

Fall 2019

Cultivating a Pedagogy of Empathy: Teaching Science Fiction in a Changing Biotechnological World

Kathy L. Avery

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CULTIVATING A PEDAGOGY OF EMPATHY: TEACHING SCIENCE FICTION IN A
CHANGING BIOTECHNOLOGICAL WORLD

by

KATHY L. AVERY

(Under the Direction of John Weaver)

ABSTRACT

I argue that science fiction affords us the ability to think past our anthropocentrism opening up a space for us to consider our relationship to burgeoning biotechnologies and the other. I provide critical interpretations of science fiction film and literature which I believe stimulate the power of the narrative imagination to envision the “netherworld experience of the other.” I believe science fiction provides a site of speculation, a means to better understand and consider the role and position of the post/human as well as the vital issues of human equity and social justice as new technologies challenge the immutability of normatively human boundaries.

Martha Nussbaum asserts that the power of the narrative imagination is crucial to the cultivation of sympathy and empathy which are key components of the best modern ideals of a democratic education. This study extends Nussbaum’s theories on the narrative imagination into the realm of science fiction film and literature. I argue that a pedagogy of science fiction not only awakens awareness of biotechnologies, but also stimulates the narrative imagination to empathetically envision a rapidly changing world.

INDEX WORDS: Science fiction, Biotechnology, Moral imagination, Empathy

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in Partial Fulfillment of the Requirements for the Degree

DOCTOR OF EDUCATION

STATESBORO, GEORGIA

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December 2019

ACKNOWLEDGMENTS

I would like to express my sincere appreciation to Dr. John Weaver and my dissertation committee who kept the faith while mine faltered. I appreciate the patience and guidance you afforded me throughout this process.

DEDICATION

It is my privilege and honor to dedicate this doctoral dissertation to my wonderful parents, Larry Currie Avery and Patricia Page Avery, whose love and unwavering support made this journey possible.

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CHAPTER ONE
INTRODUCTION

“Individual science fiction stories may seem as trivial as ever to the blinder critics and philosophers of today – but the core of science fiction, its essence has become crucial to our salvation if we are to be saved at all.”

Isaac Asimov

In the movie, *Deep Blue Sea* (1999), a group of scientists conducting genetic engineering while searching for the cure for Alzheimer’s unwittingly created a mutant strain of intelligent, bloodthirsty sharks. One of the characters asked, “What in God’s creation is that?” Samuel Jackson responded, “It’s not God’s creation, it’s ours.” The character of Dr. Susan McCallister stated, “Their brains weren’t large enough to harvest sufficient amounts of the protein complex. So we violated the Harvard Compact and Chimera Policy. Jim and I used gene therapies to increase their brain mass, a larger brain means more protein. As a side effect the sharks got smarter. We’re *this* [emphasis added] close to the reactivation of a human brain cell.” Carter Blake, Jackson’s character retorted, “No, what you’ve done is taken God’s oldest killing machine and given it will and desire. What you’ve done is knocked us all the way to the bottom of the goddamn food chain. It’s not a great leap forward in my book.” Just as Shelley created *Frankenstein* by tampering with nature, these scientists created an “underwater world of gliding monsters” with no thought given regarding ethical issues, exploitation, and potential hazards.

In *Jurassic Park* (1993), Dr. Ian Malcolm questioned the liberties that John Hammond had taken with nature by stating, “Don’t you see the danger, John, inherent in what you’re doing here?”

Genetic power is the most awesome force the planet's ever seen, but you wield it like a kid that's found his dad's gun." John Hammond responded, "I don't think you're giving us our due credit. Our scientists have done things which nobody's ever done before." Dr. Malcolm retorted, "Yeah, but your scientists were so preoccupied with whether they could that they didn't stop to think if they should. God help us; we're in the hands of engineers."

Statement of the Problem

Biotechnical interventions on the body will co-exist and evolve alongside ideas of democracy, morality, and the nature of humanity. The eugenics movement incorporates such debatable issues as embryonic research and implantation genetic diagnosis which are able to extend beyond common, acceptable therapeutic applications into the realm of re-writing our DNA. As political licensure and social endorsement for these modifications expand, Habermas (2003) suggests that there will be a "weakening of the 'social moral' restrictions placed on biotechnical progress for medical as well as economic reasons" (p. 21). Currently, gene therapies are being successfully utilized for a variety of disorders such as cystic fibrosis and muscular dystrophy. However, as the divide between the organic and mechanical continues to blur, genetic tinkering has expanded to less benevolent applications that can fundamentally alter our biologically-determined identity as human beings endowed with autonomy, dignity, and inalienable rights. In this vein, Habermas states, "What is at stake is a dedifferentiation, through biotechnology, of deep-rooted categorical distinctions which we have as yet, in the description we give of ourselves, assumed to be invariant" (p. 42). The use of biotechnological interventions at will for desired enhancements and modifications alters our self-understanding and calls into question the inherent equalities of personhood and a democratic society. The journey into posthumanity will be fraught with pitfalls as new ideals of biomedical personhood result in the conjugation the mechanical and

inorganic with the organic. There is the potential for a shift in paradigm of what constitutes personhood resulting in the possible creation of stratified, categorical distinctions. I believe there is also a potential for what is organic to be commodified and discarded violating democratic ideals of the sanctity of all human life. Also, as personhood assumes a variant nature, we might lose sight of the traditional notions of personhood and the rights conferred therein, or they may be denied to some groups. The reflexive construction of the human body will create a new normal in the way we interpret personhood which will undoubtedly filter down through society, culture, and our institutions. Given the variant nature of the new personhood, I question which groups will be accorded the rights and privileges associated with being a human being and those who will not, thereby threatening the tenets of democracy. It is possible that some groups will be granted the highest level of moral treatment with the right to life and self-determination while others are devalued, instrumentalized, and denied the dignity and rights accorded a human being. Kant (1785) stated, "Act so that you treat humanity, whether in your own person, or in the person of any other, always as the same time as an end, never as a means only" (p. 429). In my opinion, this means that it is our moral imperative to behave in ways that preserve and promote the welfare of our posthuman fellow man. This belief assumes that all people have an assumed worth and are created equal. I envision a grim and hopeless world when traits associated with being members of the human community and kinship are devalued and sacrificed at the alter of genetic enhancement for self-improvement; an unjust world where the meek do not inherit the earth and human frailty is met subordination and domination, not compassion. The logical extension is that if human nature is subject to change, morality as we know may cease to exist.

Thesis Statement

The overall question that this dissertation seeks to explore is: how is the biotechnological revolution impacting humanity? To what extent is science fiction foreshadowing what it means to be human in a posthuman world? Also, what are the ethical and moral issues associated with living in a posthuman world? In order to answer this question, science fiction serves as the medium and the scholarship for provocative investigation.

The thesis of this dissertation seeks to examine the co-evolution of technology and morality through the use of science fiction metaphors. As I stated earlier, this co-evolution will undoubtedly produce a shift in morality. Science fiction optimizes moral imagination because it allows one to experience a completely unfamiliar set of moral values, practices, and principles triggering viewers' emotional responses. Spectatorship enriches our fund of knowledge and consciousness and allows for critical reflection on consequences of technological expansion on humanity. Interpretation and meaning will be contingent upon the viewer/readers' perception, personal imagination, and feelings. Drawing upon Martha Nussbaum's theories that fiction encourages the moral imagination and cultivates critical reflection, understanding, and empathy for unfamiliar perspectives, I will argue that deliberately teaching science fiction serves as a more relevant pedagogy for young people which will endow them with a critical consciousness by which to navigate biotechnological revolution in an increasingly posthuman world.

Science Fiction as Posthuman Scholarship

Braidotti (2017) defines posthumanism as, "a convergence phenomenon unfolding at the intersection between post-humanism on the one hand and postanthropocentrism on the other. Posthumanism proposes the philosophical critique of the Western Humanist ideal of the 'Man of

reason' as the allegedly universal measure of all things, whereas post-anthropocentrism rests on the rejection of species hierarchy and human exceptionalism" (p. 19). Posthumanism erupted out of the critique of the human; also, out of the need to think about what we are ceasing to be and what we are in the process of becoming. We are moving away from the traditional notions of the centrality of the human with a fixed identity and dual natures. Braidotti (2017) further posits:

The posthuman knowing subject is a complex assemblage of human and non-human, ecological, technological, planetary and cosmic, given and manufactured, organic and technological relations. This subject is inscribed in the power formations of the current phase of cognitive capitalism and ubiquitous mediation, bio-piracy, necro-politics and world-wide dispossession, expulsions and migration. The posthuman subjects need to develop an ethics that combines the recognition of our collective belonging to the totality of a vital material universe, with respect for the structural differences and inequalities that compose our social existence and the desire to develop a collective ethics of becoming. (p. 29)

Science fiction is science, wrapped in a pipe dream, wrapped in fantasy, chock full of metaphors, embedded messages, existential truths, and potential consequences which makes it uniquely qualified to chronicle the complex lived experiences of the posthuman. The scholarship of today acknowledges the significance of the exploration of science fiction as a platform for thoughtful discourse regarding the vast technological changes in genetic engineering, bio-informatics, genomics, and nanotechnology; changes that are redefining our culture, our identities, and our relationships with others as well as societal institutions.

The Mythical Chasm Between Life as We Know It and Life as We May Know It

Garreau (2005) emphasizes the expansive gulf and incredulity which exists between what engineers are creating today and what is believable. He states, “It is the first challenge to making sense of this world unfolding before us, in which we face the biggest change in tens of thousands of years in what it means to be human” (p. 3). The average reader does not have the background knowledge, vocabulary, or interest in plowing through highly technical material on cloning, tissue engineering, or transgenics. Furthermore, readers do not need to create meaning or make connections to their reading because it is clearly and explicitly stated and requires no imagination, heart, or soul to interpret. Because the act of reading is commonly regarded as a fact-finding expedition, a routine exercise, or a test, it is disengaged and disenchanted with the humanities. However, one can buy a ticket to a science fiction movie and vicariously learn of scientific discoveries and developments which propel the action of the narrative in an exhilarating manner. Doll (2000) states that, “Fiction is not only necessary for pedagogy but is the lie that pedagogy needs to uncover truths that make us human” (p. xii). Furthermore, she posits that exposure to fictional narratives weaves webbed connections that are fluid, dynamic, and challenge one’s central beliefs. Its end product is wisdom, not knowledge. Only when connections are made can the learner be truly insightful about their thoughts about the human condition, approach outer social issues, and dare to dream of a better world. Science fiction ignites the imagination narrowing the chasm between reality and incredulity.

Science fiction film fills our minds with questions and wonder as we consider the “what if?” and “why?” One of my favorite movies is *Contact* (1997) starring Jody Foster and Matthew McConaughey. It is based upon Carl Sagan’s 1985 novel by the same name. Jody Foster plays scientist Dr. Ellie Arroway who discovers a radio signal from space and believes that she has

made contact with Vega, a star system 26 light-years away. She deciphers a diagram for building a ship to take her there from these frequencies. The countries of the world come together to build the transport machine but the project is vexed. Eventually, it is built by an interested billionaire. Although the ship never leaves its docking station, Ellie is rendered unconscious and travels through a wormhole making contact with an alien being who assures her of its benevolence and that it wanted their first contact to be familiar. It takes place on a beach with the alien being assuming the figure of her deceased father. Ellie regains consciousness only to find out that she never really left. The twist is that eighteen hours of static were recorded. My earliest exposure to aliens was the film *ET the Extra-terrestrial* which did not necessarily inspire me to think about “what if?” However, the plot of *Contact* was so deeply steeped in real science that it allowed for the suspension of my disbelief and the questioning of what our first contact would really be like. Would it be as beautiful as the contact presented here?

Envisioning New Technologies

Science fiction film is also ground zero for envisioning new technologies. We all remember the flip communication device that Captain Kirk used to contact Scotty while away on missions asking him to, “Beam me up, Scotty” when he was ready to return. In 1996, the Motorola corporation fashioned the first flip phone naming it StarTAC. Other technologies envisioned by the *Star Trek* writers include the iPad, blue tooth headsets, the floppy disk and USB drives, and GPS. The hoverboard had its genesis in *Back to the Future* and became a reality once the technology was refined.

Inspiring Empathy through Science Fiction

Studies have demonstrated that watching movies stimulates the imagination and inspires empathy. Roger Ebert believed this to be true and stated in a 2014 documentary on his life and career that the purpose of civilization and growth is to be able to reach out and empathize a little bit with other people. He believed that movies are like a machine that generates empathy. It lets you understand a little bit more about different hopes, aspirations, dreams, and fears. Ebert's belief is supported by science according to Dr. Jim Coan, associate professor of clinical psychology and director of the Virginia Affective Neuroscience Laboratory at the University of Virginia, who said that we immerse ourselves into the perspective of another person when we watch movies and, in doing that, we start to accrue those perspectives into our own universe which is how empathy is generated.

There is also a link between storytelling and empathy. Paul Zak (2015) conducted a study in which they were able to demonstrate that watching a compelling narrative can alter brain chemistry by the creation of two neurochemicals: cortisol and oxytocin. His team discovered that the release of oxytocin was positively related to the degree of empathy study participants felt for the characters while level of cortisol that were released were triggered by a sense of distress for the characters. Another study was published in *The Journal of Applied Social Psychology* in 2014 which found that watching movies generated empathy for those we perceive as different from ourselves. The observation of people trying to find their place in the world and fit in helps build better understanding of people's perspectives. It found that we fundamentally need to have empathy, understanding, shared goals, and cooperation. When we lack that connection, our sense of self literally, not metaphorically, literally, is diminished. In other words, our identities are inextricably bound to our empathetic linkage with others. Hayles (1999) states, "What are

we, then, to make of the posthuman?” (p. 246). Indeed, the posthuman is here dismantling enlightened humanist embodiments. Speculative science fiction allows us to explore literary and fictional representations of future posthuman embodiments and, hopefully, establish feelings of inclusivity and a critical consciousness for a shifting cultural and social reality.

Themes of Equality and Justice

Thematic emphasis in science fiction film tends to reflect a disruption of order, conflict between society and its institutions, and questions regarding equality and justice. This allows the film to approach controversial issues such as race and gender equality in metaphor using imaginative plots and compelling characters. By creating fictitious worlds in which characters are oppressed and live in the margins of society, the opportunity is created for viewers to step outside of themselves reimagining themselves in the position of the “other.” Science fiction also stimulates critical thinking regarding the dystopian worlds it creates calling into question what we really want for our planet and for the posthuman race. The use of science fiction tropes stimulates moral and ethical thinking as it explores blurred categorical distinctions and alternate representations of humanness.

New posthuman narratives are emerging as the field of biosciences continues to make advances and further colonize the human body. It is my intention to explore the various biotechnologies within the framework of relevant literature and movies in order to ascertain the degree of convergence between science and fiction. Biotechnologies create opportunities for mankind to transcend its humanity mechanically, intellectually, physically, chemically, and maybe at the level of the human genome itself one day. There are many inherent dangers associated with these opportunities in the hands of a society of consumers. It has the potential to

create two distinct classes, those that have access to these technologies and those who do not. Furthermore, having access to augmenting biotechnologies has the potential to create a “superior class” and “permanent under-class” which threatens the very ideals of democracy upon which we were founded. Science fiction is telling stories about the biotechnical colonization of the human body. Through this genre, I would like to explore the impact on our society as a whole, potential social and cultural change, as well as implications for educating the posthuman.

Science Fiction Challenges Traditional Humanist Views

Science fiction poses imaginative and hypothetical points of narrative departure challenging traditional humanist views that emphasize the supremacy and autonomy of man in which there is a clear distinction between what is natural and what is artificial. Technology is a cultural artifact placed on the continuum of human progress and advancement by which we improve our condition. It is simply a manipulation of the environment; a tool by which to more efficiently achieve a means to an end. The posthuman awakening of the past decades has changed our relationship with technology blurring the boundaries between man and machine. Prolific technological advances have served to artificialize our bodies and mechanize our workplaces. Technology is not limited to serving as an implement for increased effectiveness or productivity but merges with the human body creating a man/machine hybrid with unique capabilities and fantastical potential. New relationships are being forged between the organic, the altered or modified, the hybrid, and the engineered. Graham (2002) corroborates this view by stating, “Technologies call into question the ontological purity according to which Western society has defined what is normatively human” (p. 5). For example, consider the humanoid Cyclon characters in *Battlestar Galactica* who are cyborg “marginalized others” callously referred to as a “skin-jobs” and are hell-bent on the annihilation of the human race. They are created from

biological materials but, are distinctly robotic and completely void of human emotion. Cyclons regard themselves as more highly evolved than “backward” human counterparts as evidenced by their advanced technologies yet they long for “humane” qualities. While most science fiction focuses on plot, this television series blurs the lines of identity between human and machine by examining agency and interpersonal relationships as markers of inclusion into the human race. Although Cyclons are machines, they were created from organic material and some eventually evolve into a thinking, feeling, and emoting beings capable of love, compassion, reproduction, and death thereby challenging the epistemological and ontological markers of what is considered normatively and exclusively human. As we see in *Battlestar Gallactica*, science fiction challenges the meta-narratives of the dominant culture by rendering what it has determined to be human, abstract, arbitrary and potentially obsolete. It is in a sublimely unique position to deconstruct traditional binary classifications and to explore the netherworld experience of the posthuman “other.”

Conversely, it can be said that works of fantastical science fiction can and do incorporate the ideals traditionally associated with humanism. Gene Roddenberry, creator of *Star Trek*, was a committed humanist. *Star Trek* promoted the humanistic views of ethics, virtue, social justice, and reason. Episodes were rife with the human themes of love, courage, and truth. As I mentally recount the episodes, I remember that there were always personal and societal moral lessons to be learned which were played out against the backdrop of deep space. Roddenberry’s primary characters were representations of humanist values. Spock represented the virtues of truth and logic. Of course, Captain Kirk was courageous and wise. McCoy was lovelorn and passionate. As opposed to the dystopian scenarios depicted in the fiction and film discussed in this dissertation, *Star Trek* posed a utopian future where technology enhances the quality of life

for all and no aliens are harmed in the process. *Star Trek's* narrative envisioned a fictional future society which appreciated highly evolved intelligence, diversity, tolerance, and interdependence. Technology was merely the handmaiden to a heightened, utopian social order. Roddenberry's masterpiece was primarily a statement regarding his vision for humanity's future and the fulfillment of individual potential.

The science fiction narrative challenges traditional views of what it means to be human by blurring the lines between the human and the not-human. Braun (2010) states that in science fiction, "the characters' bodies, through difference or metamorphosis, become markers of their inclusion or exclusion within the national or political body, so that the genre becomes a technique for confronting the boundaries of the human" (p. 31). Cyborgs and clones become the metaphors that dramatize how biotechnologies are used to construct the "other." those marginalized people who are functionally excluded from participation in the dominant culture on the basis of difference. Science fiction literature challenges our unquestioned assumptions and is in a unique position to offer insight into bioscientific and technological advances that could be beneficial for moral, ethical, and political discourse.

Social representations of the "other" are not simply a matter of categorization, prejudice and stereotype. They have much to do with deeply imbedded beliefs that pass as absolute truths and cultural knowledge which are transmitted from generation to generation along with fear of the unknown. A defining characteristic of human society is its esprit de corps: its tendency to gather in groups which define themselves by certain common characteristics and, differentiate themselves – set themselves apart from and at odds - with other groups and individuals who do not share these characteristics. There is an "otherness," invisibility, and marginalization of various groups of people which include but are not limited to race, ethnicity, sex, sexuality, and

gender. It is a social construction by the dominant culture whose purpose is to attribute flaws to, objectify, and devalue groups of people who live in the margins of society. It is part of the form and function of this dissertation to address issues involving democracy, equity, and the use of power via science fiction scholarship.

The Intersection of Biotechnology, Literature, and Film

Why, you might ask, should we care how other people think and feel about stories? Why do we talk about them in the language of value? One answer is just that it is a part of being human. People tell stories and discuss them in every culture, and we know that they have done so back as far as the record goes... We wouldn't recognize a community as human if it had no stories, if its people had no narrative imagination.

Kwame Anthony Appiah *Cosmopolitanism*

The world of the posthuman is accessible in the humanities and at the intersection between biosciences, literature, and curriculum theory. Gough (1993) argues the importance of emphasizing popular culture in teaching scientific issues, favoring science fiction and comic books over textbooks. He states, "Science textbooks and laboratories are literally science fictions in the original sense of the Latin *fictio*, 'something fashioned by a human agent'. But they also fictionalise science in ways that are likely to impede learners' understanding of the meaning and significance of science in our society and culture" (p. 16). Furthermore, he stipulates that science fiction provides the platform by which to experience cutting edge science. Gough argues that science and the humanities do not exist separately from one another but actually inform each

other and reconciliation between the two is necessary to ensure that science serves democratic purposes of an increasingly diverse population.

Isaac Asimov identified three major types of science fiction as “What if?” “If only,” and “If this goes on.” Filippo (2011) states that, “Magnificent works have emerged from each of these categories, but readers-and writers-have reserved their greatest love for the first of the trio. Asking simple, counterintuitive, counterfactual, or even childlike and naïve questions...seems to unlock the storytelling imagination like nothing else” (p. 15). *In Liminal Lives: Imagining the Human at the Frontiers of Biomedicine* (2004), Susan Merrill Squier states:

I view human beings living in the era of these biomedical interventions as liminal ourselves, as we move between the old notion that the form and trajectory of any human life have certain inherent biological limits, and the new notion that both the form and trajectory of our lives can be shaped at will – whether our own or another’s, whether for good or ill. (p. 9)

The truth is that nobody can predict the future of biotechnological advancement. While the prevention and cure of diseases for the purpose of a longer and healthier life is its first and foremost consideration, the long arm of scientific knowledge has a much farther reach. Science fiction explores the possibilities of biotechnological growth extrapolating scenarios that present unprecedented human traits and abilities. Braun (2010) also asserts, “Science expresses the excess of fantasy and desire that cannot be contained within its purported objectivity through metaphor and imagery and in return, imagery borrows scientific discourse in its expression with culture” (p. 17). Employing Asimov’s “what if?” compulsory question of science fiction, we are

able to contemplate multiple constructions of the human situated within the milieu of posthuman technologies and bear witness to the emerging narratives.

Science Fiction as Cultural, Social, and Political Metaphor

Science fiction narratives function as political and social metaphor. Metaphor is richly woven into the fabric of our social and political culture. It functions as a more palatable, engaging cognitive tool for understanding abstract concepts. In fact, cognitive linguistic researchers Lakoff and Johnson (1980) assert that people make sense of their world largely through conceptual metaphors, which enable them to understand abstract concepts using knowledge of superficially dissimilar, typically more concrete concepts. Landau, Meier, and Keefer (2010) expanded their research and determined that conceptual metaphors shaped a wide range of phenomena, particularly social thought, perceptions, and attitudes impacting judgment and decision-making. It also functions as the reigning form of social satire and critique. What could have provided better food for fodder in the socially tumultuous 1960s than casting an empowered, attractive black woman as a commander on the *USS Enterprise* thereby challenging mainstream beliefs about race and gender? The role of Lieutenant Uhura was ground-breaking as this was one of the first televised depictions of a black female who did not occupy a position of servitude; a major coup for African-American women. In addition, from a metaphorical standpoint, Lieutenant Uhura's role was a force to be reckoned with and served to invalidate traditional sexist, objectified stereotypes so prominent in patriarchal Hollywood. *Star Trek* "forayed boldly" by empowering her with opinions, convictions, and authority punctuating the feminist and civil rights agendas of that time.

The music and entertainment industry have long infiltrated the psyches of the masses through the prolific use of metaphors in their art. Metaphorical language packs a more powerful, inspirational punch as well as conveys the importance of the two similar ideas represented in dissimilar ways. For example, “American Woman” was an epic hit for the Canadian band The Guess Who in 1970 and is one of the most wildly misconstrued songs ever. The listener rocks out to the distinctive guitar sounds of Richard Bachman and its hook, “American woman, get away from me” under the mistaken impression that the group is chauvinistically touting the superiority of Canadian women. In fact, the song is a political statement protesting U.S. politics, the draft, and the war in Viet Nam. “American Woman” actually refers to and is a metaphor for The Statue of Liberty with its lyrics attacking U.S. policies.

Posthuman literary fiction is cultural, social, and political text which functions to shape understandings of the biosciences and technology. Hayles (1999) states, “culture circulates through science no less than science circulates through culture. The heart that keeps this circulatory system flowing is the narrative-narratives about culture, narratives within culture, narratives about science, narratives within science” (pp. 21-22). Rutten, Soetaert, and Vandermeersche (2011) argue that literature and culture are inextricably bound; furthermore, it is the function of the literary canon to address ethical issues in a global, multicultural, and media-saturated society. They contend that literary narrative is embedded within the social context and is therefore a socio-political construction because it occupies a fixed position within the power structures of society and institutions. The literary canon is a moral technology and process of socialization because it specifically delineates what constitutes the state of being right and moral as well as what to value. Rutten, Soetart, and Vandermeesche (2011) warn of a world devoid of literature because narrative is an important source of inspiration and critical reflection and state:

people make sense of their experience and other people and the world by emplotting them in terms of socially and culturally specific stories...which are supported by the social practices, rituals, texts, and other media representations of specific social groups and cultures. (p. 2)

They describe science fiction as a laboratory for experimenting with the imagination of time and space and of social and affective relationships between people. What kind of future do we imagine? Who is predicting this future? From what perspective is this future imagined? Science fiction narratives are social documents revealing much about contemporary society and the social embeddedness of technological developments illuminating invaluable information about cultural practices and social values.

In *The Inhuman, Reflections on Time* (1991), Lyotard asserts that:

any material system is technological if it filters information useful to its survival, if it memorizes and processes information and makes inferences based on the regulating effect of behavior, that it, if it intervenes on and impacts its environment so as to assure its perpetuation at least. (p. 12)

In my opinion, the logical extension of this thought is that technology will be the final bastion of social and political influence and power. What role will the human being play in the grand scheme of a futuristic society? Will humanity serve as handmaiden, in servitude to technology blithely unaware of the diminishing importance of our species in the universe? *Mass Effect* is a video game situated in a galactic civilization battling all kinds of aliens. The villain, Sovereign, is contemptuous of organic matter due to its biological limitations and finitude and, has the ability to control organic matter through the process of “indoctrination” which reduces humans

to a mere shadow of the former self. The Reapers indoctrinated organic beings by the process of technological brainwashing. “Indoctrination” may have been conceived as a metaphor for technocracy and/or control and transmission of an accepted body of knowledge and information.

Sovereign proclaims:

Organic life is nothing but a genetic mutation, an accident. Your lives are measured in years and decades. You wither and die. We are eternal. We are the pinnacle of evolution and existence. Before us, you are nothing. Your civilization is based upon the technology of the mass relay, our technology. By using it, your civilization develops upon the paths we desire. We impose order on the chaos of organic evolution. You exist because we allow it. And you will end because we demand it.

How will the nature of human existence be redefined as the great meta-narratives which nourish our existential self-understanding implode? Do technology and knowledge have the ability to impact social affiliations as well as the structure of society and its institutions? There is a potentially incestuous relationship between science, technology, and society constitutive of the “perfect storm” for re-conceptualizing society, superceding social, political, and cultural values and institutions as we currently know them. As I stated in my introduction, science fiction questions and challenges our ability to be good stewards of burgeoning biotechnologies.

Furthermore, Gregory Stock (2002) states that, “We’ve seen too many apocalyptic images of nuclear, environmental, and environmental disaster to think that the path to human extinction could be anything but horrific” (p. 4). Stock ponders the quintessential question of whether the misuse of this awesome power of genetic manipulations will alter our social structure. Science fiction metaphorically addresses the hysteria and fear surrounding prolifically emerging

biotechnologies and explores the ways of and means of these extrapolations. In her discussion of how myth and literature inform popular reactions to technoscientific innovation, Elaine L.

Graham (2002) states:

This leads me to suggest that science and popular culture may both be regarded as representations of the world, in that they both deploy images and rhetorical conventions which do not simply report reality, but construct, mediate, and constitute human experience. (p. 13)

Popular culture employs a healthy dose of escapism as it addresses the strange and supernatural fabulations that technoscience has made possible and the ever-present “Other” in any science fiction film worth its salt. The shock and entertainment factor make it worth the price of the ticket. However, feelings, emotional responses to, and investment in the experiences of the largely-silenced plurality of voices flex the critical thinking muscle and stimulate the moral imagination. Science fiction enables one to consider the plurality of human identities, put themselves in another’s place, and consider the nature of social justice which is essential to my thesis.

Zombies, and aliens, and mutants, oh my! Once the domain of myth, legend, and lore, these as well as other sinister and grotesque motifs are not only the cash cow of Hollywood popular culture fabulation but, serve as the discourse of monstrosity; as metaphorical representations of the world and experiences. Through the discourses of the fantastic and speculative science fiction narrative, netherworlds are built which illuminate the potential consequences of unrestrained biotechnical scientific advancement including themes of isolation, dehumanization, disenfranchisement, and disembodiment which raise moral and ethical existential questions.

Graham (2002) affirms the importance of popular culture, specifically the science fiction genre, in constructing mythical and monstrous representations of what it will mean to be a human while simultaneously raising social and political issues associated with technoscientific advancements. She states, “It is a reminder that ‘the stories we live by’ can be important critical tools in the task of articulating what it means to be human in a digital and biotechnological age” (p. 17). The science fiction genre has moral agency enabling one to live multiple lives phenomenologically. The monstrous and mythical representations of the human, sub-human, almost human, and non-human are constitutive of world-building in that they are able to produce and legitimize “facts” about human identity and have socio-political impact. The ability to critically appreciate and ponder the representations of science fiction within the context of contemporary, as well as future society, is crucial as the defining traits of what is considered normatively human blurs with regard technological interventions, sexuality, race, and gender; traditional, fixed, binary classifications supplanted by hybridity and placement on a continuum of traits.

In her dissertation, *Cyborgs and Clones: Production and Reproduction of Posthuman Figures in Contemporary British Literature* (2010), Braun argues, “In the twentieth century there is a shift in general attitudes toward technology from one in which technology is distinctly different from human and controlled by them (for good or ill) to one where technology is imagined as being able to mimic the human” (p.15). She also asserts that this shift is “generating important ethical questions that are specific to our understanding of ourselves and our categories of human, subhuman, and non-human” (p.74). In the same vein, Hayles (1999) ponders the questions regarding how we will navigate this posthuman future and posits:

Rather, the answers will be the mutual creation of a planet full of humans
struggling to bring into existence a future in which we can continue to survive,

continue to find meaning for ourselves and our children, and continue to ponder our kinship and differences from the intelligent machines with which our destinies are increasingly intertwined. (p. 282)

In addition, scholars have begun considering the ethics of non-human lives critiquing the unjust treatment and exploitation that non-human animals are heir to in the name of science as well as consumption. Challenging the speciesist viewpoint of the human-animal as distinct and supreme, Weitzenfeld and Joy (2014) state:

Anthropocentrism, as an ideology, functions to maintain the centrality and priority of human existence through marginalizing and subordinating nonhuman perspectives, interests, and beings. Anthropocentrism requires that a society have a concept of humanity, assign privileged value to it, and measure all other beings by this standard. (p. 3)

Because they have no agency or other traits considered to be the sole dominion of humans such as a soul, language, and consciousness, non-human animals are denied freedom and dignity. For example, duck foie gras, which means “fatty liver,” is a gourmet delicacy and is produced by force-feeding corn mash to male ducks through a metal tube. Female ducks are bred for their meat. Concerned scientists and activists are calling for a ban on production of foie gras on the grounds that this is extreme animal cruelty. These male ducks’ suffering includes esophageal injury, confinement, and severe digestion issues leading to vomiting and death. A non-human animal bereft of a divine origination and consciousness is not subject to the ethical and moral treatment as human animals. Marla Morris (2014) counters this view by discussing the inter-relationship between human and non-human animals. Her belief is that non-human animals do

have rich inner worlds experiencing many of the same emotions that we do and that they are worthy of contemplation in humane education citing the relationship between service animals and their companions. Furthermore, Weitzenfeld and Joy (2014) further posit, “A critical animal theory thus requires an awareness of and opposition to the larger political-economic structures that manifest oppression, the discourse and narratives that legitimate these institutions, and the exclusionary affects that may ensue when these institutions and discourses are challenged” (p. 27).

What will it mean to be human? Where will the socially-constructed boundaries be drawn? Who will be accepted as members of the human community? Science fiction dares to speculate and dream of the various biotechnological representations of the futuristic posthuman, affording the creative mind license to envision and create cinematic worlds exploring the vital issues of posthuman identity.

Early Science Fiction

There is a symbiotic relationship between bioscientific advances and newly emerging technologies and popular culture; science provides the seeds of creation for fictional narratives, scripts, metaphors, and images while fictional narratives provide the foundation for discourses regarding such issues as cloning, genetic engineering, stem-cell research, etc. Abrash (2004) argues that the unknown dichotomously exists on two levels: (1) the comprehended unknown (COU), and (2) the uncomprehended unknown (UNU). Victorian scientific method assumed that the uncomprehended unknown would be brought to light based upon the comprehended unknown scientific fact and discourse. Although Victorians were aware and fearful of known and unknown scientific knowledge, there were many scientific concepts that exceeded what could be considered rational basis for discourse. The more they knew, the more they were aware

of what they did not know. Gothic novels addressed these fears and gave birth to the first science fiction narratives, among which was Mary Shelley's *Frankenstein*. *Frankenstein* forayed into the uncomfortable notion that science had the ability to transcend the static nature of humanity creating life forms differing drastically from that which was considered normatively human, potentially creating monsters alienated and condemned to live in the margins of society. Science fiction united literary skill and scientific imagination providing the methodological framework for discourse to tell the stories that hard science was incapable of telling. Science fiction, with its fantastic elements, pushed the plausibility of the uncomprehended unknown as hard science conveying the message that the subject matter of the fictional narrative could belong in the realm of the comprehended unknown.

Serres (1995) was of the opinion, as others, that the Age of Enlightenment was the exclusionary agent in the chasm that formed between literature and science as it deemed intellectual thought that fell outside the realm of reason, science, and empiricism irrational and imaginary. During this time, all disciplines fell under the domain of science and the development of facts, bereft of the individual lived human and social experiences; blithely ignorant of the collective social construction of "facts." Eighteenth century trajectory of thought, in its rational singular approach to organizing, categorizing, and understanding the world, held disdain for freedom of thought, preferring to frame their epistemological beliefs in an orderly, definitive, and prescriptive manner. It was a time in which the rich contextual interweavings of science, society, culture, and humanity were disregarded as unauthentic and fanciful. Through an examination and critique of Serres' books, Zembylas (2002) discusses his holistic point of view and describes his attempt to bridge, or "crossbreed" the sciences with the arts, literature,

and philosophy. Science and the humanities are best situated at the intersection of invention and imagination. Zembylas states:

Serres offers an alternative vision and a new image of vitality that shift our thinking and feeling about our place in the world and the ways in which to respond to the new challenges facing humanity: a life and education that think outside of the metaphysical categories of unity or rational order and sense, feel, and hear the “noise” that is the background of the living world. (p. 2)

Serres topographical theories generated a landscape by which to understand science fiction. He observed the multiple turbulent relationships in the space between objects and humans in the world; also, he recognized the interdependency of philosophy, history, science, and literature. In this same vein, science fiction also navigated and described the mythical spaces between humans and technological advancement. While *The Strange World of Dr. Jeckyll and Mr. Hyde* (1886) was not technically a work of science fiction, it is rife with 19th Century Gothic tropes which acted as a catalyst for scientific discourse. While Serres found science fiction as a genre questionable, he was uncomfortably aware of the divergent nature of science and fiction. He expressed his concern to Latour writing, “the bifurcated relationship between science and literature was so frozen, so distant, that two eternities seemed to be looking at each other like two porcelain dogs – like two stone lions flanking in a doorway” (Serres & Latour, p. 47). Serres regarded the passage between science and fiction as complicated and void of explorers. He embraced the work of Jules Verne, *Journey to the Center of the Earth* (1864) writing, “There is only a technology of vehicles and communication, only balloons, aerostats, submarines, steam engines, railways, airplanes, and not one word of what commonly goes by the name of science fiction” (*Jules Verne’s Strange Journeys*, 1975, p. 175). Although he did not grant credence to

science fiction, he did acknowledge that there were no impossible technologies. Through his work, Serres represents the technologized world and is cognizant of its' hopes for humanity, pitfalls, and potential terrors. He eschewed the alienation of science from other disciplines recognizing the influential discourses between science and fiction, or more specifically, the fictions of science. In other words, he recognized the different interpretations of the science that substantiate science fiction, and the variety of fictional narratives that are derived from them.

Salisbury (2006) states that Serres':

insistence on mapping the passages between discourses and genres that would conventionally appear to be spatially and temporally distinct, alongside his creation of a method that reveals the productive hybridity of disciplines, suggests that there could nevertheless be linkages and relationships between his theories and science fiction that Serres himself has not explored. (p. 2)

His mapping theories illuminated the multiple and turbulent relationships of human beings in the world encountering technological change.

Potential Pitfalls

In my opinion, the most important story that the biosciences are telling is that of the acquisition and management of genetic knowledge, the ability to create and manipulate life from organic and inorganic material, and how this impacts what it means to be human. The human gene has come to represent social, cultural, and bodily difference and parallels historical hierarchal categorization based upon race, gender, sexuality, and ethnicity. Biotechnological narratives revolve around the subsets of reproductive technologies, cloning, stem cell research and therapies, genetic manipulation, organ harvesting, etc. Science fiction provides the most

appropriate framework for contemplating our present posthuman condition and questioning our existing epistemological and ontological views. In *Representations of the Post/human*, Elaine Graham (2002) asserts that, “Technologies call into question the ontological purity according to which Western society has defined what it means to be normatively human...New technologies are often perceived as threatening bodily integrity, undermining feelings of uniqueness, evoking feelings of growing dependency and encroachments of privacy” (p. 5). The manipulation of genetic information will fundamentally alter hereditary factors, and ultimately mankind. Poor stewardship and use of these processes without restraint and proper moral and ethical consideration of the effects on the human gene pool could have disastrous effects on humanity and culture. The genetic engineering of people is quite different from breeding the perfect lap dog for royalty. It is a natural assumption that the traits that we are born with are a matter of chance and that our fate is in our genes. Genetic engineering has the potential to redesign the human and will undoubtedly produce social change in our practices and institutions. In our quest to make the better human, we must be careful not to abdicate moral and ethical considerations. The future of man depends upon it. Braun (2010) states that:

Technology is more than just gadgets and machines, however; it is also institutions, processes, and techniques that enhance the capabilities of humans. In short, technologies are those things that extend beyond the individual human subject to enhance the capabilities of the body and mind. (p. 123)

Power and justice within the political and social realm would be unbalanced in a society that relies on genetic solutions to their desires and problems. Kansa (2008) corroborates this view postulating that changing and improving mental and physical capabilities by the use of various technologies is inherent in posthumanism. However, far from being an objectification of the

human body, he states, “individual human nature will be tied more closely to the body, and therefore what a person thinks and feels will be directly expressed in the body” (p. 2). Therein lies the major debate. What will happen to our humanity as biotechnologies exceed the boundaries of evolution in order to colonize, objectify, and commodify the body? Undoubtedly, there are benefits in technologizing the body for certain ailments and infirmities. Critics contend that cyborg-ization could unleash Pandora’s box potentially superceding natural selection and creating a hierarchal class structure based upon access to biotechnologies. Mankind is trailblazing the final frontier as technology increasingly interfaces with human life. Once consumed with finding other life forms “out there,” science fiction is now exploring the “brave new world” of re-engineering our bodies. Our quest is a peaceful coexistence between the organic and the inorganic, using biotechnological knowledge for the betterment of humanity, and the salvation of the inner workings that make us uniquely human.

In *The Postmodern Condition: A Report on Knowledge* (1979) Lyotard remarks that scientific knowledge is a kind of discourse whose status will be altered as societies enter postmodernity with its concurrent technological transformations. He states:

The nature of knowledge cannot survive unchanged within the context of general transformation. It can fit into new channels, and become operational, only if learning is translated into quantities of information...Knowledge is and will be produced in order to be sold, it is and will be consumed in order to be valorized in a new production: in both cases, the goal is exchange...Knowledge in the form of an informational commodity indispensable to productive power is already, and will continue to be, a major-perhaps the major-stake in the worldwide competition for power. (pp. 4-5)

Knowledge in the form of rapid technological change defines the information revolution and has important moral implications for “biocapital” in terms of production, ownership, and distribution, as well as the institutions and social practices that legitimize it. Technoscientific capitalism trafficking human biomatter as a commodity negates the “gift-giving” and civic responsibility concepts previously associated with blood drives, organ donations, and transplants and makes blood, tissue, and cells subject to market forces. Furthermore, the commodified body diminishes the value of human embodiment in life and posthumously. In this view, Waldby and Mitchell (2007) stress:

the increasing importance of ‘information’ as a mediating term between individuals and tissues used for research and therapies. The transformation of the economic foundation of the United States and most western European countries from industrial to informational has encouraged the extension of intellectual property categories (copyrights, patents, trademarks, and publicity rights) to an ever-increasing number of objects, and human tissues, (and information about human tissues) are no exception. (p. 26)

DNA is information and the blueprint for an organism. The logical extension is that the federal government and its agencies become the governing entity in making adjudications how this knowledge will be controlled and dispersed, particularly with regard to the relationship between universities and the corporate sector. What has been traditionally regarded as a gift denoting the ideals of a sense of trust between embodied members of a common humanity and social equity has been transformed into a tissue economy by which systems are developed for sourcing and distribution. Waldby and Mitchell (2007) comment that, “the establishment of intellectual property in human tissues requires the dispossession of the donor, or through the informed

consent procedure, which effectively declared the tissues a form of unimproved waste, valueless until channeled through the circuits of technical and capital transformation” (p. 86). Consider this plot: In a dystopian future, organ transplants have become a commodity and the giant corporation that sells them sends out repo men to take back hearts, kidneys and other innards from customers who aren't paying their bills. This scenario is reenacted in the sci-fi movie *Repo Men* in which a man is on the run after he is unable to pay for the heart he purchased, not the medical services. The film is actually predicated on an off-Broadway production called *Repo! The Genetic Opera* which was a horror rock opera about organ repossession whose cast included Zdunich, Sarah Brightman, Paul Sorvino, and Paris Hilton.

Discussions regarding cloning, pre-natal manipulation of the gene, organ harvesting, and tissue banks stimulate questions about human identity and autonomy. If the purpose and function of the human body to act as the vessel for commodified artifacts for the purpose of exchange, research, and capitalistic endeavors, I fear this is tantamount to bioslavery and reminiscent of past human and social injustices. In *Modest Witness@Second Millinnum*, Haraway (1997) implies that systems of exploitation might be crucial parts of the “technical content” of science, as it is in other systems of structured inequality (p. 332). Haraway recognizes that there is a synergy between science, technology, and society. Technology is not a separate entity providing a means to an end but is embedded in the cultural artifacts reflecting the broader social and cultural values. *The Stepford Wives* provided an excellent example of how the use of technological systems reflect the nostalgic sentimental narratives of a patriarchal society and masculine supremacy. The technological bodily invasions of these women cinematically and metaphorically represent gender struggles and misogyny by reducing them to

robots. Technology is not represented as a separate object or machine but is intertwined and embedded in the artifacts of a broader socially and culturally situated environment.

The Narrative Imagination

In Cultivating Humanity: A Classical Defense of Reform in Liberal Education (1997), Martha Nussbaum argues that the purpose of a liberal education is to cultivate humanity. She asserts that to cultivate humanity is to prepare and educate for participation in world citizenship. Nussbaum posits that one cultivates humanity by the development of three capacities. Number one is the capacity for critical self-examination and critical thinking about one's own culture and traditions. The second capacity is the ability to see one's self as a human being who is bound to all human beings with ties of concern. Lastly, is the capacity for narrative imagination which is the ability to empathize with others and to put oneself in another's place. It is the narrative imagination that is key for seeing oneself as a human among other humans. The moral force of the narrative imagination is its ability to illuminate our world view in ways that can shift our cognitive biases, perspectives and deeply-held beliefs and be truly open to new and differing beliefs. These afore mentioned needs must be fulfilled for a person to fully exercise their humanity and be fully participatory in cultural life. Nussbaum discusses that empathy is an essential ingredient of humanity and is crucial to social justice. Without empathy, there is the potential for dehumanization and "othering" those outside our sphere of empathy. Literature, or story-telling, is constitutive of our humanity. Literature is one of the nutrients that satisfies our human needs by expanding our empathy and developing our moral imagination. Literature allows us to live multiple lives. Through the development of the moral imagination, we improve our capacity to more fully assume the perspective of the "other."

Science fiction narratives function as metaphors to stimulate the scientific and moral imagination and better understand the stories of others. Indeed, as technology proliferates our culture and transforms our “patterns of play, work, love, birth, sickness, and death,” science fictions’ fabulations are not merely imaginative plot devices but metaphors by which we live (Lackoff and Johnson, 1980). Robert Scholes (1976) describes fabulation as, “fiction that offers us a world clearly and radically discontinuous from the one we know, yet returns to confront the world in some cognitive way” (p. 47). Furthermore, he adds:

In works of structural fabulation the tradition of speculative fiction is modified by an awareness of the nature of the universe as a system of systems, a structure of structures, and the insights that of the past century of science are accepted as fictional points of departure...It is a fictional exploration of human situations made perceptible by the implications of recent science. (p. 54-55)

Science fiction as a form of inquiry parallels real-life experiences while, simultaneously, minimizing the artificiality and standardization of hard scientific research (Sandelowski, 1981). Science fiction narratives, or science as a fictional point of departure, afford a cinematic foray into how prolific biotechnological advances reconceptualize the human challenging traditional notions regarding how we define ourselves as human and its conjuring often produces the form of the marginalized Other, favoring other traditionally marginalized groups ensnared in a plot of oppression and conflict. I contend that we are pioneering uncharted territory by exploring multiplistic metaphorical identities that extend beyond the comfortable, traditional binary classifications through science fiction fabulation. At the core of the narratives are the universal themes of the heuristic human experience such as domination, self-determination, full participatory rights of citizenship, and equal access; themes that speak to the ethical and moral

parameters of “humanness.” As technology continues to colonize our bodies and culture, the potential exists for a shift in cultural values producing a change in morals. Traversing the science fiction narrative stimulates the moral imagination as one cogitates on the passionate intertwining of technology and the human.

Zembylas (2002) quotes C. P. Snow’s classic essay *The Two Cultures and The Scientific Revolution* (1959) and states, “In this famous work Snow described the dangerous split that exists between our literary and scientific communities and argued that we entered a new age in which science, tradition, and art have no choice but to unite. The same can be said about invention and imagination” (p. 2). Serres (1997) posits that in an age of unbridled and empowered science, the juxtaposition of contemporary scientific phenomena with a wide terrain of narratives offer a holistic, interrelated perspective to the issues of life, humanity, and survival whose main objective is moral significance, not the accumulation of scientific knowledge. In recognition of the absolute power that science and technology have the capacity to wield, his agenda is one of tolerance and adaptation in the face of “unspeakable injustices, poverty, famine, and wars” (Zembylas, p. 11). Ihde (1990) addresses Cultural Hermeneutics in *Technology and the Life World: From Garden to Earth* regarding humanity’s ambiguous interaction with technology suggesting that once adopted, technology is embedded into culture and society deems what its uses are. What are our goals for nature as we transcend our own humanity through technology? What vestigial remnants of human values will survive the zeitgeist of science and technological innovation? “Contemporary philosopher Max More describes the goal of humanity as a transcendence to be achieved through science and technology steered by human values” (Kurzweil, 2006, p. 373). Siebrand (2007) states that through story-telling and narrative inquiry, “moral imagination can make a reflexive ethics of technology possible because it allows

us to create and experience different moralities consisting of different values, norms and principles” (p. 7). The question remains, “What will those values be?”

Through the science fiction genre, we gain first-person, subjective exposure to the lived experience of the “other” stimulating our emotions, imagination and perception internalizing it into our own stream of consciousness. Through reflexive phenomenological awareness of our own subjective mental processes, we transcend our epistemologies, and become self-conscious as well as others-conscious.

The Arts and Entertainment Channel touts the mantra, “Real life. Drama.” Drama is powerful. Drama has the capacity to ignite imagination and incite emotion. It has the potential to awaken our moral character and sense of responsibility toward the “other”. Historically, literature conjured both inspiring and reprehensible characters and served as a guide for moral and righteous behavior in an entertaining format from myths to legends. Wright (2003) states that, “A number of thinkers, particularly those working in the philosophy of literature, have been concerned with the role the imagination plays in our moral reasoning” (para.1). I contend that the study of science fiction novels and movies provide the platform by which to examine the moral and ethical issues permeating science fiction narratives.

Post/Human Nature

Integral to the conversation of the impact of biotechnologies on what it means to be human is the subject of human nature itself. There is a basic assumption that human nature has an essence; it is the embodiment of a fixed set of attributes that all members of the human species share which include ways of thinking, feeling, and acting. Historically, this has been an area of much religious, cultural, and philosophical debate. The philosopher Frederick Nietzsche condemned the existence of human nature. It was his contention that human nature was a biological and

sociocultural phenomenon. Furthermore, every individual is composed of a fixed psycho-physical constitution, and that this fixed identity was reflected in one's value and belief systems. Therefore, the psycho-physical constitution delineates how one will behave and what they will become. An individual's will is dictated by unconscious physiological factors which they have no agency over. He believed that human beings are driven by their innate human natures and passions, such as emotions, senses, and sexuality. These passions inform one's "will to power" as well as their morality. Similarly, in *An Enquiry Concerning Human Understanding* (1952), Hume stated, "Mankind are so much the same, at all times and places, that history informs us of nothing new or strange in this particular. Its chief use is only to discover the constant and universal principles of human nature" (para. 7). He argues that the human mind is molded into a fixed and established character from birth. Yes, to a certain degree, human nature is innate. We learn from an early age in elementary school that members of the human race have basic social and physical needs in common which include the necessities of food, clothing, and shelter. Also, we are driven to become part of communities, form families, and perpetuate our species. However, there is great diversity in human nature which is not genetically determined or fixed. Genetic determinism assumes our identity is biologically preordained. However, even with our current knowledge regarding DNA and the genetic code, it is impossible to determine exactly why people are the way they are. How do we know what factors account for differences in intelligence, skills and talents, predispositions toward certain things, personality and temperament? Every teacher will tell you that children have distinct personalities which often confound their parents. They don't know where they came from. There is the nature versus nurture debate in understanding human nature. The nature explanation assumes we are born with these differences while the nurture explanation assumes these differences are a result of the

environment; the most important factors being parental influences and culture. Of course, parents pass certain physical and mental heritable traits to their children. It is not uncommon for children to share the same complexion, eye color, or hair texture as their parents. Also, parents may possess certain skills and talents that their offspring develop as well. Parents' dreams, aspirations, and ambitions for their children play an instrumental role in determining the trajectory of a child's life. In a democratic society, parents are free to afford their children the finest education to ensure them the best life possible. Behavior geneticists study individual differences to evaluate the extent to which our genetic code determines our development compared to how much is determined by the environment. This information has promises as well as pitfalls as biotechnological knowledge continues to grow. Why wouldn't a parent provide their child with superior genes for the purpose of higher IQs and better looks if they were able to afford it? Conversely, as multi-generational modifications proliferate, there is the potential for creating an undemocratic and inegalitarian society of have and have nots. There is the possibility that these modifications could result in the creation of one or more subspecies. The logical extension of this capability is that people may become bred for certain purposes. Also, there is the danger of homogenization of the species which evolution does not favor. The incorporation of various gene therapies into the human narrative must be approached with safety, fairness, and justice in mind.

Conversely to humanist philosophy, posthumanism questions the whole notion of human uniqueness and human nature. There is no essence which is why technology is able to reshape humans. Technological advancements ground the argument that technology is constitutive of identity. In the twentieth century, prominent posthumanists argue that technology plays a critical role in the constitution of human nature. They deny the existence of a universal essence of man,

as well as the notion of human nature. Kurzweil (2006) argues that it is the absence of human nature that allows the proliferation of technological possibilities in the configuring and reconfiguring of humans. Burgeoning biotechnologies are paving the way for the reshaping of humanity. Technological tools and artifacts have provided ways of extending and shaping ourselves. Hayles (1999) argues that body's boundaries have been compromised and that our current era is characterized by a desire to erase the burden of the body by reconstituting it as information or non-matter. It is her view that posthumanism assumes a loss of subjectivity because the boundaries of the body have been breached. The human body is released from bondage of traditional notions of a shared ideal of personhood and is free to augment and enhance without restriction. In *Pandora's Hope* (1999), Bruno Latour states, "If anything the modern collective is one which relations between humans and non-humans are so intimate, the transactions so many, the mediations convoluted, that there is no plausible sense in which artefact, corporate body, and subject can be distinguished" (p. 197). Latour references a "zone of indeterminacy" and a blurring of the boundaries between Object and Subject, between the "who" and the "what" as technological artifacts become increasingly and intimately embedded in our biology. The human is a construction of our entanglements with technology. In fact, technology is constitutive of humanness as it shapes and defines our bodies.

It is not my intention to chronicle all of the latest advances in technology in its quest to create the *Urbemensch*. Technology is merely a conduit to the future: a looking glass by which to examine the human condition, reflect on the past, and contemplate the future. Hard science is not my idea of a good read and I'm sure the average person feels the same way. The vocabulary of science is difficult to understand, particularly if one does not have the pre-requisite background knowledge. I would equate it to learning a foreign language. Due to the Obama Administration's

educational policies and the Bill Gates funded initiative, Common Core curriculum, I believe there is a disconnect that occurs early in science education. The curriculum and pedagogy are geared toward rote memorization and mastery of standards and high-stakes testing instead of making it a meaningful learning activity; this is why most of us forgot what we learned right after we took the test. Giroux (2014) states the cult of data emphasizes “teaching to the test” at the expense of expanding students’ “sense of wonder, imagination, critique, and social responsibility.” Works of science fiction give us strength to draw upon what has been and what will be. It is the suspension of disbelief; that crystallizing experience in which one stops thinking about what is but what might be; a differentiated reality. It contextualizes scientific principles developing a deeper understanding of important scientific information enabling students to make real-world connections in an entertaining format. Biotechnologies are one of the most salient issues of the current human condition yet, most are barely aware of the potential consequences. While it is largely fanciful, the only taste the public gets of it is through science fiction novels and movies. Consider the short story *The Jigsaw Man* (1967) by Larry Niven. He was writing about an issue that was not yet conceived as a problem. What happens when the demand for organs exceeds the available supply? Who would have guessed at that time that transplantation technologies would have advanced to the degree that it has and become a multi-billion-dollar business? Science fiction is usually predicated on a body of scientific and/or technical knowledge. It engages the reader/viewer with creative plots, imaginative settings, and compelling characters. In addition to the entertainment factor, science fiction plots often revolve around important social issues raising awareness of what is good and what is evil for humanity. We want to be sucked in to an engaging story imbued with lust, love, loyalty, power, ambition, deceit, greed, justice, faith, human kindness; illuminating all qualities which are good and bad in human nature. Great stories

celebrate what is virtuous and righteous in human nature and impugn the less savory, dishonorable attributes of its villains. I postulate that we are experiencing unprecedented technological upheaval and the stakes are high. In its aftermath, the explosion of innovations will ultimately redefine our economic, cultural, social, and political ideologies. As we approach Kurzweil's *Singularity*, or the point at which there is no distinction between man and machine, we are at the threshold of transcending the most fundamental aspects of our being through augmentation, mutation, alteration, and modification. What will our world look like? What will we look like? Will imagination, science, and technology render us unrecognizable by current standards? What will become of human nature? Are we at war with our humanity? Therein lies the important work of science fiction; creating imaginative, scientifically-grounded narratives to speculate on the future. Through the integration of invention and imagination, science fiction is already envisioning such worlds.

Exposure to popular culture, science fiction in particular, is not a commodity to be produced bereft of redeeming or critical value, mimetic of the larger social, political, and economic community. The interplay between the intersubjective individual and the digital artifact impact our unconscious thought processes and affective states which in turn influence social, economic, and political structures. The science fiction genre challenges our perspective and invokes discord of personal ideologies. Miller (1999) states:

Ideology is by definition unconscious. It is therefore difficult or impossible to eradicate it by demonstration that it is erroneous. Ideology arises as a phantasmal reflex of our real material conditions of existence in the world, including the institutions within which we live and work. (p.59)

These personal experiences mutate and alter one's ontological, epistemological, and axiological perspectives. We approach the objects of our awareness subjectively with certain intentionalities which are embedded into our wide range of senses which include action, volition, perception, cogitations, ideas, emotion, and imagination. Through fiction, implicit and explicit narratives are illuminated through context and dialogue creating empathy, a sense of authenticity, and new meaning is attached to the experience which is internalized into our personal stream of consciousness and ontological belief system. For those impacted by the biotechnical revolution, the future will be characterized by the mutability of humanity, technology, and the biosciences which was once the exclusive domain of fantasy and science fiction challenging traditional anthropological and morphological qualifications for membership in the human race. Also, just as humans, animals, and machines occupy liminal spaces, new digital technologies are being taken to the end of the line alchemizing virtual environments to the point of indelible sensorial and physical reality within the realms of time, place, and space. Weaver (2010) states that:

Science is too important and pervasive to be left up to the scientists. It is too much a part of everyone's lives for poets, literary critics, and other citizens of the world to ignore. Through the humanities, new ways of understanding the impact of the posthuman condition can be developed. If scientists are invited into a dialogue with the humanities new policies on how to best proceed with stem cell research, cloning, gene therapy, pharmaceutical drug research and other research agendas with the bioscience can emerge. (p. 39)

A comparative analysis and critical interpretation of various science fiction works serve as ground zero for debates regarding contemporary social issues in the biosciences and technology. With blurred boundaries between human, animal and machine, as well as increasing ability to create and

recreate life, science fiction helps us navigate controversial issues, especially with regard to the competing interests of a burgeoning pluralistic society and global institutions. Popular culture representations of the posthuman and their narratives are social documents which socialize and politicize as they develop and shape our philosophical, ethical, and cultural constructs. The dynamics of the narrative is the touchstone by which we evaluate our humanity, contemplate the possibilities of transforming the horrific into reality through imagination, and is the agency which foreshadows our future as a society as dystopian or utopian.

Weaver (2005) states, “popular culture is much more sophisticated in its ability to teach young people and adults how to think” and that “a healthy approach to popular culture and education would develop a pedagogy that utilizes the power of popular culture in order to enhance democracy” (p. 108). We must reimagine education for a just and democratic society. Science fiction offers a creative venue for young viewers and/or readers to think critically about social realities and the opportunity to theorize about the increasingly technologized world in which they live. The educational process must be humanized with media studies and critical imagination playing a pivotal role in the establishment of epistemological and ontological beliefs of students, as well as in academics. There are many common threads that are interwoven within the science fiction canon which include cataclysmic and apocalyptic events, alien life forms, mutated human bodies, cybernetic beings, themes of good/evil, free will, etc., that invoke critical discussion of an increasingly posthuman future.

Science fiction is *currere*; it is the revisiting and re-evaluating of a collective lived experience for the purpose of understanding why things are the way they are and how that came to be. *Currere* is the vehicle by which we reframe our world to obtain a more valid understanding of socially constructed phenomena and representations for the purpose making the

world a better place by being better informed and making better decisions. Vrasidas, Avraamidou, Theodoridou, Themistokleous, and Panaou (2015) discuss that recent science education trends around the world have called for substantial reforms in learning environments and the ways in which science is conceptualized and taught in the school classroom. More recently, the Framework for Science Education in primary and secondary schools has been published in the USA as the basis for the development of new standards in science education (National Research Council [NRC], 2012). As summarized in the report, the overarching goal for K-12 science education is to ensure that:

By the end of 12th grade all students have some appreciation of the beauty and wonder of science; possess sufficient knowledge of science and engineering to engage in public discussions on related issues; are careful consumers of scientific and technological information related to their everyday lives; are able to continue to learn about science outside school; and have the skills to enter careers of their choice, including (but not limited to) careers in science, engineering, and technology. (p. 1)

Research tells us that the introduction of narratives in science education significantly increase students' memory, interest, and understanding (Avraamidou & Osborne, 2009). Vrasidas, et. al. (2015) state that:

Also, the use of SciFi narrative in the learning process introduces students to the different "codes" used by the genre of Science Fiction and encourage students to view literature as playing with imagination and to develop a positive stance towards literature and reading. Furthermore, it enables students to recognize and

critically reflect on the critical or even subversive nature of SciFi stories and support students in making connections between Sci-Fi literature and technological development, as they both create “virtual realities” and “see into the future”. (p. 4)

They posit that the most important benefits of the use of stories and narratives in education are critical thinking, environmental and civic sensitivity, opportunities to explore visions of the future and critique of the present, cognitive awareness and critical awareness about science, students’ realization of the interconnections between science, technology, culture, society, and the environment, motivating students and making learning more interesting, engagement and development of students’ imagination, improvement in vocabulary and language skills, positive stances towards reading, and encouraging students to predict possible alternatives for the future.

Science fiction empowers students to think about and ponder the consequences of living in a world of rapid technological change which show no signs of slowing down. Science fiction is defined by Barthell (1971) as the literature of ideas. Gunn (2005) redefined the definition of science fiction as the literature of change, since new ideas necessarily include consequences. He stated, "Science fiction is the literature of change, and change is the only constant in our world. Hence the only literature that is 'realistic' is science fiction — any literature that doesn't include and assertively confront the human response to change is historical or fantasy" (para.3). Science fiction affords the reader/viewer with a quality, in-depth foray into the rapidly transforming technological world in which we live. Science fiction is characterized by unfathomable narratives of unprecedented change which is fascinating for sci-fi junkies. As a pedagogy, it stimulates thinking regarding how people will respond to challenges of these events. These events include but are not limited to environmental degradation, the extinction and creation of

new species, cloning, artificial intelligence, instant access to all archived knowledge via chip implantations, and the looming prospect that future students may have to contend with the implications of physical immortality. In order for science fiction to empower students to think about these changes and to envision the kind of world they desire, the genre must be systematically taught with an emphasis on themes. Asselin (2012) proposed the Human Evolution Framework which argues that the changes addressed by SF (Science Fiction) are future projections of concerns rooted in our evolutionary past: the tools we use (stone implements in the past, robots in the future), the settings we explore (the next valley, the next planet), others we meet (other tribes, otherworldly aliens), invisible dimensions we think about (divining the future, travelling there), how to master them and the world by changing our essence (shamans and the supernatural, mutants and superpowers), the rules that organize our societies (loose-knit hunter-gatherers, finely structured utopias), and the habitat we transform (waste accumulation within village walls, radioactive wastelands). Through human empathetic imagination, science fiction in the classroom has the capacity address a variety of social ills while simultaneously teaching curriculum. Through education's employment of myth, monster, cyborg, or other representations of fabulation, the youngsters of today will be better prepared to navigate a harmonious co-evolution of technology and the posthuman. Popular culture equips students with the tools that they need to be informed agents of social change in this rapidly changing world.

Advancements in biotechnologies is undoubtedly changing what it means to be human. We associate free will, emotional, kinship, a soul, and spirituality with our humanity. As a result, the integration of the biosciences and technology in to human life will blur the boundaries between animal, human, and machine invoking the age-old question, "What does it mean to be human?"

The internal and external manifestations of the human form are under reimagination and reinvention as we give way to the construct known as the posthuman.

Overview of the Chapters

Chapter 1: Science Fiction as Posthuman Scholarship

Chapter One is the introduction and discusses the posthuman metaphorical representations of science fiction and how it dares to dream and envision futuristic worlds characterized by rapid biotechnological advancement. These visionary posthuman tales would pave the way for the creation of a new genre of literature and film called science fiction. Differing schools of philosophical thought exist regarding the moral and ethical spectrum of pushing the boundaries of science and technology ranging from the most altruistic of improving the human condition to the more radical aims of transcending our organic biological nature challenging the limitations which make us human. While mainstream novels and movies tend to rely heavily on characterization, works of science fiction focus primarily on plot. It is the goal of Chapter One to examine science fiction as posthuman scholarship and how literature and film narratives and metaphors have illuminated posthuman possibilities. It is through the plight and experiences of these literary metaphorical representations that biotechnologies are critically examined.

Chapter 2: Human Identity in a Posthuman World

Kurzweil (2006) argues that we are approaching Singularity and that which constitutes our everyday living will no longer make sense. When science and technology transcend the fixity of the body by renegotiating the boundaries between the organic and biotechnological, there exists the potential for opening a Pandora's Box for scientifically intervening on nature. Many science fiction narratives proffer an apocalyptic, dystopian view of thoughtless tinkering with the most

fundamental dimensions of being human rendering meaningful human existence obsolete. It is the fear of macabre genetic manipulations by which one becomes dominant or enslaved that threatens society as we know it as well as what it means to be human. Chapter Two will examine the ramifications that emerging biotechnologies will have upon social order and the traditionally human experience.

Chapter 3: The Genetic Divide

Contemporary society is adopting an increasingly deterministic view of the human gene as evidenced by the continuing social, economic, and political advancement of genetic testing, genetically modified foods, therapies, reproductive technologies, and cloning. Scientists have long used animal stem cells and adult human stem cell for the purpose of tissue engineering due to their unique ability to renew and regenerate themselves through cell division and to repair or replace tissues in certain organs. Therefore, as scientific genomic techniques develop greater potentialities to create and recreate forms of organic and inorganic material, the Foucaultian view of “biopolitics” and its concerns of “health, progeny, and race” within a national context begs the question, “How does biology and information redefine, categorize, and order the genomic population?” DNA is metaphor and information. Chapter Three explores futuristic societies characterized by rapid technological advancement which practice cloning for specific purposes. It seeks to examine how technological breakthroughs in genetic manipulation can construct identity, shape human lives, and create a new social order if not governed and mediated by moral and ethical principles in a humanitarian and egalitarian posthuman society.

Chapter 4: Organ Transplantation, Identity, Embodiment, and Bio-Capital

Since the beginning of time, there has been a symbiotic and definitive relationship between our senses of identity, bodies, humanity, and culture. We negotiate our identity through the commercialization and manipulation of our physical being and it is through this process that we assume the important signifiers that preserve the hegemony of the dominant culture. However, what happens when commercialization of the human body becomes a signifier of exclusion?

Transplantation biotechnologies will impact the way we experience ourselves as embodied subjects. An ontological struggle exists between the Christian view of the inviolability of the human body and the bio-medical view of the human body as resource for parts. The notion that a human body is a complex machine of replaceable, exploitive, and commodified vessel of parts represents a disturbing view of embodiment and defies the sanctity of the Christian view which upholds the inviolability of the body. Chapter Four utilizes organ theft science fiction to examine what happens to human subjectivity when the body becomes a site for commerce, as well as the potential for coercive, dehumanizing practices of organ procurement if organs are commodified. It is the purpose of Chapter Four to the potentially undemocratic social and political effects of transplantation technologies and how socially constructed markers of difference impact the inclusion or exclusion of human beings as fully participatory members of society.

Chapter 5: Education for a Democratic and Socially Just Society

As educators, finding new pedagogies to teach today's youth is perhaps the greatest obstacle we are facing. Chapter Five argues for a new approach, the critical teaching of popular culture, specifically, science fiction film and literature. It examines the roles of critical consciousness,

empathy, and moral imagination in fiction, film, and science fiction. As previously stated, science fiction allows us to enter the netherworld of the marginalized “other.” It enables educators to assist students in the deconstruction of the metanarratives of the dominant culture and in identifying oppressive social forces that perpetuate an unjust society. Chapter Five calls for a humanizing curriculum which reflects the beliefs of prominent curriculum theorists Mary Aswell Doll, Maxine Greene, Madeline Grumet, and bell hooks in order to achieve a more egalitarian and inclusive society.

Concluding Thoughts

My thesis explores the pedagogical value of science fiction in imagining a world characterized by dramatic change in the light of significant scientific advancement, the plight of the “other,” as well as fostering the development of a critical consciousness. Critical consciousness can be defined as the ability to recognize and recognize systems of inequality and the commitment to take action against these systems. Current research findings indicate that the development of critical consciousness enhances young people’s commitment to challenging pervasive injustices (Watts, Diemer, & Voight, 2011). Also, critical consciousness of oppressive social forces fosters a sense of engagement in the broader collective struggle for social justice (Ginwright, 2010). While there is much research on the uses of science fiction in research, the deliberate use of science fiction text and film as a uniquely qualified pedagogy for this use has been overlooked. Education favors the banking model as evidenced by the ubiquitous Common Core Curriculum and high-stakes testing. In our increasingly posthuman world, I believe that exposure to science fiction ignites the imagination and provokes critical thinking, which enables students to approach complex topics from differing perspectives and, promotes deeper engagement with a rapidly changing world.

Menadue and Cheer (2017) engaged in research to discover the range of research that utilized science fiction to describe and illustrate the human condition. Their aims were two-fold: (1) to determine if there were possible correlational links between science fiction content, culture, and society; and/or (2) to determine if science fiction concepts presented as metaphors and analogies explain or illustrate cultural activity. They found that the relationship between science and science fiction has become more socially and culturally relevant in scholarly endeavors as science fiction has become a point of departure for research outcomes. Their findings revealed that science fiction literature has been used in research across a variety of disciplines. These disciplines included semantics, theology, natural sciences, and education. Also, two key features emerged in the use of science fiction in research. First, science fiction has been used as a tool for advocacy and cultural insight. Secondly, it has been an effective aid in teaching and learning.

Stableford (1979) examines the restorative and maintenance functions of science fiction remarking that science fiction could determine the worldview of individuals “by virtue of its multiplicity of nonconventional resolutions, and the rapid pace at which the variants thereof come into being and decline” (pp. 57-58). Furthermore, it has the potential to generate a “gestalt shift” in perspectives regarding the importance of science and biotechnological advancement. He posits that science fiction is no longer “pulp” but is notably characterized by the triumph of technological invention and the attainment of intellectual power via scientific knowledge. Tymn (1985) discusses science fiction’s transition from pulp to serious scholarship worthy of investigation and analysis. He stated that, “Science fiction is a literature that prepares us to accept change, to view change as natural and inevitable” and has a ‘directive effect’ on individual’s interpretations and acceptance of science” (p. 41).

Lastly, Menadue and Cheer (2017) stated, “There is evidently a relationship between science, science fiction, and the cultural imagination, and the significance of this relationship should be assessed” (p. 2). However, their PRISMA meta-analyses of JSTOR, PubMed, SCOPUS, and Web of Science databases found no clear links to academic literature on this subject. Therein lies the research gap in the critical role that science fiction plays in igniting the cultural imagination thereby shaping the future views of humanity on constantly evolving innovations in artificial intelligence and biotechnologies and, providing an empowering education. The time has come for the integration of hard science into the humanities using the science fiction genre as a legitimate mode of academic inquiry.

Alternative approaches utilizing the critical teaching of popular culture, specifically science fiction, will enhance students’ abilities to deconstruct the dominant narratives and equip them with the necessary skills to negotiate a posthuman world. Biotechnologies are hurling us beyond human limits into the realm of the superbeing. People will be able to sustain better health for longer periods of time. Cognitive, intellectual, physical, and creative abilities will supercede what we currently know. These notions conjure every science fiction cliché imaginable. The posthuman lens of science fiction provide a new vehicle by which to consider a post-anthropocentric world with its myriad of embodiments. I will argue that the teaching of science fiction awakens the cultural imagination and enables students to critically envision such worlds and those who will occupy it as new narratives emerge, as well as provide for a transformational and humane education.

CHAPTER TWO

HUMAN IDENTITY IN A POSTHUMAN WORLD

Kazuo Ishiguro's novel *Never Let Me Go* (2005) and the science fiction film *The Island* (2005) portray dystopic alternate societies that focus attention to the social construction of identity, existence as human beings and non-humans, and the themes of isolation and alienation. In both works, the clones are considered non-human who experience isolation and alienation as they are not allowed to conceive of their body as their own because they exist to supply organs for "normals." Educational debate is primarily informed by the anthropocentric perspective which places man at the center of the universe. Anthropocentrism posits that man exists to be educated by man and education exists to humanize. From a humanist standpoint, without physical, aesthetic, and spiritual components, there is no "self" and, therefore no identity. If there is no identity, one is less than human. In *Bewildering Education* (2013), Snaza problematizes the concept of the human in that it leaves the "nonhuman" out of politics and fails to protect those most in need of protection. Posthumanism is open to the "other" and rejects the human/non-human binary and the notion that identity is "given" in favor of the idea that identity is fluid, continuously being reworked, and reformed. It posits that we have always been linked with technology and machines and seeks an end to the Anthropocene perspective in favor of total hybridization in which humans are embedded in a technological world. An examination of the formation of identity in a posthuman world is crucial for children, youth, and young adults. Speculative science fiction allows them space for critical reflection regarding the complex issues of humanness.

Snaza, Appelbaum, Bayne, Carlson, Morris, Rotas, Sandlin, Wallin, and Weaver (2014) state that, “Re-evaluating the human in relation to technologies, animals, and objects is, for us, inseparable from rethinking the concepts we use to understand how things-living and nonliving-relate, especially politics and knowledge” (p. 48). Science fiction narratives have the potential to equip young minds with the “what ifs?” that are emerging. For example, “What if human cloning becomes not only possible, but also commonly used?” Re-evaluating the body will require tolerance and acceptance. I believe that students need to be prepared to negotiate a world characterized by a plurality of embodiments. Science fiction creates a hypothetical, imaginary space in which to speculate on moral and ethical situations that occur from rapid advancements in science and technology.

Leibowitz and Naidoo (2017) acknowledge that posthumanist views provide a fresh and transformative lens by which to consider socially just pedagogies and posit, “Post-humanism allows us not to see students as requiring to travel a predestined path from not knowing to knowing, and from being deficient to having skills” (p. 7). Learning is not only cognitive, but also experiential and affective. It embraces identity, difference, and a plurality of voices. As Snaza (2015) states in *The Failure of Humanizing Education*, “what will be required is an education that does not posit its ends in advance. We need an education that does not set out to make us full human beings, but rather enables us to affirm the continual process of becoming-other-than-we-are. This becoming-other, in turn, may open us toward a new, nonanthropocentric forms of politics” (para. 28). I propose a new pedagogical approach, such as the teaching of speculative science fiction, to inspire empathy and moral imagination in students as they critically deconstruct the dominative anthropocentric narratives and achieve a humanizing education for a more just and inclusive society.

Never Let Me Go Summary

Kazuo Ishiguro's novel *Never Let Me Go* (2005) is a haunting, cautionary tale set in a dystopian speculative future in which full-scale human cloning for organ donation has become a common, yet shrouded, enterprise for therapeutic medical intervention. The plot revolves around the reflections of a cloned, young woman named Kathy H. At the beginning of the novel, she is about to become a donor for the first time after twelve years of being a carer. A carer provides assistance and emotional support to clones who have entered the harvesting and donation phase of their short lives. Kathy and her friends, Ruth and Tommy, were all conceived via in vitro for the purpose of organ harvesting and donation to "normal," or non-cloned people. Each student at Hailsham has a "possible" or a human which they resemble and whose DNA might have been used to clone them. The students reside at an elite boarding school in an alternative, mid-1990's England whose surreptitious aims were to promote aestheticism and keep the students healthy. Hailsham placed a premium value on art and students were encouraged to be creative, particularly in art and writing. Their artwork was routinely collected by a mysterious woman named Madame who acted as curator at a local gallery for the purpose of proving the clones have souls. The students were led to believe that they were among the privileged to be educated at Hailsham and passively acquiesced to the rigid rules and constant medical probes they were subjected to. They were aware of their origin and purpose but, their true fate was carefully concealed from them.

In the second part of the novel, Kathy, Tommy, and Ruth move to The Cottages where they await their first donations with a quiet sense of duty. Throughout the novel, Kathy, Tommy, and Ruth quest to discover the ambiguities and meaning of their lives. They engage in sexual relationships and go in search of their "possibles." While they never question that they do

indeed have souls, they calmly face the reality of their true purpose continuing their search for meaning. In the third part of the novel, Kathy is saddened by the growing relationship between Ruth and Tommy and leaves The Cottages to begin her career as a carer. During this time, she discovers that Ruth and Tommy have begun their donations and that Ruth is doing very badly. Kathy assumes the role of Ruth's carer until she completes after her second donation. She goes on to become Tommy's carer during which time love blooms between them. They go to see Madame at The Gallery to request a deferral from organ donation as they have heard this could save them from their predestined completion. Madame recoils from them in horror informing them that deferrals do not exist. She explains to them that they were part of a progressive program at Hailsham which used art to prove that the clones had souls and should be treated humanely. Soon after, Tommy gives his fourth and last organ donation. Sadly, the story ends in present day with Kathy about to make her first donation.

Never Let Me Go is rich in imaginative metaphors, tropes, and themes which engage the unsuspecting reader in an inner dialogue about what a future where human cloning is a common practice might look like as well as its implications for society. In *Never Let Me Go*, Ishiguro envisions a world in which human embryos are genetically cloned or "copied from a replica" to be nurtured, educated, and ostensibly humanized through adulthood for the solitary purpose of organ harvesting; that is, until they "complete." On the surface, this "completion" sounds akin to matriculation or a ceremonial rite of passage. The horrific truth is that to "complete" is to die after multiple organ donations which is a grotesque twist on the more socially acceptable posthumous organ donation. As this novel explores what it means to be human, the rapid, prolific advancements in science and technology are secondary players to the issues of democracy, marginalization, oppression, and social justice.

Human Identity vs. Human Nature

Ishiguro's novel grapples with ethical and moral considerations that exceed the scope of cloning. While not directly critiquing the pros and cons of cloning, Ishiguro prose appears more concerned with the "humanity" and ethical treatment of the cloned replicas. Despite education, culture, kinship, love, empathy, sexuality, and a sense of hope, these "others" fall short of the being regarded as fully human; liminal creatures occupying a hazy, troubling realm of identity. Following the dystopian literature of Aldous Huxley's *Brave New World* (1932) and George Orwell's *1984* (1949), *Never Let Me Go* serves as an allegorical tale of dehumanization as poignantly told through the first-person narrator, Kathy.

Contemporary movies and novels have come to feature genetically-altered humans, cyborgs, and clones with plots revolving around the tensions that exist between the authentic and the unnatural or semi-human. As an adolescent in the 1970s, I loved watching the *The Six Million Dollar Man* on television. The writers of the series address the catastrophic accident which left the astronaut completely broke with Oliver Spencer stating the catch-phrase, "We can rebuild him. We have the technology." I considered it pure fantasy; as if he was a superhero with super powers, situated safely within the confines of the console color TV/stereo combination, fighting against injustice. Blithely unaware that I was watching a science fiction adventure drama series based upon the novel *Cyborg*, I enjoyed Steve Austin's bionically-enhanced heroic exploits. In this drama and others like it, man exercised dominion over technology. However, in a global society characterized by encroaching, rapid technological advancement, narratives scrutinize and challenge the superiority of man as emerging technologies increasingly occupy and hybridize the human body. As genes are intervened upon and manipulated, the physical embodiment of human nature is no longer fixed, but pluralistic. In *The Future of Human Nature*, Jurgen

Habermas (2003) discusses the blurred dividing line “between the nature we are and the organic equipment we give ourselves” (p. 22). Furthermore, he comments:

Gene manipulation is bound up with issues touching upon the identity of the species, while such anthropological self-understanding provides the context in which our conceptions of law and morality are embedded. My particular concern is with the question of how the biotechnological dedifferentiation of the habitual distinction between the “grown” and the “made,” the subjective and the objective, may change our ethical self-understanding as members of the species and affect the self-understanding of a genetically programmed person. (p. 23)

Habermas recognized technological control of the species had the potential to result in the denial of equal social, political, and economic rights based upon technologically-mediated factors. At the heart of the struggle are the questions, “What is human nature?” and “What is human identity?” Inherent in these questions are issues of what constitutes signifiers for inclusion and exclusion; also, what people or groups of people have the rights and power associated with participation in a democratic society.

The biotechnological revolution has changed what it means to be a human. Human nature and identity was once considered constitutive of a fixed, shared essence. However, technological advances have become embedded in our biology reshaping human nature. What was once considered assumed and fixed is now varied, fluid, and moldable. Posthuman modes of being will transcend our current attainable capacities and way of knowing and being monumentally. Posthuman and cyborg figures in popular culture represent the departure from traditional humanist ideals regarding the nature of man. The cybernetic reconfiguration of the body is not

just fodder for science fiction but a reality of contemporary life. Hayles (1999) states that cyborgs currently walk among us. She estimates that approximately 10 percent of the current U.S. population technically qualify as cyborgs due to prostheses, electronic pacemakers, artificial joints, drug-implant systems, implanted corneal lenses, and artificial skin. It has been a long-lamented ambition of scientists and medical professionals to be able to control mechanical limbs from the brain or from a remote device. This ambition has come closer to being realized through the efforts of researchers at the MIT Touch Lab in the U.S., and no doubt also through the considerable discomforts of several owl monkeys (Wessberg, 2000). The monkey's brains were wired to scanning systems which correctly interpreted brain activity related to motor tasks, like reaching for food. Another idea which has received much consideration is that of implantable chips for the neurological system to download information or trigger certain thoughts. Rapid progress is being made in bio-engineered prosthetics. Oscar Pistorius was able to outrun non-disabled Olympians when outfitted with prosthetic technology to compensate for his disability. Advances in medicine have endowed medical professionals with the ability to control and manipulate the most fundamental aspects of our physiology. Doctors are able to practice controlled cooling of body temperature prior to certain types of surgery enabling them to take their patients to the brink of death and snatch them back in the nick of time. Pepperell (2003) states:

Humans have imagined for a long time that the ability to develop and control technology was one of the defining characteristics of our condition, something that assured us of our superiority over other animals and our unique status in the world. Ironically, this sense of superiority and uniqueness is being challenged by

the very technologies we are now seeking to create, and it seems the balance of dominance between human and machine is slowly shifting. (p. 2)

It is beyond the scope of the paper to discuss every posthuman technological development that has arisen. What can be said is that each new advancement brings us to new understandings of the constitution of our human nature as we progressively integrate ourselves with machines. It is apparent that many of our physiological life processes will be mimicked by machines and that machines will be constitutive of life. This blurring of boundaries between what is real and what is artificial is at the heart of posthumanism. Pepperell further posited:

The general implication is that we can never determine the absolute boundary of the human, either physically or mentally. In this sense, nothing can be external to a human because the extent of a human can't be fixed. The consequences as far as the posthuman condition is concerned are profound. It means that human beings do not exist in the sense in which we ordinarily think of them, that is as separate entities in perpetual antagonism with a nature that is external to them. (p. 35)

It is the end of the anthropocene as we have come to know it. Hayles (1999) conceives of the posthuman as void of the liberal humanist conceptions of individual subjectivity and identity stating, "The posthuman subject is an amalgam, a collection of heterogeneous components, a material-information entity whose boundaries undergo continuous construction and reconstruction" (p. 3). Given the current climate of biotechnological advancement and the infinite possibilities which it affords, what we consider normatively human is undergoing rapid change rendering specifically defining human nature impossible.

There is an inherent ideological prejudice in any technology producing shifts in cultural, social, and political thinking. Technological transformation disproportionately allocates power and privilege and autocratically demands that society make way for it without regard for sufficient inquiry into the consequences. In *Technopolopoly: The Surrender of Culture to Technology* (1992), author Neil Postman discusses the nineteenth century invention boom and states, “We had learned *how* to invent things and the question of *why* we invent things receded in importance” (p. 42). Furthermore, embedded in technological advancement was the underpinning principle that people were not “children of God” or even citizens in a democratic society, but market-driven consumers. In *Never Let Me Go*, humans were produced and reproduced through biotechnological intervention to be commodified and sacrificed at the hands of the dominant culture; a purpose which was also their marker of exclusion. It is through this text that we can envision such a future and develop crucial understandings of the commonly understood embodiment of “humanness” and the social construction of the “other.”

Life at Hailsham was bleakly institutional, regimented, and standardized; not at all dissimilar to the dehumanizing pedagogy and practices of current American educational policies which are dominated by high-stakes testing and a legislatively-dictated curriculum. My intention is to illustrate that the “upbringing” provided at Hailsham was an agent of manipulation, oppression, and dehumanization. Despite the intentions of the guardians to raise the students in a humane and cultured environment, their goal was not to develop a critical conscious but to determine the extent of the personhood as evidenced in their art. In the words of Madame, “We took away your art because we thought it would reveal your souls, or to put it more finely, we did it to *prove you had souls at all*” (p. 260). In this experiment of dedifferentiation through

biotechnology and perhaps nomenclature, the students of Hailsham were robbed of the basic rights of dignity, self-determination, and a sense of purpose.

The mystique of human existence is finding a reason for living which is part and parcel of our human nature. Peter Wilkin (1999) discusses the Foucault and Chomsky debate on human nature. Foucault asserts that human nature is a social and cultural construct which assumes a shared, invariant universal truth about identity. In my opinion, this suggests that the definition of human nature is static, merely a matter of convenience; as a system by which to classify and name. A state of pathological and anatomical limbo exists as a plethora of interventions invade the body. Technological advancements challenging what we consider our singular “human nature” are moving at a mind-numbing speed and it is imperative that our moral progress keep the pace at the risk of “othering” those living in a state of liminal, almost-human status. Foucault's anti-essentialist view on human nature prompts thinking about what alternatives have been marginalized and excluded from this understanding. In a linear fashion, Noam Chomsky asserts that, “any serious social science or theory of social change must be founded on some concept of human nature.” It is interesting to note that although *Never Let Me Go* was first published in 2005, Ishiguro situates his narrative in the late 1990s. In fact, the National Bioethics Advisory Commission (NBAC) published its report in 1997 stating, “At this time it is morally unacceptable for anyone in the public or private sector, whether in a research or clinical setting, to attempt to create a child using somatic cell nuclear transfer cloning.” Ishiguro seemingly acknowledges the slippery slope involving the ethical and moral treatment of clones and that marginalization based upon mode of conception is tantamount to discrimination based upon race, gender, or sexuality.

Notions of Kinship

Ishiguro explores notions of kinship in *Never Let Me Go*. The nature of the relationships between Kathy and the other residents of Hailsham, as well as with the guardians leaves the reader with an unsettled feeling. I liken this aspect of the story to children who are in foster care being raised by a temporary care giver, attempting to form familial bonds with the guardians and other foster children in the home. There is an “otherness” attached to this situation; these children often feel as though they are different and somehow inferior because it is normatively human to have a biological mother and father with custodianship, and perhaps siblings. I find myself being very cognizant of using the terms “Mom” and “Dad” when addressing foster children in my class because I do not want to punctuate any pain or embarrassment caused by not living in a traditional family structure. In contemporary culture, the term parent has become increasingly ambiguous due to alternative family structures. Many teachers find themselves using the term “guardian” when addressing their class collectively. Rachel Carroll (2010) writes of the students of Hailsham, “Living outside of conventional family and kinship structures, they affirm a collective identity defined against those they term the ‘normals’” (p. 1). The fundamental unfairness of this situation is heart-wrenching, despite the best of conditions. Psychologically, humans have a basic need for a sense of belonging and tend to organize themselves in groups for safety and sustenance. Kathy ponders a different existence in which there is a parent figure and wonders, “Didn’t we all dream from time to time about one guardian or other, bending the rules and doing something special for us? A spontaneous hug, a secret letter, a gift?” (p. 60). This quote demonstrates the desire for kinship which is a fundamental aspect of our human nature and a common organizational structure in human culture. In the absence of a traditional familial bonds, the students of Hailsham cleaved to one another to satisfy

this need. It is interesting to note, intimate gestures or acts of favoritism toward any student was strictly forbidden, nor did the students hug each other. Counterintuitively, the guardians at Hailsham discussed sexuality quite frankly but discouraged intimacy.

In Search of "Possibles"

Highlighting their humanity, they hold on to hope desperately seeking their "possible" as affirmation of origin and vicarious hope for the future. Kathy and Ruth were hopeful of finding the "normals" they were copied from. Kathy proposed, "Since each of us was copied at some point from a normal person, there must be, for each of us, somewhere out there, a model getting on with his or her life" (p. 139). This is significant for three very important reasons: first, they were seeking kinship; secondly, perhaps a parental figure, and lastly, they believed they could get a glimpse into what their future might be like. Chrissie and Rodney inform Ruth that her "possible" has been sighted in nearby Norfolk. Ruth is elated because this woman works in a proper office as depicted on a glossy advert that she so admired. Sadly reminiscent of a Lifetime movie drama, Ruth and company take to the streets of Norfolk seeking out the authentic person she was copied from in an attempt to connect herself to the life of which she dreamed. Tommy accepts the futility of their situation and in attempting to placate Ruth, he offers, "I don't see how it matters. Even if you found your possible, the actual model they got you from. I don't see what difference it makes to anything" (p. 165). Human nature is characterized by a sense of hope and the ability to envision a future. Kathy and Ruth daydream and fantasize about their "possibles" to escape the reality of their existence.

At the Gates of Difference

A sense of belonging to a group affirms one's identity. Jantzen (1998) argues that the Western symbol of natality is acknowledgement of the common origin of birth which connects human beings with a collective sense of biological and social heritage and a particular ideology toward sociability, interdependence, and embodiment (p. 151). Due to their alien natality, this view of human nature effectively illegitimizes and monstrifies the students of Hailsham, relegating them to a less than human status with no free will, self-determination, or a human destiny. Despite her humanitarian efforts, Madame found them repellent stating, "We're all afraid of you. I myself had to fight back my dread of you almost every day I was at Hailsham. There were times that I'd look down at you from my study window and I'd feel such revulsion" (p. 269). In *Representations of the Post/Human: Monsters, Aliens, and Others in Popular Culture* (2002), Graham contends that, "The discourse of monstrosity is therefore something which both bolsters and denaturalizes talk about what it means to be human" (p. 39). Graham argues that due to a "liminal and ambivalent status," the fragility of very taken-for-granted categories are exposed. To the rest of the world, the clones are "spectacles of abnormality" to be demonized and subject to repression, exclusion, and submerged from view. I find it very interesting that Ishiguro makes use of the words shadowy and hazy frequently as a metaphor for the students' ambivalent status.

During adolescence, the character of Kathy is signified as having sexual urges which she feels are abnormally strong and shameful. Her assumption is that she was cloned from a highly sexualized woman. After finding some soft pornographic magazines, she surreptitiously escapes to the boiler room to peruse them with the secret desire to find her "possible" and mother figure. Tommy discovers her activities and queries her as to why she could possibly think she was

modeled from one of *these* girls. She tearfully confesses her sexual encounters to Tommy stating, “So, I thought if I find her picture, in one of those magazines, it’ll at least explain it” (p. 181). Still reeling from her own disappointment and in true “Ruth” fashion, she exploded on the group, “We all know it. We’re modeled from *trash*. Junkies, prostitutes, winos, tramps. Convicts, maybe, just so long as they aren’t psychos. That’s what we come from. We all know it, so why don’t we say it?” (p. 166). Ruth is likening their group to others who evoke feelings of repugnancy and live in the margins of society. Her explosion is an act of rebellion against their plight because conformity is a central element to *Never Let Me Go*; Hailsham implicitly demands complete docility and submission. Semi-recognizing that they are condemned to live a brief life, the students are completely compliant with the weekly medical interventions as if the invasions on their bodies were a commonplace occurrence on par with the responsibilities of an everyday job.

Willful Ignorance

Willful ignorance is another critical theme for Ishiguro which he elucidates through various social issues within the story. These issues include sexuality and reproduction, and organ donation. The guardians at Hailsham used the techniques of propaganda and deceit by omission to keep the students sufficiently indoctrinated and compliant with their collective fates. Miss Lucy is repelled by the inhumanity of this situation telling them their grandiose aspirations for a different kind of life are delusional; that they have been “told and not told” stating, “If you are to have decent lives, you have to know who you are and what lies ahead of you, every one of you (p. 81). Furthermore, “You were brought into this world for a purpose, and your futures, all of them, have been decided” (p. 81). The children attentively listen as she reiterates the clones’ future of vital organ donation upon adulthood, making up to four donations at which time they

will “complete” their lives. Miss Lucy’s outburst was met with flippancy as they saw no need for further examination of the information they had been given about their futures. This willful complicity is embedded within the dogma of the guardians at the Hailsham institution, save Miss Lucy, the unspoken heroine. Ishiguro’s characters appear to be on board with their determined fate and designated roles. This complicity gives the students a pass on confronting the horror that is their future, and effectually denies their human nature and soul. The students at Hailsham are not so very different from the population at large in their responses to impending death in that they are aware that attempts to escape death are futile. Kathy confirms this in the narrative when she comments, “If it did come up, people tended to say: “Well so what? We already knew all that” (p. 82). The students’ passivity to authority and to the group is a fatalistic commentary on the psychological framework and human nature of the organ donors. They readily accept a calculated and premature death as part of their “human experience” as it has been ingrained since their conception; in fact, it is their conception that seals their fate.

Denial of Full Rights of Personhood

The students at Hailsham were robbed of the traditional metanarratives that dominate contemporary Western world-view including self-determination, intimacy, reproduction, and a traditional family structure. Perhaps that most important theme in *Never Let Me Go* is the denial of the rights of citizenship and participation in a democratic society. Neil Postman (1992) comments on the twentieth century information explosion of Western culture positing, “It developed new institutions, such as the school and representative government. It developed new conceptions of knowledge and intelligence, and a heightened respect for reason and privacy (pp. 65-66). More importantly, he argues for the ideological principles of the First Amendment which command that the public have access to information and the ability to control and manipulate

information on behalf of their personal interest. Inherent in the First Amendment is the assumption is that citizens are entitled to and capable of managing information. He states that it is these “commonly shared principles” that allow us to debate such questions as: What are the responsibilities of citizens? What is the nature of education? What constitutes human progress? What are the limitations of social structures? Limiting access to information serves to maintain the power and privilege of those in control. Just as schools do, Hailsham governed the ecology of information “legitimizing some parts of the flow of information and discrediting other parts” (Postman, 1992, p. 63). Kathy considered Tommy’s comment that he thought it possible that the guardians had, throughout all their years at Hailsham, timed very carefully and deliberately, everything they were told, so that they were always too young to understand properly the latest piece of information. The students were discouraged from being too inquisitive or tapping in to their democratic right of self-determination as illustrated when Kathy states, “Though most of us had first come across the idea of ‘possibles’ back at Hailsham, we’d sensed we weren’t supposed to discuss it, and so we hadn’t – though for sure, it had both intrigued and disturbed us” (p. 139). Hailsham was the arbiter manipulating the flow of information which fueled their willful ignorance, passivity to authority, and complicity in their own deaths. It was through this control of information and deceit by omission that limited the students’ knowledge and served as the mechanism by which these children were marginalized, devalued as disposable, and objectified.

Despite the attempts of humanizing education, Hailsham students lack authenticity and were still objectified as automaton; treated unjustly because of their mode of conception with their lives genetically determined. Buchanan, Brock, Daniels, and Wikler (2000) discuss the fallacies regarding genetic determinism positing that it is folly to say that genes are solely responsible for whether a given trait is present; furthermore, this type of thinking, “is a cognitive error that

fosters the abdication of moral and social responsibility” (pp. 23 – 24). It was this type of thinking by which the guardians at Hailsham and society that maligned the students’ identity as less than human and self-righteously reject any moral culpability in offering up these children as sacrifices in the name of medical science. Madame attempts an explanation stating to Kathy and Tommy, “Here was the world, requiring students to donate. While that remained the case, there would always be a barrier seeing you as properly human” (p. 263). A liminal barrier that discounted these students as soulless, *persona non grata*, and destined to live in the margins of society. Classifying these students as objective, soulless, and exempt from a rich inner life enables the dominant culture to sidestep their cruel and horrific treatment of the students. The social construction of the clone denies individual subjectivity and is bereft of a soul.

Furthermore, Shameem Black (2009) states, “The lives of the genetically-engineered students seem fundamentally automatic and mechanized; they move through the stages of their lives with the regularity of students promoted from grade to grade, seemingly blind to the horrors that shadow their march toward suffering and death” (p. 788). The marginalization of these students on the basis of their lack of subjectivity parallels the hierarchizing of students on the basis of high-stakes testing scores. Students ascend to the next grade upon demonstration of a certain criteria on a mind-numbingly dull standardized test. Current teaching pedagogies are scripted, far too literal, and performance-focused. A student’s value is represented by a data point in a summary report. Learners are required to memorize rote facts for the purpose of regurgitation on a true/false or a short answer test. Students learn discrete information that is quickly discarded as irrelevant. In my opinion, this is a soulless endeavor. Nathan Snaza (2015) asserts that the narration of Ishiguro’s novel reveals that humanizing education, which has been the dominant philosophy of education in the West for more than two thousand years, has never done what it

claims to do. He also questions whether our own educational system is humanizing. Does it actually do what it purports to do? Education should have a loftier ambition; its purpose should be to engage the creative imagination and encourage abstract and metaphorical thought regarding one's personal belief system, values, and assumptions metamorphosing one's cognitive and perceptual framework. The end product should be the development of a deeper understanding of the human condition and social issues, as well as the wisdom to successfully navigate a rapidly changing future.

Embodiment as Exclusion, Hopelessness, and Isolation

The question of what it means to be human must include a discourse on embodiment. We have an ethical and moral self-understanding of ourselves as free, equal members of the human race embodied with special characteristics. Habermas (2003) posits, "The concept of humanity obliges us to take the 'we'-perspective from which we perceive one another as members of an *inclusive* community no person is excluded from" (p. 56). We are physical beings involved in complex social, cultural, spiritual, and economic relationships. Our futures are temporal and spatial blank slates anxious to be written upon featuring rich plots, characters, settings, and actions. After all, this is our natural-born right to proceed with autonomy and write our life histories. Implicit in these "God-given" rights to humanity is a natural essence called the soul. Natality, specifically alien natality, is central to this discussion. By virtue of an unnatural origin, their futures are not written on blank slates but on their bodies; mere replicas subject to an existence of subordination and oppression. There is a real paradox in *Never Let Me Go*. On one hand, there is a tentative acceptance of the knowledge that they were born to die. However, the students spend their time at Hailsham in subjective awareness; developing relationships, having experiences, dreaming of futures, and creating artifacts that reflect an embodied human person.

In fact, Kathy's narration subtly belies awareness that she is a clone. Hyper-focused on the students' art as an indicator of the existence of a soul in the clones, Madame and the guardians disregard other significant dimensions which are deeply ingrained in our understanding of what it means to be human. In *Ishiguro's Inhuman Aesthetics* (2009), Shaheem Black posits, "The act of identifying with someone else's experiences is deeply tied to our everyday understanding of what it means to be human" (p. 2). Kathy, Ruth, and Tommy demonstrated a capacity for love and empathy, jealousy and manipulation, and a critical consciousness. They did not react like automon to their environment, but with emotion, reason, and individual subjectivity.

In the face of impending vital organ dismemberment and genocide, the students at Hailsham were able to find some degree of humor in their situation; probably part of their willful ignorance. Tommy was easily agitated and had a quick temper. The other students would taunt him to invoke a tantrum for their amusement. After observing Tommy's seeping elbow wound, Christopher tells him, "If it's right on the elbow like that, it can *unzip*. All you have to do is bend your arm quickly. Not just that actual bit, the whole elbow, it can unzip like a bag opening up. Thought you'd know that" (p. 85). Kathy speaks of the unzipping caper stating:

The idea was that when the time came, you'd be able to just unzip a bit of yourself, a kidney or something would slide out, and you'd hand it over. It wasn't something we found so funny in itself; it was more a way of putting each other off our food. You unzipped your liver, say, and dumped it on someone's plate, that sort of thing. (p. 88)

This scenario is symbolic of the recurring themes of hopelessness, loss, and the singularity of their existence with no real origin or binding ties; they were just orphan clones with no real

connection to others, society, or even to their own bodies. This sense of disconnection and loss is prevalent throughout *Never Let Me Go* as hauntingly evident in Kathy's narration. She speaks of seeing a clown in the streets with a bunch of balloons and is moved by how it seems to parallel her existence at Hailsham. She states, "I could see the balloons had faces and shaped ears, and they looked like a little tribe, bobbing in the air above their owner, waiting for him" (p. 212). The thought of one of those twisted and tangled balloons being orphaned by escaping the man's grasp troubled Kathy. She laments:

I thought about Hailsham closing, and how it was like someone coming along with a pair of shears and snipping the balloon strings just where they entwined above the man's fist. Once that happened, there'd be no real sense in which those balloons belonged with each other anymore. (p. 213)

There was rarely a show of emotion among the students as creeping hopelessness and darkness fueled their denial. Several scenarios reinforce that the clones are simply replicas; human-formed vessels lacking passion, capacity for enduring love, and emotional attachments. Employing their words, actions, and thoughts, Ishiguro punctuates their lack of the essential signifiers of humanity. Upon arrival at the Cottages, Kathy observed that the veteran couples' behavior and mannerisms were mimicked from the television. She states, "I began to notice all kinds of other things that veteran couples had taken from TV programmes; the way they gestured to each other, sat together on sofas, even the way they argued and stormed out of rooms" (p. 121). She deduced that the couples' traditional way of saying goodbye by gently punching each other with the back of their knuckles near the elbow had its origin in a TV show. In typical Ruth fashion, she was quick to adopt the mannerism in lieu of the juvenile Hailsham embracing and kissing. Ruth became enraged when Kathy questioned this practice by taunting, "It's not what

people really do out there, in normal life, if that's what you were thinking...Anyway, that's not how it works in real families. You don't know anything about it" (p. 124). Embedded in our nature is the need for human affiliation and physical contact which is mediated by socially acceptable practices as dictated by our families, social institutions, and culture. In the absence of traditional role models, the clones pantomime behavior considered normatively human in a desperate effort to eschew the notion that they are hollow shells bereft of a soul. By mimicry, the students belie their natal origins. Indistinguishable from "the normals," the clones grappled with their identity, searching for meaning in a world that diminished their humanity, and managing "to live in this cosy state of suspension in which we could ponder our lives without the usual boundaries" (p. 143). They dare to dream of and experience love and kinship without regard for their less than human social status in a cruel and unjust world cognizant of their exploitation, sacrifice, and ultimate annihilation. Just like the snipping of the balloons, the closing of Hailsham metaphorically represents the loss of the tribal interconnectedness of the students, rendering their existence parentless, soulless, and with no sense of belonging and meaning.

Ishiguro objectifies, trivializes and mechanizes sexual relationships among the students by devaluing the very act itself. Much akin to the manner students were given information regarding donations, students were made aware of the parameters of their sexual relations in a piecemeal fashion. The guardians were more concerned with putting out fires than kindling flames giving the students mixed messages and caveats regarding sexual activity. For the students, sex was perfunctory; an enjoyment to be engaged in *but* intimacy was taboo because it activated certain emotions. Kathy considers Miss Emily's propaganda:

On the one hand we had, say, Miss Emily's talks, when she'd tell us how important it was not to be ashamed of our bodies, to "respect our physical needs," how sex was "a very beautiful gift" for as long as both people really wanted it. But when it came down to it, the guardians made it more or less impossible for any of us actually to do much without breaking rules...In other words, for all the talk about sex being beautiful, we had the distinct impression we'd be in trouble if the guardians caught us at. (p. 95)

Kathy speaks of having sex "in freezing rooms in the pitch dark" on a bed of "old curtains, even bits of carpet." She states, "When someone wanted sex with you, that too was much more straightforward. A boy would come up and ask if you wanted to spend the night in his room 'for a change,' something like that it was no big deal" (p. 127). In addition to the avoidance of intimacy, the students were cautioned against having sex with "normals" who might be diseased. Taking chances with their health was strictly forbidden as they had their donations to consider first and foremost. Implicit in this unconscionable treatment of the clones is the message that they reside outside the realm of humanity and are not privy to organic human emotions. The fact that Kathy, Ruth, and Tommy were involved in a love triangle rife with passion, jealousy, empathy, sadness, anger, and longing clearly evidences the presence of an array of human emotions. Tommy and Kathy clung to the hope that demonstration of these emotions would afford them a donation "deferral" from Madame; but ironically, as their inhumane and oppressive "benefactor" would have it, they were denied on the basis that, despite evidence to the contrary, the students were poor creatures; "shadowy objects in test tubes" which "existed only to supply medical science" (p. 261). Due to the students' non-reproductive status, society

validated their unjust and instrumental treatment as legitimate; therefore, making it easier to perpetuate this horrifying atrocity.

Central to *Never Let Me Go* is the recurring theme of disconnectedness. The students are stricken parentless with no organic tribal kinships. Their sexual indoctrination included the awareness and knowledge of their inability to procreate. Most couples, and in particularly women, would be devastated by this revelation. Under ideal circumstances, a child is conceived in a union as an expression of love and devotion. The students of Hailsham blithely accept the denial of one of the most fundamental aspects of human lived experience. There is little more sacred than the intimate, emotion-laden bond between mother and child. Ostensibly aware of her inorganic origins, Kathy enacts in the privacy of her room a scenario in which she is a mother fiercely clutching her child while listening to the song *Never Let Me Go*; in fact, the lyric goes, “Baby, never let me go.” Given prolific use of the colloquialism, baby, in popular culture and music, we would assume somebody is being referred to affectionately. Kathy’s clone status, impoverished relationships, and isolation at Hailsham prohibits her knowledge of this.

Therefore, she assumes that the song is about a mother who is afraid her child will be taken away from her. It is heart-wrenching for the reader to envision Kathy, desperate to hold her own baby and find a true sense of connectedness, belonging, and meaning. Madame stumbles upon this scene on a visit to Hailsham and was moved to tears. Kathy is painfully aware of Madame’s dehumanizing revulsion toward the clones and was surprised at the reaction. Kathy mistakenly thought Madame was crying about the song and her infertility. Later, Madame corrected her understanding of what happened by telling her that she was crying for an altogether different, more sympathetic reason:

I saw a new world coming rapidly. More science, efficient, yes, more cures for the old sicknesses...But a harsh cruel world. And I saw a little girl, her eyes tightly closed, holding to her breast the old kind world, one that she knew in her heart could not remain, and she was holding it and pleading, never to let her go. That is what I saw. It wasn't really you, what you were doing, I know that.

(p. 272)

Even though Madame was truly sympathetic to her plight, by not validating Kathy's imagined reason for Madame's tears, there was a denial of Kathy's right to feel anguish. It was if she could not bring herself to admit that Kathy possessed a soul and had developed a critical consciousness. An empty vessel would not have awareness of others' perceptions of oneself and would react like automon to any stimulus. Madame essentially disavows the existence of rich inner lives and any other manifestations of humanity in the clones which serve as markers of inclusion. By conceiving them as non-human, ethical boundaries of what can be done to them were easily transgressed.

The Body as Site of Colonization

Virtually enslaved at birth due to their nonreproductive conception, the students of Hailsham experienced forfeiture of self-determination as well as hopes and dreams for a bright future. Unaware of her colonized status, Kathy feels a sense of pride in being a student at Hailsham even though she's not exactly sure why. She narrates:

And I'm a Hailsham student-which is enough by itself to get people's backs up. Kathy H., they say, she gets to pick and choose; and she always chooses her own kind; people from Hailsham, or one of those other privileged estates. (p. 4)

Indeed, the students had been indoctrinated to feel superior because they have been afforded the luxury of an elite education with an emphasis on the fine arts, including poetry, painting, and the creation of art. Kathy never doubted that she was human until she discovered that her “idyllic” childhood was an elaborate ruse to conceal her ambivalent identity, a social experiment gone awry. The pedagogy of Hailsham dictated their personal sense of identity. Miss Emily offered an explanation:

We at least saw to it that all of you in our care, you grew up in wonderful surroundings. And we saw to it, too, after you left us, you were kept away from the worst of those horrors... You’ve had good lives, you’re educated and cultured.
(p. 261)

The students of Hailsham did not recognize their oppression as they truly considered themselves fortunate because they were indoctrinated to believe this. Adolph Hitler is quoted as saying, “If you tell a big enough lie and tell it frequently enough, it will be believed.” And believe they did; to do otherwise would have been perilous.

Frantz Fanon in *Black Skin White Masks* (1952) discusses the plight of the colonized black man and states, “He has no culture, no civilization, and no ‘long historical past’” (p. 17). Most of us have some sort of treasured vestigial remnant or heirloom that confirms our identity and where we come from. Beds are covered by beautiful wedding ring quilts pieced together by loving grandmothers. Antique china and precious silver from a favorite aunt may grace your table. We all have tattered black and white photographs of ancestors long-gone and have heard tales of their lives. Our genealogical origins shape who we are and inspire our actions. The students of Hailsham had no such roots by which to confirm their individual and group identity

and found solace in their treasured collections of acquired personal possessions in their quest to create memories and develop status and relationships among their peers. During World War II, Jews in France were duped into packing suitcases containing their most treasured possessions for their internment in concentration or labor camps, ostensibly to ease their longing for home and family. The Auschwitz-Birkenau Memorial and Museum in Poland houses the multitudinous suitcases that Holocaust victims carried with them to their death. These suitcases were the only link to the past and to those they loved; a past that the students at Hailsham were denied. Kathy mused that, “being dependent on each other to produce the stuff that might become your private treasures-that’s bound to do things to your relationships” (p. 16). They did not belong to anybody and were considered vacuous mirror images of another. Personal worth was not tied to their humanity, but to the quality of the artifacts produced. It was within this exchange that tentative familial-type bonds were formed, meaning created, and identities constructed.

The Hailsham ideology paralleled the firmly entrenched belief systems that historically sustained and nurtured slavery and colonialism. As a reader, I wondered why Ishiguro developed such pacifistic characters who demonstrated no resistance to their repression, accepting their less-than-human status. The dominant social order regarded themselves as superior and devalued the clones as inauthentic, thereby legitimizing and perpetrating their inferior status. After all, society requires “the Other” to enhance its status. The collective unconscious of a society is cultural and acquired. Borrowing from the basic tenets of Critical Race Theory (CRT) which can be used to address other forms of social injustices, the clones were racialized for the purpose of insidious coercion and to maintain a binary society. CRT holds that racism is commonplace, normal and embedded in our social structure; also,

relationships between the races reflect the interests of the dominant group. In *Critical Race Theory: An Introduction* (2001), Delgado and Stefancic argue that:

The “social construction” thesis, holds that race and races are products of social thought and relations. Not objective, inherent, or fixed, they correspond to no biological or genetic reality; rather, races are categories that society invents, manipulates, or retires when convenient. People with common origins share certain physical traits, of course, such as skin color, physique, and hair texture. But these constitute only an extremely small portion of their genetic endowment, are dwarfed by that which we have in common, and have little or nothing to do with distinctly human, higher-order traits, such as personality, intelligence, and moral behavior. (p. 3)

Despite the fact the Kathy, Tommy, and Ruth demonstrated all of those distinctly human, higher-order traits, society deemed them a separate race by which to define them and disavow their humanity. It is unsettling to the reader that the students accept the normalcy of their situation. In fact, Kathy narrates very dispassionately their inhumane, cruel, and inferiorized existence. Psychologically, the clones have internalized feelings of depreciation and debasement, having no sense of hope except for fantasies and the possibility of a deferral. Fanon (1952) states:

Man is human only to the extent to which he tries to impose himself on another man in order to be recognized by him. As long as he has not been effectively recognized by the other, it is this other who remains the focus of his actions. His human worth and reality depend on this other and on his recognition by the other. It is in this other that the meaning of his life is condensed. (p.191)

It is interesting that Kathy, Tommy, and Ruth never crush on “normals”. Because they passed as normals, it probably would be easy for them to seek out a relationship to naturalize their lives, if only for a short time, and gain access to truly equitable treatment. Perhaps it was an act of self-preservation to stick with their own kind. Engaging in interpersonal relationships with a “normal” could potentially open Pandora’s Box for self-scrutiny of their corporeality and challenge the normalcy of their existence.

Concluding Thoughts

The students at Hailsham were cruelly and inhumanely denied the human necessity of giving and receiving love because they were considered less than human, which is perhaps a greater, more devastating loss than their organ donations. The concept of a body being objectified as merely a vessel for commodification is the making of great science fiction entertainment, but the potential realization of these capabilities is horrifying. Envision a society which breeds a group specifically for the purpose of advancing medical human welfare and subsequently exterminates them; a society that deems them different and disposable due to their less than human nature. The study of science fiction literature and cinema affords a glimpse into how science and biotechnology have the potential to be future bastions of human exploitation, oppression, and marginalization reminiscent of a past best forgotten. Furthermore, it provides a critical consciousness by which we can explore the dehumanizing capabilities of therapeutic medical technologies and the ethical implications significant to our self-understanding and the posthuman “other.”

The Island Summary

Strikingly similar to *Never Let Me Go*, *The Island* is a movie directed by Michael Bay which is set in a seemingly utopian, but sterile self-contained environment whose inhabitants are survivors of a global contamination disaster. The inhabitants, including Lincoln Six-Echo and Jordon Two-Delta, enthusiastically await their turn to win the weekly Lottery gaining entry to a Garden of Eden known as The Island which is ostensibly the last remaining uncontaminated paradise on Earth. However, the truth is that this subterranean incubation lair is a facility mass-producing clones which grow at an accelerated rate to match the age of the client who paid for them and are commonly referred to as an “insurance policy” to be redeemed upon demand. In actuality, it is a government-funded, billion-dollar lab growing replacement parts for rich clientele who need organ transplants or who want to live longer, more attractive, and healthier lives. Unaware that they are copies of others to be used as “product” or spare parts for their rich or celebrity counterparts, the clones are duped into believing that they have hope for a better future in which they may live with freedom and dignity. Dr. Merrick assures the clones that they are the chosen ones and therefore truly special saying, “Nature has left you a garden of Eden to repopulate!” Unbeknownst to them, departure for paradise via the lottery means certain death at the hands of a scalpel, which is discovered by Lincoln Six-Echo. Organ harvesting for profit as a socially acceptable practice becomes suspect when it is discovered that the clones have consciousness, without which their organs fail, a secret closely held by the Merrick Corporation. Merrick discovered that without hope, experiences, and human emotions, the clones’ organs were not viable; they withered and died. The new American Dream is to live forever and at any cost as touted by the Merrick’s public relations pitch man as he tells potential clients, “I want to tell you how you are going to live sixty or seventy years longer.” It is not a far-fetched idea that

spare parts be produced so that we maybe more attractive and live longer, more healthy lives. The more salient point is, “To what extent does the end justify the means?” *The Island* addresses the ethical issues of cloning, human and organ trafficking, genocide, euthanasia, and the meaning of humanity.

Following in the tradition of *Never Let Me Go*, *Brave New World*, and *1984*, *The Island* illustrates the mechanisms and manipulations by which rigid social control is achieved. Personal happiness is a function of perfect submission to an authoritarian regime. As one of his minions stated about Dr. Merrick, “He has brought them into the world...he can take them out of it.” Perfect submission to the authoritarian regime is the only path to freedom and independence. In accordance with the “big lie” theory perpetrated by the keepers at Hailsham and other propagandists in corporate America, popular culture media, and history, the Merrick Corporation exploits the clones while promising potential bliss on The Island contingent upon the turn of the Lottery wheel recognizing that, “the island is the one thing that gives the clones hope, gives the clones purpose,” a lie that must be perpetrated to keep the clones alive, well, and profitable. The captors spin a web of deceit which subjects the clones to complete dominance and control, thereby diminishing their humanity. An individual’s right to self-determination is an inherent component to being a fully functioning human being. Lack of agency leaves only hope. To question too closely is to lose hope; for once hope is lost there is no self-determination. The hope for life in Paradise is the driving force that keeps them alive and viable. The clones who inhabit the community are unaware of the abominations that are being perpetrated upon them. They truly cherish their life and harbor hope deep inside for a prosperous future on The Island. What does hope have to do with being human? What characteristics make the human a unique animal? The eugenics movement demands discourse on the slippery ethical slope of the

potential evils of cloning, particularly at the hands of an unscrupulous, government-funded corporation whose primary goal is profit.

Human beings supersede the non-material limitations of the animal kingdom in that man is a thinking, feeling, emoting, creating, and spiritual flesh and blood being. Cloning has the potential to be creation gone fiendish without ethical and moral considerations. Meilaender (1997) in *Cloning Human Beings: No Distinct Title* comments on biotechnological engineering, cloning, and the ethic of “giftedness” stating:

[The] exercise of technological power would come at the cost of artificial, diminished humanity. It would also disrupt the fundamental relational ties of likeness, identity, and equality. A child created and designed through cloning is designed and manufactured as product, rather than welcomed as a gift. (p. 52)

Parents lovingly welcome their newborns into the world just as they are, not with genetically engineered attributes and capabilities. Most parents feel an obligation to socialize their children and to provide opportunities for their personal growth to realize their maximum potential and have the best life possible. It can be argued that cloning violates the grand narratives which permeate familial relationships such as the sacredness and continuity of human life, the institution of marriage, and the importance of parenting.

Traditionally, birth is not only biological but exists and is interpreted within a social and cultural milieu. Reproductive technologies, including in vitro fertilization and surrogacy, blurs the lines and redefines the normative social constructs of kinship and relatedness. *The Island* illustrates how therapeutic cloning undermines social affiliations as well as impacts the structure of society.

The clones never knew the comfort of kinship as they had no family members. We know that we exist because we retain memories of our lives, loved ones, and other signifiers of “being human”. The clones at Merrick had no such memory save the ones that were imprinted upon them in their gestational sacs. The lack of memory signifies the lack of a soul. It is these kinships and memories that reside in the vessel of our souls.

If procreation transitions into a product-creating enterprise, what will the penalty be for a child born via cloning? *The Island* illustrates how cloning created a sub-human species; a second-class citizenry upon which maltreatment was justifiably perpetrated. A newborn is legally endowed with the rights of personhood at birth; rights that are guaranteed by the U.S. Constitution. Historically, prejudicially-treated subgroups were vilified for the color of their skin, religious doctrines, gender, ethnicity, and sexual orientation. To a lesser degree, certain social stigmas were attached to others whose circumstances were not popularly accepted by Western civilization. For example, in the past illegitimate children have been ostracized by their families and society. Divorced and/or career-minded women were demonized for falling short of the June Cleaver template of submissive wife, perfect homemaker, and nurturing mother. It appears the posthuman body itself is the final frontier for future waves of discrimination.

While I’m quite sure there are those who would like to own a clone for the purpose of an insurance policy by which they may live healthy and prosperous lives for an additional 60 to 70 years, I am also quite sure that nobody would want to be one. Merrick Biotech’s surreptitious and unethical practices sought to dehumanize and diminish the personal identity, human nature, and social relationships of the genetically-engineered sub-humans it manufactured. While manufacturing the consumer product of therapeutic clones, it created the objectified, subhuman “other” to be dominated and subjugated. *The Island* illustrates how the biotechnological

revolution may potentially reshape our humanity in an age where what constitutes “humanness” is shifting. It invites critical reflection on how the hubris of science, uncoupled from ethical and moral considerations, is a threat to democracy and social justice widening the social, economic, and educational gap.

Ignorance is Bliss

The captors of Merrick Biotech subordinate and dominate the clones in their fascist, underworld community. They were kept isolated and repressed, unable to participate in simple human joys available to free and equal members of society. Their “human” lives were artificial in origin and relentlessly regimented until the harvest of their organs or offspring. The protagonists in the story are effectually denied the fundamental entitlements based upon “personhood.” The clones represent a socially constructed low rung in a hierarchal society; a subhuman or nonhuman “other” deemed a lower life form and disenfranchised from the human race on the basis of their conception. The clones were completely deprived of the common human experience due to their assumed lack of humanity. By conceiving non-human animals as radically different in kind from human animals, we create an artificial barrier in ethics between what can be done to humans and what can be done to other animals (Rachels, 1993). Cloning, the creation of subhuman species, and dalliance with human nature have long been the lore of science fiction. As previously evidenced in *Frankenstein* and *The Island of Dr. Moreau*, *The Island* illustrates how the creation of a life form identified as subhuman invites a genocidal tendency. This is truly a horrifying depiction of potential consequences of technological advancement.

One of the most disturbing aspects of *The Island*, is that the clones are held in check as property, not as human beings, and never questioned the inhumanity of their plight, which was to be created and subsequently destroyed for profit. In fact, everything that the clones are exposed to is designed to encourage compliance. In the quasi-totalitarian unjust “society” at Merrick, it was critical to those in power to maintain their hegemony and keep the balance of power tilted in their favor which they accomplished through censorship, propaganda, and misinformation. There were many instances of their life at Merrick Biotech which merited contemplation and questioning. However, they were manipulated to such an extent that questioning was taboo. The Island’s plot revolves around Lincoln-Six Echo’s opposition to and rejection of the unequal treatment.

Reminiscent of the Nazi experiments on Jews, slavery, colonialism, and the subjugation of women, the underground community at Merrick reflected a rigid, disciplinary regime. The captors at Merrick instituted systematic, institutionalized governance and surveillance to squelch defiance, creativity, and a healthy curiosity allowing for the continued perpetration of injustices and inequities. In *The Birth of Biopolitics*, Foucault (2008) posits the term “environmental technologies” as the:

image, idea, or theme-program of a society in which there is an optimization of systems of difference, in which the field is left open to fluctuating processes, in which the minority individuals and practices are tolerated, in which the action is brought to bear on the rules of the game, rather than on the players, and finally in which there is an environmental type of intervention instead of the internal subjugation of individuals. (pp. 259-60)

The disenfranchised, marginalized “other” in a biotechnological society is the central trope of this dissertation. In *The Island*, in order to maintain the status quo, the clones were oppressed by the establishment of regulatory mechanization of living conditions. They were indoctrinated and manipulated into passive acceptance of institutional confinement in which all facets of their less-than-human existence were controlled. A marginalized group was created based upon biotechnological difference which justified their inhumane treatment. This scenario begs the alarming question, “Is it possible that a large corporation could create a parallel world manufacturing human capital and legitimately violate the ideologies of democracy and humanity?” The twenty-first century will undoubtedly see unprecedented developments in biotechnology, particularly genetic engineering. As the revolution of interventions become increasingly feasible and acceptable, the trajectory of human evolution has important social, political, and economic repercussions with the potential to fundamentally change societies, culture, and human nature. *The Island* demonstrates how the biotechnological divide could place the democratic principle of civil liberties and the value of the individual in peril at the hand of unscrupulous corporations. In addition, it demonstrates how the process of artificial selection could potentially destabilize society as we know it creating a new social order with dominance granted to those with access to cutting edge genetic interventions at the expense of the permanent underclass. Privilege and esteem will be awarded to those with the “best” gene set usurping the status of lofty family pedigrees while disposable subgroups are targeted for genocide.

Control by Regimentation and Conformity

The Island's plot is primarily about ultimate control and conformity. The clones were deprived of agency and self-direction. For example, Lincoln Six Echo awakens each day in a white, clinical-style room to his daily medical interventions which include measuring his vitals

and analyzing his urine. Because the clones were considered products to be manufactured, dismembered, and sold for a profit, they underwent constant physical and cognitive monitoring and medical interventions to ensure their continued optimal health, or quality control. In one of the opening scenes Jordon is undergoing a routine body chemistry analysis which reveals high sodium levels. Jordon was sentenced to the dietary restriction of “no bacon” for breakfast which angered him. In addition to the daily medical routines, the clones were charged with keeping their physique in prime shape by working out in one of the numerous gyms. Their primary recreational activity was a holographic fighting ring designed to promote kinesthetic endurance.

Once the Merrick Corporation realized that keeping the inhabitants in a vegetative state was no longer possible, maintaining the status quo became problematic. Reminiscent of “Thoughtcrime” and other transgressions in Orwells’ fictional future world of *1984*, Merrick demanded strict adherence to a rigid social order of surveillance and control which governed every aspect of the clones’ lives making it nearly impossible to develop healthy and normal interpersonal relationships. The captors at Merrick observed what was deemed inappropriate interaction between Lincoln Six Echo and Jordon Two Echo and intervened by telling them to separate. Lincoln was later queried by a guardian who stated, “Your file shows that you’ve been interacting regularly with Jordon Two Delta.” He replied, “There is no law against friendship.” The guard in the gray uniform replied, “No. No, we encourage it, but, obviously, proximity could become a concern.” Jordon retorted, “I know the rules of proximity.” Close proximity between the clones for extended periods of time was forbidden. However, the clones were designed to be bereft of sexual desire. However, human nature found a way.

The captors at Merrick took several preemptive steps to discourage a healthy curiosity and narrow the range of thoughts, interests, and beliefs that were acceptable to entertain. In fact, they

were supposed to be maintained in a vegetative state with no consciousness. However, fate stepped in; rigid social control systems were implemented to keep the clones in check. They were never to know sickness and suffering or to feel love, joy, or hate. They were “product” and not human in every way it matters. The inhabitants of Merrick were imprinted with the intellectuality of a fifteen-year old. Also, they were not imprinted with any real memories, only vague recollections that were modified and recycled with each new batch of clones. Jordon Two-Delta and Lincoln Six-Echo are told by McCord that they are clones, copies of other people stating, “The life you had...it never happened.” In the aftershock of this revelation Jordon Two-Delta responded, “I have a mother, I remember her! I grew up on a farm! I had a little dog – and I had a bike.” To her surprise, McCord continued to elaborate upon her life story by saying:

A bike, yeah. A pink fluffy Flyer with little tassels on the handlebars? And you rode it up the street to your Grandmother’s house, you’d ring the little bell, she came out and served you cookies on a hot plate. Memory implants...There’s only, like, twelve stories, they change around little details, but they’re pretty much all the same. The life you think you had before the “contamination” – it never happened.

Inequality and injustice are inherent components of any social structure. We become aware at a young age of the disparities that exist between ourselves and others as it is part of our daily human experience. Children participate in community and church-based activities spending time at friends’ homes noticing differences that exist. Some people have maids, pools, and vacation homes while there are other children whose homes you are not allowed to visit. Social and economic differences become more pronounced the older we become as evidenced by distinctions in homes, vehicles, and lifestyles. *The Island* is an extrapolatory movie delving into

frightening, future disparities that could potentially manifest in a society driven by rapid technological change and consumerism.

The Posthuman as Commodity

Implicit in the ideals of democracy are the notions of liberty and individual freedom in that people should be allowed to pursue their interests and dreams wherever that may take them. If it weren't for these ideals, many great ideas and inventions may not have materialized.

Unfortunately, there is no crystal ball which foretells the potential consequences and hazards of biotechnological advancement. For example, the introduction of vaccinations, antibiotics, and the X-ray machine were heralded for their benefits to society but are now suspect as they are linked to negative side effects. In particular, the X-ray machine will go down in medical history as one of the most important life-saving diagnostic tools. Despite its success, would it have been as well-received or even developed if the dangers of radiation sickness had been known? I believe most would agree that these things have done more good than harm. In keeping with these democratic ideals, do people have the "right" to dabble in cloning if they so choose? To what extent should reproductive technologies be legislated?

In times past, cloning has only existed within the speculative and fantastic world of science fiction. Given the biotechnological advancements of contemporary medical science, cloning is now accepted as not only plausible but a reality of life. Reproductive cloning, utilized since 1952, was used to create Dolly the sheep as well as other animals. Even though scientists were successful in cloning Dolly after 277 attempts, her health was ill-fated and she had to be put down. Despite lack of wide-spread support in the scientific community for cloning human beings, there are proponents of therapeutic cloning. The most common rationale of biological

researchers for therapeutic cloning is the harvesting of embryonic stem cells due to their unique ability to indefinitely proliferate all varieties of cells within organisms. This capability allows researchers to cultivate healthy body tissues and organs in the laboratory to replace those which are damaged or diseased in people. Embryonic stem cell research would enable scientists to study human development, treat a variety of diseases, and develop new therapeutic drugs. Given an unlimited supply of viable tissues and organs, patients would no longer risk death from being placed on waiting lists for transplants. The possibility of organ transplant rejection would be minimized because their own DNA was used in the production of tissue. *The Island* serves as a credible platform for critical discussions regarding human cloning. The most pressing issue is to what degree the end justifies the means. How far will medical science go using cloning in order to provide life-saving, life-extending, and life-enhancing hubristic treatments for patients who have the ability to pay for it?

Human beings have a moral right to reproductive freedom. However, the argument can be made that cloning is the asexual reproduction of humans. Cloning is popularly thought of as the replication of the entire human being which is produced outside of the body. In reality, reproductive and therapeutic cloning involves somatic cell nuclear transfer (SCNT) and is actually the copying of cells from a source stem cell. Stem cells can originate from a variety of sources and are able to multiply prolifically and to differentiate into other types of cells such as blood, bones, heart, and lungs. It is not the production of another entire human being as popularly depicted in science fiction. The nucleus of an unfertilized egg is removed and replaced with a stem cell which is then “fertilized” artificially with electric current or chemical treatment. Given a sufficient artificial environment, embryonic development and gestation of a genetically identical organism can occur giving rise to a host of objections regarding cloning.

Richard Dawkins (1941) examines the contemporary viewpoint of genes as replicators and human or nonhuman bodies as vehicles for this technologically concomitant production in his influential work, *The Selfish Gene*. Dawkins argues that the gene is programmed for self-preservation and that the new millennia will undoubtedly bring forth innovative “techniques and artifices” to ensure the improvement and survival of the gene (pp. 19-20). He states:

They are in you and in me; they created us, body and mind; and their preservation is the ultimate rationale for our existence. They have come a long way, those replicators. Now they go by the name of genes, and we are their survival machines. (p. 20)

Issues of commodification of the body proliferate not only in scholarly journals but in popular culture as well. While readers and viewers are fascinated and entertained by speculative science fiction narratives, there is underlying ambivalence, fear and anxiety surrounding the unsettling dream works of clones and hybrid beings. I believe that works of science fiction prompt reticent acknowledgement that humanity is fundamentally changing due to rapid technological and engineering advancement. Most hasten to accept and take advantage of any procedure, prostheses, or device that improves the quality of their life, makes them more attractive, or cures an illness. However, there is a fear factor associated with social and ethical issues surrounding the exploration of the multiple boundaries of the normative “self;” especially if the “self” becomes captive to the profit motive of capitalism. We belong to the “family of man” which assumes that our “self” has fundamental qualities that are consistent among all members of the human race, despite differences in culture and language. In addition, there is value and integrity in the human life form.

In *Modest Witness@Second_Millennium* (1997), Haraway also establishes a connective relationship between the gene and capitalism.

In commodity fetishism, inside the mythic and fiercely material zones of market relations, things are mistakenly perceived as the generators of value, while people appear as and even become ungenerative things, mere appendages of machines, simply vehicles for replicators. Without question, contemporary genetic technology is imbricated with the classical commodity fetishism endemic to capitalist market relations. In proprietary guise, genes displace not only organisms, but people and nonhumans of many kinds as generators of liveliness. Ask any biodiversity lawyer whether genes are sources of “value” these days, and the structure of commodity fetishism will come clear. (p. 135)

Biotechnological engineering and science fiction popular culture media appear to be revising our social and cultural mythology regarding the human gene and the products of biotechnological advancements. Scientific knowledge and science fiction are producing a paradigm shift in which traditional cultural and social ideologies are being challenged. Humanity is metamorphosing and the imaginings of fictional narratives reflect the trepidation, fear, and awe at the possibilities. Through science fiction goggles, cloning and reproductive technologies are fantastical and logical extensions of the continuously advancing human narrative and are not necessarily negative, despite prolific misrepresentations of evil duplicates who are identical in every way possible. These depictions of clones are more a function of the need for a consumer-driven plot which will appeal to the masses than a testament to what technology and science are capable of. Genetic engineering would greatly benefit mankind in a variety of ways. It is becoming possible to intervene in and manipulate the human embryo in increasingly complex ways. Human

cloning has the potential to not only extend life but to extend life to its fullest potential by ensuring health maintenance. I cannot imagine any better use for the applications of cloning than for the treatment of Alzheimer's or cancer. Imagine a world in which viable tissue or other corporeal commodities are readily available for people whose only options are dementia and death. Perhaps it is a child or a person in the prime of life who has a lifetime of potential to fulfill.

The counter argument is that the production of humans subject to market forces, as in *The Island*, can potentially represent the American spirit of ingenuity and capitalism gone fiendishly wrong by objectifying human beings who are devalued as genes, human tissue, and anatomical parts. Throughout *The Island*, the clones were referred to as "products" by Merrick's shifty minions. During the Industrial Revolution, America came to love all things mass-produced which is solidly reflected in the movie's plot. Automobiles are mass-produced with a Vehicle Identification Number (VIN) which serves as a serial number by which to identify individual vehicles and other over-the-road modes of transportation. It is interesting to note that this number also serves as public record to determine if the vehicle is defective or has been written off. The number includes an encoded model year, plant code, and production number. In a similar fashion, the corporation branded the clones with numbers on their wrists as if they were a "product." Lincoln Echo Six displays the human quality of curiosity and is recalled as defective. This recall represents a disposal of two million in "product" due to a small defect.

Merrick Biotech's branding of the clone's wrists serves as a signifier of their identity bearing resemblance to historical narratives of racial injustices and is tantamount to neoslavery. The clones were branded like cattle to signify their identity and ownership. It is interesting that a black hit man, Albert Laurent, was hired to track down and kill the escaped clones, Lincoln and

Jordan, whom Merrick regards as mere tools, soulless medical instruments. Laurent recognized the parallel between the clones and himself as he took his orders and exposed the brand on his hand. He recounted his own personal history, branded as a member of a lower class of human, enslaved, and dehumanized. Albert Laurent, showing Merrick his marks, stated, "When my father was killed, my brothers and I were branded, so everyone would know we were less than human." Merrick Biotech represents a hierarchal class system in which the "marked" marginalized clones were denied the equal dignities afforded to those recognized as members of humanity.

Just as Dawkins predicted, the human gene takes center stage in history as bioneers and industry use biotechnological advancements to imagine and create humanity as a biologically controlled species. As a means to improve methods in producing genetically modified livestock, a series of experiments were carried out at The Roslin Institute led by Professor Sir Ian Wilmut. As a result of these experiments, Dolly became the first mammal to be cloned from an adult cell proving that specialized cells could be used to create an exact replica of the animal from whence she came. Although she was not the first animal to be cloned, her creation ignited public curiosity and debate regarding the good and evils of cloning. The research team included many members from various branches of science including embryologist, E.O. Wilson who stated, "Dolly will take humanity into the age of biological control" (Wilmut, Campbell, & Tudge, 2000, p. 24). Science fiction raises awareness of liberal and unmediated utilization of technologies that manipulate and alter the human gene. Reminiscent of *The Island of Dr. Moreau* whose message warns of the dangers of unregulated cloning in the hands of evil scientists and immoral corporations, the potential exists for cloned people to become owned human capital and their genes copyrighted by corporations. The technologies of cloning and

hybridizing human life have the ability shift the paradigm of what constitutes “humanness” and notions of “self-identity” and create a new social order. Inherent in this discourse, what rights will be granted to posthuman bodies? Is it moral and ethical to commodify the posthuman body for consumerism? *The Island* invites critical reflection on the dominant theme which continues to be what it means to be human in a posthuman world and the consequences which will come to bear on human nature as gene-altering technologies become more liberally used. In Chapter 3, I will explore narratives that utilize genetic manipulations for the purpose of engineering desirable traits into the inhabitants of future societies. I will argue that eugenics has positive as well as negative consequences and, should be used for the betterment of all society, thus, avoiding the exclusion and stigmatization of fellow citizens.

CHAPTER THREE

THE GENETIC DIVIDE

“As night-fall does not come at once, neither does oppression...

It is such twilight that we all must be aware of change in the air – however slight –

Lest we become victims of the darkness.”

Justice William O. Douglas

Science fiction film and literature have conjured up severe criticism of embryonic stem cell research, human reproductive cloning, and human enhancements. The burgeoning biotechnological advancements in these areas will challenge our views on human life, personal identity, kinship, spirituality, and methods of procreation. Rather than inciting fear and horror at the prospect of designer babies and human clones, we would be much wiser to accept and prepare for a future society inclusive of these technological advancements. Critical and ethical reflection regarding the fundamental respect that should be accorded post-anthropocene life as it is redefined is necessary. What kind of society is it that we wish to create and live? Will we disregard the welfare of future cloned children or will we recognize and appreciate the plurality of humanity by taking special care of their well-being?

Snaza (2013) states that, “Laying claim to ‘humanity’ is a fundamentally political act” (pp.47-48). Also, he points out that, historically, women, indigenous peoples, and Black slaves were dehumanized by not being regarded as humans. This provides a powerful critique on the social construction of the human as well as the political importance of reconceptualizing the human. The creation of future human beings will be a complex and political issue as any bounded ideal of what constitutes humanity will be problematic. Since the dawn of time, human society singles

out some group to defile as less than human to maintain hegemony by doing harm to them. It will be difficult to resist the temptation to do so as humanity becomes more fluid.

Contemporary science fiction creates speculative and imaginative spaces in which to contemplate and critically reflect upon the normative understanding of humanity and the plight of the “other.” In both works of this chapter, the clones are minimalized as a DNA sequence with certain skills, aptitudes, and traits. They are mere instruments in the stories’ narratives. As young readers of fiction, we developed the ability to identify with those who are different from us through intersubjectivity and imagination. In the case of the two works discussed in this chapter, we experience intersubjectivity with the inhuman, or clones, which allows us to deconstruct the dominant narratives on the nature of humanity, thus, developing compassion and sympathy for the objectified “other.”

In *Reframing the Debate on Human Enhancement* (2014), Barbara Henry aims to develop an account of post-human enhancement which makes it possible for us to envision a future society that is made up of human beings, human-machine hybrids, and artificial beings which can be viewed as free and equal (p. 60). It is crucial that these issues be addressed through a humanizing education with children, adolescents, and young adults as they navigate a future in which humanity will increasingly merge with cybernetics, artificial intelligence, genetic manipulation, and possibly future human clones. I envision a posthuman future society that embraces the plasticity of human nature providing safe harbor replete with freedom, equality, dignity, and compassion for all human beings.

GATTACA Summary

The film, *Gattaca* (1997), is an exploration of a futuristic, genetically-based caste society which is capable of eradicating disease, illness, and physical defects in newborns through bioengineering. It explores the themes, issues, as well as the moral and ethical considerations in an age of genetic engineering. In this seemingly Utopian society, an individual's worth is predicated on the superiority of genetic code. The two courses of action presented in *Gattaca* are the allowance of a "God-birth" in which the composition of the genetic code is determined at birth; the second option is that offspring are objects of the parents' desiring. A "man-child" or a "self-made woman" is a male or female product of altered DNA, also referred to as a DAN. These children are born complete with specially designed attributes and ambitions. Their success in life is almost certain. This society is comprised of two distinct social classes, the Valides and the Invalides. The plot revolves around a "world state" in which one's fate and social class is solely determined by their genetics. The Valides are genetically manipulated, while the Invalides are natural offspring. These labels serve to segment the "genetically perfect" people from the "imperfect" people. The setting is a seemingly Utopian "state" which pre-ordains all people to their specific and ideal place within this community. Even though the Valides are born with an enormous advantage over In-Valides, it is important to note that they do not get to choose what they want to do with their lives. It is determined before birth. All members passively accept their assignment as birthright, even though they are not happy with their predicament. The term government is never used but is implied through the powers which are vested in them. It is ostensibly void of any type of discrimination. However, members of this society have no control over their own lives. Technology eclipses individuality and freedoms normally associated with being self-determined. The Invalides are denied access to a better life. Due to

constant DNA testing and surveillance, a new social order is created and perpetuated as determined by the cells in their body. The “world state” dictates which caste a child will become a part of by administering tests to determine if one is a Valid or an Invalid. Those who do not meet the genetic standard are “othered” and left to fend for themselves by foraging for hard and menial labor.

Conversely, this seemingly Utopian society has given birth to a new form of discrimination called Genoism, or discrimination instituted based upon genetic purity. Existence for the genetically impure is decidedly Dystopian for those whose genome is susceptible to frailties and fatal conditions. They are not considered worthy of the family name; in fact, it is a genetic scarlet letter by which one’s future (or lack of it) is determined. In *Gattaca* (1997), Vincent states, "I belonged to a new underclass, no longer determined by social status or the colour of your skin. No, we now have discrimination down to a science."

The differences in these types of birth give rise to many salient issues which this section explores. There is a burden associated with perfection and an inherent struggle between human imperfection and inhuman perfection. The level of connectedness the imperfect one experiences with family and community is much different than what is experienced by the genetically superior. This notion begs serious consideration of how we ascertain the true value of a human being. Aren’t individuality and freedom of choice very significant pieces of the fabric of our society? Is it possible and/or feasible to envision the unintentional creation of an oppressive world born of the application of bioengineering revelations? Is it morally and ethically defensible to employ genetic control over what a child we be and become over the course of their life? There will undoubtedly be forms of discrimination and oppression in a society which stresses that anything less than perfection is failure. Are we in danger of re-engineering our

nature as we tamper with genetic traits? What are the potential consequences if technology is allowed to exceed our humanity?

Vincent, Jerome, and Eugene

Gattaca is a 1997 film which evolves around the main character, Vincent Freeman, who was a “God-child.” Because was born bereft of any genetic manipulations or innovations, he was destined for a lowly position in society. It is interesting that his last name is Freeman which looks and sounds like “free man.” In fact, Vincent was anything but free to dream and achieve a better life. Due to his natural birth, he had genetic impurities and was predisposed to a variety of physical and mental frailties, particularly, congenital heart disease and eye problems. However, Vincent did have a keen fascination of space exploration and a desire to work at Gattaca, a privilege reserved for the Valid. He overcame physical obstacles and obtained the prerequisite knowledge in his quest to work at Gattaca, but to no avail. Vincent’s human spirit was undaunted and through his own sheer will found passage to Gattaca. He became a “borrowed ladder” via a broker. This is a process where Eugene Jerome Morrow, a Valid man who was no longer “useful” or a perfect specimen contributed his DNA and life to assist Vincent in assuming his identity and achieving his life-long ambition of space exploration at Gattaca. Through technological machinations, Vincent morphed into Eugene, which was Jerome’s middle name. Although Jerome had been genetically perfect, he suffered a devastating loss at a professional, high-stakes swimming competition which compelled him to end his life by stepping in front of a car. The attempt failed with him became paralyzed from the waist down. Jerome was embarrassed at his failure and disappeared from public life to another country which knew nothing of his fame or accident. Jerome found satisfaction and pleasure in his last days helping Vincent to assume his identity which will enable him to realize his dreams. Through Jerome,

Vincent found a sense of connectedness that was lacking his own family who rejected and scorned him. *Gattaca* explores the themes and issues regarding the potential dangers of rapid technological discoveries through an examination of diametrically opposing concepts such as individuality vs. perfection and dystopia vs. utopia. Inherent in these discussions, are the interrelated topics of discrimination and oppression. It is imperative that a posthuman society maintains the right of all embodied creatures to practice self-determination and have unfettered access to equal opportunity.

Finding New Ways to Discriminate

Gattaca is set in a futuristic, alternative society where unchecked rapid technological advancement takes priority in dictating political and social ideologies. The world is ruled by science and scientific discovery. Rapid technological advancement is the Goliath enterprise and engine that drives Gattacan society. Due to the shift in societal and ethical values, a “world state” is inadvertently created and fueled by the choices of individuals, including the passive acceptance of the devalued human being. It is interesting to note that GTCA are the four main chemicals in DNA. This “world state” touts itself as a utopian society due to its ability to manipulate and aggrandize the genetic code. Consequently, a new form of discrimination based upon genetic purity called Genoism took root which segmented society into two distinct castes and made systematic discrimination lawful. Despite their quest to create a more clean, precise, and perfect world, a dystopic society was inadvertently formed in which less perfect human beings were devalued as human beings and experienced alienation, objectification, and commodification.

God-Child v. Man-Child

Vincent was born into the Gattacan society where genetically engineered births were preferable to Faith births. Genetically engineered births were known as the “natural way.” Parents were free to choose gender, interests, ambitions, hair and eye color, and eradicate any potentially prejudicial conditions. What parent in their right mind wants a child with a propensity for deformity, mental illness, disease, or violence, to name a few. In a moment of retrospection, Vincent ponders his existence and questions his mother’s decision to put his birth in God’s hands, and not the local geneticist. The God-born child is subject to all the frailties that flesh is heir to. He narrates, “My destiny was mapped out before me---all my flaws, predispositions, and susceptibilities – most untreatable to this day. Only minutes old, and the date and cause of my death already known.” Vincent knew that he was a source of disappointment and shame for his parents. Discrimination was his birthright as he was labeled an “Invalid” the day he was born. Vincent was viewed as “chronically ill” crushing his desires to pursue an education or career because he was genetically impure and unworthy. He was not even allowed to go to Kindergarten. Constant genetic testing and surveillance prohibited Vincent from being granted an interview at the Gattaca Aerospace Corporation. Obtaining the job in space exploration which he so desperately wanted was a faraway pipe dream. The Gattaca society is utopic only if you are fortunate enough to be born genetically perfect. A dark and oppressive world of discrimination existed for the unfortunate “othered.”

The plot depicted in *Gattaca* is obviously a worst-case scenario and will not be realized for a very long time. Some aspects may never be developed. However, it is important to scrutinize the social and ethical ramifications of rapid technological development to raise awareness and minimize risks.

Discrimination, Oppression, and Genocism

Societies whose social and political ideologies are rooted in technological advancement essentially deny equal access to goods, services, and opportunities. In *Gattaca*, technology and bureaucratic policies were used to control aspects of reproduction and the individual rights and the freedoms conferred therein. Human beings were subordinated to the demands of technology. At *Gattaca*, a human being was devalued as secondary to technology. There was no distinct line drawn between the self-directed, private lives of the inhabitants and the technological demands of space exploration. Vitalized by rapid technological advancement, a society was developed which signified the subservient relationship of traditional notions of culture to the mammoth institutional enterprise of science; one that transcended humanity and embraced the glorification of genetic coding as a legitimate means to divide the population into two separate classes.

In *Technopolopoly; The Surrender of Culture to Technology*, Neil Postman (1992) states, “Cultures may be classified into three types: tool-using cultures, technocracies, and technopolies” (p. 22). He cites European Middle Ages as an example of a tool-using culture because tools are integrated seamlessly for a given purpose and do not pose a threat to the existing world-view. Technocracies invade the fabric of the culture in a bid to overtake it and shift values. It attacks the integrity and authority of existing institutions. Lastly, he states, “In a technocracy – that is, a society only loosely controlled by social custom and religious tradition and driven by the impulse to invent – an ‘unseen hand’ will eliminate the incompetent and reward those who produce cheaply and well the good that people want” (p. 41). Technocracies first reared their head during the Industrial Age, a time-period rife with invention and the idea of inventing. People came to be viewed primarily as consumers instead of children of God. The lure of the mechanical with its increased efficiency, objectivity, and standardization usurped the

individual as the gold standard for production in the psyches of that generation. Although industrialization and consumerism had a dehumanizing influence on the value of individuals, spirituality, relationships, and cultural institutions of that era, the technological and the traditional negotiated a tense co-existence. The citizens of this time could not fully accept material wealth was more important than as individual's self-respect. Thirdly, technopolopoly or totalitarian technocracy, redefines culture by making the traditional irrelevant. Postman (1992) states, "And it does so by redefining what we mean by religion, by art, by family, by politics, by history, by truth, by privacy, by intelligence, so that our definitions fit its new requirements" (p. 48). The "world state" of Gattaca was guided by self-interest and self-preservation. Traditional notions of privacy and the sanctity of the family were sacrificed at the alter of scientific innovation and extreme corporatism. The institution of Gattaca was entitled to adjudicate regarding career avenues at childbirth, and in doing so, found new ways to discriminate based upon genes. Currently, we enjoy the personal and private freedom to procreate. Producing a family is a natural liberty which is considered one of the most natural and fundamental expressions of humankind which ensures the perpetuation of the species. The expectation is that all members of society are legally and morally free to have children with the expectation that they will have live happy and productive lives with access to basic human rights, regardless of their origin. It's a crucial component of the natural state of being and what it means to be human. However, procreative and child-rearing rights and responsibilities were passively relinquished by the Gattacan citizens as they conflicted with the shifting political, social, and economic ideologies of a technologically-driven society. Presently, children born via alternative means are considered human beings and do not suffer the cruelties associated with labeling, oppression, and discrimination as the "God-child" offspring at Gattaca endured.

Gattaca serves as a powerful metaphor to explore the ethical and moral implications of unrestrained genetic engineering and the potential perpetuation of social injustices. Gattacan society labeled children as Valid or Invalids. In essence, judgements regarding their value were rendered at birth and based upon genetic superiority. It is interesting to note the definitions of the labels assigned to the inhabitants of the “world state.” Valid means to be fit for a purpose or able to be used. In-valid means to be unfit for a purpose or unable to be used. Also, it can refer to a person with a long-term ailment. In this seemingly Utopian society, citizens passively accepted genetic discrimination as part of their existence. Vincent’s parents planned and procreated knowing that a “God-child” was doomed to a dismal existence from birth. At the screenplay’s conclusion it is written, “There is not a gene for the human spirit.” It is interesting to note that Vincent overcame predestination achieving his lifelong dream of working at Gattaca and space exploration despite his genetic inferiority. Ignited by sheer will and perseverance, he overcame genetic and social obstacles to become a self-determined man. Vincent brilliantly demonstrates what outstanding achievements an indomitable human spirit is capable of.

Although it was illegal, the Gattaca Aerospace Corporation routinely practiced genetic screening as part of their hiring process. They created profiles of potential employees by taking fingerprints, hair samples, nail clippings, skin cells, and blood and urine samples. Physical attributes and stamina were also assessed. Current employees were also subject to these evaluations as part of their daily security checks. Vincent surreptitiously and methodically assumed Eugene’s DNA metamorphosing into the genetically superior Jerome. The DNA broker assured Vincent that he could go anywhere with Eugene’s helix under his arm. By undergoing cosmetic surgery to change multiple aspects of his physical appearance, including height, and altering his fingertips, hair, teeth, and eye color, Vincent is finally able to gain employment at

Gattaca Aerospace Corporation. The murder of an Gattacan administrator occurs one week before Vincent's scheduled launch to Titan, a moon of Saturn. The eyelash of an in-valid is found while detectives are conducting a DNA sweep as part of their investigation ensnaring Vincent in a panic-stricken attempt to conceal his true identity and save his passage to Titan.

It is unthinkable to imagine a world predicated on an oppressive system of genetic manipulation and the profiling of inheritable traits and biological data. While it is a lofty ambition to engineer desirable traits into human beings and eradicate disease and physical imperfections, one must consider the collateral cost. In the future, it is very likely that genetic scientists will locate and identify most of the genes in the human genome that signify disease and other corporeal maladies. Contemplate a world in which an individual's genetic code was documented at birth and a profile created in a data bank. It is not a far-fetched idea as we live in the information age. On the positive side of the coin, such information would be helpful for establishing future medical treatment and warding off potential diseases. However, there is an inherent danger in the management and dissemination of this information. Who would have access to it? How would it be used? There is potential for this information to be used in a way that would cause harm. Most employers have criterion by which new employees are vetted. They perform criminal background checks, confirm education and previous employment references, and investigate to determine if the potential employee has any ethical complaints lodged against them. What if genetic data bases became part of the hiring process. Only those candidates with the most desirable genetic codes would be considered for the best jobs. Those human beings with inferior genetic codes would be relegated to seek and fulfil the menial positions. Their hopes and dreams for a successful life squelched due to genetic imperfection.

Currently, the Genetic Information Nondiscrimination Act (GINA) protects most people from genetic discrimination at the hands of insurance companies and employers. However, millions of Americans today are uninsured or have inadequate coverage. If allowed to access genetic screening information, there is a potential for insurance companies to treat people differentially based upon their genetic code leading to an increased number of people with unequal access to healthcare. Those endowed with a privileged genetic sequence would get the maximum coverage and qualify for the best rates. They would be healthier and live longer lives. Insurance companies already limit and/or deny coverage for some genetically-based, pre-existing conditions. Those with pre-existing conditions face soaring premiums and the danger of losing coverage. Unfettered access to an individual's complete genetic code by insurance companies could potentially disenfranchise the chromosomally inferior creating a permanent underclass of unhealthy and poorer citizens.

The narratives contained in the fictional *Gattaca* spark imaginative questions and pose potential ethical debates regarding genetic manipulation which are salient to posthuman society. While scientific advancement is not inherently evil, it must be mediated by ethical considerations regarding the basic value of all embodied beings. When rapid technological progress produces shifts in social and cultural values which prove harmful to individuals and/or to a segment of society, it is inhumane, oppressive, and discriminatory.

The Burden of Perfection

The most seductive, yet pernicious, facet of genetic enhancement are the end goals of the couples or individuals that seek to utilize these technologies to enhance their children. What is it that they seek to gain? Is it simply an intervention on the parents' part to endow their children

with the best traits and attributes to ensure their happiness and success in life? After all, isn't it the obligatory duty of parents to ensure the mental, physical, and emotional well-being of their children? Parents engage their children from an early age in activities to improve their academics and physical prowess. Many children take piano, ballet, gymnastics, martial arts classes, and participate in leagues sports with other children. Consider the amazing feats and accomplishments of pro golfer Tiger Woods. Not only is he the youngest man to win the U.S. Masters' Tournament in Augusta, Georgia, he is also the first African American to do so. His father, Earl Woods, noticed his son's amazing talent and passion for the sport at the age of three devoting himself to maximizing Tiger's talents. Tiger took to a golf club before he ever learned to walk. However, it was Tiger's innate relentless perseverance and insatiable desire to win that paved the road to his success. Conversely, "gene-doping," or the nontherapeutic use of genetic materials to build a better athlete gained attention with the invention of "Schwarzenegger's mice" which were genetically manipulated to maximize muscle mass and strength. The purpose of this experiment was to gain insight into muscle disease and degeneration resulting from the aging process. The end result was the scientific knowledge and the capability to enhance muscle development in athletes for better performance. Obviously, this is highly frowned upon and prohibited in professional sports; a dissuasion largely ignored by some competitors. It is important to note that little is known about the negative side effects of "gene doping". Also, the reverence of a genetically altered athlete diminishes the value of inborn skill, effort, and natural giftedness. It is hard to conceive of a world which idolizes bionic athletes. We love an underdog who overcomes tremendous obstacles and makes a success of his life by talent and sheer will. Simone Biles, an Olympic Gold Medalist, was raised in poverty by a substance-abusing mother but went on to become the most decorated gymnast in history. She proudly declares herself,

“Small but mighty.” Do we want to live in a society that justifies genetic manipulation to enhance or instill a trait regardless of the consequences? It would be a dire situation, indeed, if overzealous Little League parents were able to enforce this upon their children, glimpsing a major league career for their little slugger. Imagine a world where prospective parents gain access to technologies to customize their children with the assistance of a geneticist choosing favored attributes and eliminating undesirable traits, if they could afford it. Our world would be dominated by the beautiful, athletic, perpetually young, brilliant, and healthy. Eugenetic technologies would endow the most privileged with better educations, jobs, and general standard of living. The rest of society would be relegated to taking the remaining menial jobs, just as Vincent and the other faith-born people were forced to do. Commodified eugenics at the hands of consumers have the potential to create and enslave a permanent genetic underclass, those who can't afford it, resulting in major shifts in our humanity, as well as the traditional social, economic, and political paradigms that structure society.

While the “designer babies” depicted in *Gattaca* may never be fully recognized, it will not be long before scientists are able to isolate genes predicting and identifying potential diseases and physical impairments in people. The eradication of disease and physical maladies gives rise to many concerns. Gregory Stock (2003) discusses the eventual reckoning of genetic manipulation in *Redesigning Humans: Choosing Our Genes, Changing Our Future*. His concerns are primarily medical and include the following: (1) Our diminished genetic diversity could lead to a loss in creativity, ingeniousness, and imagination sparked by drive and human imperfection, (2) the potentially monstrous, extrapolatory effects of generational eugenics, (3) the fragmentation of society, (4) the fabric of familial relationships will be distorted because parents may value their children for their genetic perfection and endowed attributes instead of bestowing upon them

the unconditional love that a child truly needs, and (5) the lack of spiritual mooring inherent in our imperfect humanity.

Consider a couple ready to welcome their future child into the world only to discover that, just as Vincent's parents did, it would be born with a predisposition for a significantly diminished lifespan, a debilitating cardiac condition, depressive episodes, neurological impairments, and Attention Deficit Disorder. Most prospective parents would be heart-broken; some might even contemplate terminating the pregnancy, understandably so. What if parents were given access to eugenic technologies to rectify these issues in the womb ensuring their offspring a healthy start in life? I feel confident that every parent would employ any and all technological interventions at their disposal to guarantee their child equal access to every opportunity afforded them. However, if an unborn child is subject to such interventions without their consent, one must consider that it constitutes a form of abuse or violation of their right to be self-determining. The most salient question is, "Who will have access to these technologies?" Will it be universally available or only to the privileged who can easily afford it? How will it be regulated? Where do you draw the line at what is acceptable to enhance? This is the slippery slope of genetic manipulation.

Buchanan, Brock, Daniels, and Wikler (2009) state, "Perhaps the most important policy objective in guiding and regulating the social use of the fruits of the genetic revolution will be to ensure that maximum benefit is obtained while avoiding the exclusion and stigmatization of any of our fellow citizens" (p. 325). These authors also discuss how genetic knowledge and techniques have the potential to divide and marginalize those without equal access stating, "One is the phenomenon of the so-called genetic ghetto, which threatens some of those identified as having defective genes with exclusion from the principal institutions governing social life" (p.

326). In a futuristic age of biological transparency, those relegated to walk the earth with an imperfect genetic code could be devalued and disenfranchised. Access to insurance is predicated upon a sense of solidarity and shared risk. At this point, we have no concrete evidence what illnesses will befall us. Those of us who stay well help subsidize the medical expenses of those who aren't so fortunate. Actuaries evaluate statistics and crunch the numbers to assess risk and underwrite policies. I envision two possible outcomes: (1) the genetically perfect would opt out of insurance leaving the "othered" to pay exorbitant premiums, in the unlikely circumstance they could afford it, or (2) they would be denied coverage altogether resulting in even more sickness. Sick people and ostracized people wouldn't be able to work and provide for their families. This genetic ghetto population could be harmed by the inability to obtain private health insurance due to an imperfect genetic code rendering them "disabled". Instead of being regarded as a self-determining, productive members of society, these misfits would occupy the liminal spaces trivialized as less than human; a monstrous, abhorrent creature void of cognitive, social, and psychological complexities. They also state, "The other is the perceived threat to people with disabilities, some of whose advocates find in the promises made on behalf of the new genetics, a theme that casts doubt on their very right to exist" (p. 326). Our current human condition is built upon a sense of mutual responsibility and a shared vulnerability. We recognize ourselves in each other. The ability to transcend the shared human condition has the potential to create a dominant and tyrannical ruling class with genocidal tendencies. In the movie, *The Purge*, a futuristic dystopic America allows all crime to be legal once a year. The reasons are two-fold; first, it allows citizens to rid themselves of frustrations built up during the year; secondly, it enables the privileged members of society to hunt and kill the lowly and less fortunate. Such a scenario

may be far-fetched, however, the de-differentiation of human biology could lead to the devaluation of basic rights and social justice.

As we navigate the unbeknownst and potentially treacherous highways and byways of biological modification, the topography of society will inevitably become different and less familiar. The traditional plastic and titanic machinations of hips, retinal and cochlear implants, heart valves, silicone implants, to name a few, are primal compared to the more invasive technologies that wire into our brains, consciousness, and emotions (Garreaux, 2005). We will find our altered and augmented selves unrecognizable as rapid technological advancement enables us to supersede cognitive, psychological, and physical limitations that are normatively human. What aspects of our identities that we assumed were fixed will be altered due to generations of genetic manipulation? As we navigate the posthuman future, fluid representations of embodiment and nature will challenge the traditional signifiers of interconnectedness we feel. As members of a posthuman race, we must reconsider ideas of kinship, inclusivity, and what it means to be human as we increasingly merge with technologies.

Cyteen Summary

Cyteen (1998), winner of the Hugo award for best novel of the year, is C. J. Cherryh's work of science fiction revolving around contemporary issues such as cloning, identity, psychological manipulation, and medical experimentation. *Cyteen* is set in the 24th century as Earth is colonizing planet stars which are not necessarily capable of sustaining human life. Cherryh creates the fictional planet of Cyteen, part of the Alliance-Union, whose atmosphere is unbreathable. FTL (humans traveling faster than light) technology is employed to commute between the planets. Reseune is the enclosed city-state which functions dually as the center of

government and biotechnological corporation. It is also the capital of Alliance-Union whose primary function is cloning through artificial wombs as well as psychological conditioning to populate the Union military. At the helm is the femme fatale, Ariane Emory (Ari), who is a brilliant scientist as well as chief executive of the Reseune research complex which genetically engineers clones and develops tapes for psychological programming and reprogramming. The plot revolves around the political conflict between the Expansionist and Centric camps and Ari's subsequent murder. Reseune's practices are not only scientifically implausible as they supersede the current body of knowledge, but also disregard ethical and moral boundaries. In order to justify and perpetrate their atrocious innovations, a stratified society is deliberately created which is deemed acceptable and necessary to maintain the status quo. Ari is a Special, a small elite group of scientists certified as "genius" by the Union. In fact, scientists autocratically control government practices and policies. It is this group who are responsible for the "innovations" at Reseune. These "Specials" are considered beyond reproach from the government and society; National Treasures whose monumental talents preclude their activities from oversight, transparency, and legal consequences.

Cyteen, capital of Union, is a runaway colony illicitly founded by a group of dissident, mutineering scientists and engineers seeking political freedom as a result of Earth's restrictions and regulations. With this influx of extraordinary talent and brilliance came unprecedented technologies, innovation, and industrial growth. In 2234, Cyteen launched its faster-than-light probe which forever changed the face of trade and politics of the three human societies of Cyteen, Earth, and Pell. There is no indigenous intelligent life on Cyteen which represented a historical biotechnological opportunity for scientists. In an attempt to augment the population as

well as fortify the military and labor force of Alliance-Union, the leaders began prolifically cloning in wombtanks a to fill in the population gaps and colonize the world.

In *Cyteen*, Cherryh gives life to her version of genetically-engineered clones, the azi (artificial zygote insemination) which were created before the company war for the purposes of accelerated repopulation, military uses, experimentation, and specific jobs. In terms of caste, they are the most inferior and considered horrific. By virtue of their aberrant, monstrous nature, they are “othered,” residing outside the boundaries of normative humanity. Azi carry out tasks that are beneath the CITs (citizens) who supervise them. Despite this, a hierarchy existed within the azi based upon skills and traits; Alphas ranked the highest. From a historical perspective, the azi experience parallels the conditions of slavery. They were created for an existence of subjugation and servitude. They had no social or political rights and were considered wards of the Union who were responsible for them. In fact, a small lunatic fringe Abolitionist group evolves which fights for their humane treatment, freedom, as well as termination of the cloning labs. They recognize that the deliberate creation of a servant population is an abomination of the highest magnitude and fundamentally evil. Akin to the manner in which a child is raised by parents and then assumes the privileges and responsibilities of adulthood, the Union affords azis the same opportunity at the end of their contracts. Azis could apply for citizenship after undergoing deconditioning, a process where their memory is wiped out. If approved, their status was upgraded to CIT (citizen) and were endowed with specific rights, such marriage and family. Many CITs were previously azi. This ability to move up the social ladder was intended to maintain social order and ensure the longevity and well-being of the Union. Once a prolific, stable, and productive citizenry was established, it would no longer be necessary to produce the needed “manpower” in wombtanks.

Psychological development was not a function of nature or nurture but predetermined by “running tape.” The azi had no psychological independence as their psych-sets were established at birth via subliminal learning tapes which diminished their free will. They were psychologically programmed Union soldiers who displayed all the characteristics of a human being, but the powerful mental conditioning rendered them incapable of acting upon their capabilities. It is interesting to note that the Azi could be incubated with special talents, skills, values, and attributes but could not use or benefit from them personally because they were developed strictly for exploitation at Reseune.

In Cherryh’s *Cyteen*, the laboratory complex of Reseune is solely licensed to birth azi and serves as the hub of the action as well as impetus for the biotechnological, economic, and political intrigue which ensues. The primary plot revolves around the murder of the leader Ari; however, the production of the azi, the constitution of their nature, and their form and function in society is central to the plot. *Cyteen* is an exploration into how science can shape social practices which impact humanity and questions what it means to be human. Were the brilliant minds at the enormous Reseune complex exercising sufficient self-control in their endeavors? In addition to cloning, the Union’s technological advances included rejuvenation therapies which delayed aging for decades and advanced educational techniques. In *Cyteen*, Ari is 130 years old. Although the notion of living indefinitely in perfect health and never aging is attractive, it is necessary to consider the impact on society. How beneficial are life-extending technologies? What would it cost? Would everybody have access to the Fountain of Youth? Most likely, initially, it would be very expensive with only the wealthiest able to afford it creating the potential for further disparity between the “haves” and the “have-nots.” Is it really such a grand idea to have over a century of generations co-existing, vying for jobs and resources?

Through the development of subliminal learning tapes, Resuene's scientists were able to program the brain prior to birth as one would program a computer, implanting it with any type of intelligence, aptitude, value set or deficiency they deemed necessary. Science fiction movies such as *Inception* and *The Matrix* have also dramatized the manipulation of human learning and the creation of a memory bank. As human beings, we learn new information and skills through exposure, drill, and repeated practice. Imagine a world in which neuro-engineers have developed technologies through which they can infinitely expand a person's knowledge or perfect a physical skill, such as the swinging of a bat for a homerun every time. Imagine the "superhuman" and the deleterious effects of such technologies on society. Inevitably, there are those who would not have access to these innovations; possibly, certain groups of people would be denied access. The future is here in the form of neuroprosthetics, or brain implants, which already commonly used in such applications such as cochlear and retinal implants. As technology and our understanding of the brain continue to advance, more applications for brain implants will be discovered that are beyond the scope of current comprehension. Ethical and moral considerations must remain part of the discourse as biotechnologies continue to colonize the human body. It requires a thorough contemplation of the imminent shift in society and its values that will occur as these devices proliferate. The future is inescapable and human beings must be prepared to negotiate new frontiers without abandoning traditional ideologies of what is just and equitable for all embodiments.

Although the company was figure prominently in the novel, the narrative begs certain ethical and moral questions regarding human intelligence and learning, identity, and the uniqueness of the individual. In my opinion, *Cyteen*'s most salient question is, "How is human identity shaped?" Cherryh's creation of the azi population represents the anxieties, fears, and even hopes

of the human community as our lives become increasingly intertwined with advancements in science and biotechnologies. The significance of the *azi* lies in its teratology; the unleashing of the hideous embodiment of unbridled scientific inquiry and experimentation forever changing the trajectory of what is considered normatively human. Representations of the “other” give rise to legitimate discourse on how human nature is formed. Manipulation of the human genome and reproductive technologies challenge our anthropological understandings of self and society which contextualize our institutions and that which is considered ethical and moral. As biologically-determined members of the human race, we are autonomous beings capable of self-direction. Our natality legally ensures us the right of personhood at birth. Biotechnologies are changing our fundamental identity as the line is blurring between what nature has bequeathed to us and what is given to us via organic engineering. These innovations most certainly have clinically and therapeutically benefitted mankind in terms of disease, longevity, and quality of life. However, at what point does the degree of biotechnological intervention constitute “non-human” and how will it impact our ethical and moral behavior regarding human rights and dignity. If our society succumbs to the unbridled use of technology and biological differentiation, will we become a stratified society or an all-inclusive community with all members, regardless of embodiment, worthy of the same rights and privileges? Habermas (2003) in *The Future of Human Nature* states, “Would not the first human being to determine, *at his own discretion*, the natural essence of another human being at the same time destroy the equal freedoms that exist among persons of equal birth in order to ensure their difference?” (p. 115). While the possibilities for genetic engineering are exciting, it is society’s responsibility to be knowledgeable of the consequences of such technologies. Biotechnological interventions run amuck possess the potential to undermine social justice and democracy. In this chapter, I will

explore the dangers of genetic manipulation in the development and negotiation of personal identity with self, society, as well as institutions.

Thus far, discussion has focused on the apprehensions that clones would be considered subhuman and members of a perpetual slave class to be exploited and treated inhumanely. Also, another fear of cloning is the creation of a being void of a soul. Another component in the discussion of cloning and the development of human identity is whether or not “uniqueness” can be recreated. Although there are commonalities in our experiences, perspectives, consciousness, and behavior, it is a universally accepted belief that we possess, as members of the human race, a unique individuality. In *The Ethics of Human Cloning* (1998), Kass and Wilson posit that genotype is not synonymous with identity and individuality and state, “Genetic distinctiveness not only symbolizes the uniqueness of each human life and the independence of its parents that each human child rightfully attains. It can also be an important support for living a worthy and dignified life” (p. 35). The recognition of one’s self in another is to recognize the stable and determinate markers of inclusion into humanity. A genetically engineered being is usually viewed as a replicant, an automaton, and bereft of any unique traits or characteristics. The development of a unique identity is a complex phenomenon which doesn’t occur in a vacuum. Personal identities are formed through social and personal ingredients such as experiences and memory, familial relationships, social factors, and inherent traits and skills of the individual, to name a few. How significant are genes in the formation of individuality? Does genetic engineering infringe upon the cloned person’s ability to forge a unique identity? The President's Council on Bioethics (PCBE), a council appointed by President George W. Bush, argues that cloning would inherently interfere with the individuality of the cloned person and therefore undermine the formation of his or her personal identity. The primary objective of this discourse

on cloning is an exploration of the basic moral and ethical considerations of the consequences of bioengineering. As our powers for genetic intervention continue to develop, we are charged with regulating what is acceptable and maintaining public policies which ensure a just and humane society for all.

Safety Concerns of Cloning-To-Produce Children

In *The Politics and Ethics of Identity: In Search of Ourselves* (2012), Richard Ned Lebow suggests that human beings tend to exaggerate their differences with others, or stereotype, by attributing them with characteristics that would make them less than human. Nick Haslam's *Dehumanization, An Integrative Review* (2006) posits that dehumanization, or the denial of "humanness," specifically those characteristics that constitute one as a unique individual, may be accomplished in two ways. They may be deemed less intelligent, childlike and underdeveloped, exempt of culture and refinement, a sense of ethics and morality, and nationality. The second form is the denial of human nature; they may be considered as lacking appropriate complexity of emotions and personality which justifies objectification and mechanization effectively reducing the person or group to automaton. The animalistic dehumanization of the azi in *Cyteen* served to limit their rights and deny equality of treatment before the law; and therefore, do palpable harm to them.

The cloned azi were an economic and political necessity whose personalities were bestowed upon them via "tape from the cradle." This form of subliminal control incubated the azi with ostensibly human values, skills, and other attributes. Psychological programming was not exclusively for the azi; many of the other residents voluntarily "took tape" in order to acquire new skills. However, the azi are instilled with traits such as loyalty and predictability to keep

them in tow; thereby, diminishing their free will. Despite the fact that they were a vital part of Union, they were considered permanent minors with no agency until the termination of their contract. Whether emancipation or termination, the fate of the azi was a matter of the state and their supervisor.

Cloning is the asexual reproduction of individuals which does not require any personal involvement on the part of the donors. Sophia M. Kolehmainen (2017) argues that cloning is not just another reproductive technology, but a dangerous and radical departure from biological and social practices that have evolved over millions of years which threaten our evolutionary trajectory, traditional family kinships, and the natural embodiment of what is considered human (p. 65). While mass media tends to focus on the fanciful, speculative, grotesque, and sometimes comical aspects of cloning, the dialogue concerning the day-to-day reality of being a cloned child goes neglected. Kass and Wilson (1998) question if the possible benefits of human cloning for infertile couples as an alternative to adoption are worth the risk of harming the cloned child. A major criticism of human cloning is harm to the offspring which takes a variety of forms. Burley and Harris (1999) posit three objections to cloning children. A cloned child could be subject to the following types of harm:

1. Clones will be harmed by the prejudicial attitudes people may have toward them.
2. Clones will be harmed by the expectations and demands from parents or genotype donors.
3. Clones will be harmed by awareness of their origins.

For the purposes of this chapter, I will only address the first and third objections; the second objection will be addressed later.

Fueled by images created in film and books, cloning is an emotionally charged issue viewed with visceral disgust. Authors and writers carefully craft diabolical scientists who are clearly up to no good casting their cloned characters as either victims or perpetrators of vile injustices. Therefore, cloning is popularly considered malevolent, suspect, and potentially amoral. In contemporary society, the mere mention of “cloning” incites fear of the potential abuses and mistakes that tampering with flesh is heir to. Kass (2001) states that, “In some crucial cases, however, repugnance is the emotional expression of deep wisdom, beyond reason’s power to completely articulate it” (para.7). As members of the human race, we intuit its “profound defilement” of our humanity and rebuff it as a “radical form of child abuse.”

Cloning has the potential to create a “subgroup” or “other” which may be viewed as something unnatural and to be feared. Children created from cloning may be subject to prejudices and maltreatment that a naturally-born child would not. I would like to draw upon my own personal experience of “white privilege” to illustrate the type of prejudicial treatment a cloned child might be subjected to. As a Southern white female in her mid-fifties, I remember the segregation of white and blacks. My elementary school was not integrated until I was in the second grade, at which point my parents moved me to a private school. It is safe to say middle-class whites are indoctrinated to seek out heterosexual people of the same social station, race, and education to socialize with and form families. There is an inherent assumption that one’s life will be better and the offspring will be afforded more opportunities based given the decisions that were made based upon societal expectations, skin color, and cultural background, to be brutally honest. In her seminal article, “White privilege, Unpacking the Invisible Knapsack”, Peggy McIntosh (1998) states:

Privilege exists when one group has something of value that is denied to others simply because of the groups they belong to, rather than because of anything they've done or failed to do. Access to privilege doesn't determine one's outcomes, but it is definitely an asset that makes it more likely that whatever talent, ability, and aspirations a person with privilege has will result in something positive for them. (p. 3)

In this racist society which we live, it is also safe to assume that to choose from another socioeconomic group or race would be tantamount to living a "lesser" life, both socially and economically. Also, the offspring resulting from such a union would be subject to the prejudices of an ignorant dominant class. We cannot make predictions about what treatment a cloned child might experience as result of their natality with any specificity or accuracy as this reproductive technology as it has not yet come to pass. However, I postulate that there is a potential for a cloned child to be "othered" based upon our racist history; a new classification of a modified, semi-human to be labeled and potentially harmed. Cloning may be the gateway to creating a permanent underclass to be commodified and subjugated because an uninformed citizenry deems them less than human.

At this point in time, we can only speculate about the prejudicial treatment and discrimination that a cloned child might be subjected to at the hands of a bigoted society. However, similar fears surrounded the introduction of IVF (in vitro fertilization). While the procedure was deemed desirable for a number of reasons, it was still considered morally and ethically controversial. Proponents argued that it threw a lifeline to daunted couples who were unable to conceive naturally. Also, scientists envisioned a future bereft of congenital birth defects with the knowledge obtained from IVF. By observing fertilization and prenatal development outside of

the womb, they hoped to advance the health and welfare of expectant mothers and their offspring.

Test tube opponents argued that it was an unnatural process which represented an abhorrent departure from the corporeal expression of love between a man and a woman. Children created through technology meant that God no longer exercised dominion over procreation. Most Christians believe that one's soul, consisting of consciousness and free will, is a divine bequeathment from God. Therefore, such babies could not be assigned a soul and possibly relegated to live in the margins of society as an "other." The possession of a soul is synonymous with personhood, which endows one with the rights and privileges associated with being a human. Although there is no way to say for sure when a soul is acquired by a child, there are varying arguments for the times at which this may occur. Basically, at conception, between conception and birth, at birth, and after birth. Thomas Aquinas believed that the unborn receive their souls at conception. Middle Ages folk believed that the soul entered the child's body at birth; therefore, the child became a human at that point instead of at conception. New Agers believe that a soul is acquired after birth as it awaits to be chosen for reincarnation. Regardless of when possession of a soul occurs, those in opposition to IVF believe that society would vilify and ostracize these children as they would lack the normative markers for inclusion into humanity.

A chief concern regarding "Frankenbabies" was the possibility of babies being born with illnesses and deformities that couldn't have been predicted. Other issues included the assumption that laboratory procreation methods would destroy the nuclear family, traditional social structure, and resulted in a "marginalized other." Their concerns were for naught. Successful birth stories legitimized the process and IVF is now viewed as a desirable vehicle for

distraught couples. The production of these miracle babies ushered in a questionable technology which has since become imbedded in mainstream culture.

Problems Relating to Identity and Uniqueness

Burley and Harris (1999) also state that clones may be harmed and burdened by the awareness of their origins. Furthermore, a child's awareness of their alien natality may result in psychological trauma. Central to this objection is the argument that the cloned person will be denied a sense of identity and uniqueness. Baird (1999) discusses the psychological and social impact of cloning as it relates to identity and uniqueness:

1. In individuals originating from a transfer of an adult nucleus, the knowledge that one is the result of cloning may diminish one's sense of uniqueness.
2. Individuals originating from embryo splitting carried in the same pregnancy, such as twins or triplets, may have problems in defining expectations of themselves and for their future, because they know there is another genetically identical individual.
3. Individuals originating from embryo splitting, where embryos are frozen and implanted at different times or in different women, may have to deal with the knowledge that they have not originated from an undirected combination of two particular genomes. Instead, someone else has determined their genetic constitution.

Cheeryh's *Cyteen* explores the dangers of designing people and societies. Our current understandings of what we consider normatively human will undoubtedly change as we explore and expand into space, create advanced educational techniques, and develop increasingly sophisticated biotechnological interventions. As society continues to explore these burgeoning

innovations and we interface increasingly with artificial intelligence, augmented human beings, and androids, we are becoming increasingly aware of the biological differentiation that exists among us inevitably posing a dilemma for what we constitute as the “self” or our unique, personal identity. Kass (2001) posits that a cloned being would be an identical, yet younger, version of the replicated adult whose entire genetic makeup deliberately designed by scientists and parents. He also states that “genotype is not destiny” and that parents and society would shape this new life in the same ways it does naturally created children. The President’s Council on Bioethics posits that cloning is fundamentally dehumanizing in that it infringes on the unique individuality of the genetically-engineered person and subsequently tampers with the development of her or his personal identity:

Cloning-to-produce-children could create serious problems of identity and individuality...Personal identity is, we would emphasize, a complex and subtle psychological phenomenon, shaped ultimately by many diverse factors. But it does seem reasonably clear that cloning at the very least would present a unique and possibly disabling challenge to the formation of individual identity...our genetic uniqueness is an important source of our sense of who we are and how we regard ourselves. It is an emblem of independence and individuality. It endows us with a sense of life as a never-before-enacted possibility. (pp. 102-103)

The fallacy of this statement is that an individual’s identity is not determined at all by genetics. Genetic determinism assumes that the makeup of our gene pool ultimately determines who we are and what we do, which effectually exempts us from moral and social responsibility. If genes predetermine identity and the potential of an individual, prisons would be empty due to lack of

culpability for behavior. How many times have irate mothers commented to their sons, “You are just like your father!” as if by virtue of paternal parentage, the son possessed specific engendered traits; for example, infidelity and indolence. The existence of a particular trait is a contributing factor performing in concert with the environment and stage of development of a person.

Kolehmainen (1999) states:

The cloning process would never produce an exact copy of the cloned person. Though an individual manufactured by cloning would possess the same genetic sequence as the person whose nucleus was used, other factors also substantially affect the development of an individual. An individual's development may be affected by structural and metabolic influences of the enucleated egg and the differentiated cell, as well as influences during gestation. In addition, non-genetic factors such as nutrition, home environment, education, economic situation, and culture add significantly to the development of personhood. Just as with animals, cloning humans will never produce exact copies. (p.559)

Given the average person's lack of knowledge regarding genetic science, the interplay of the pseudoscience of science fiction and biotechnologies have produced gene-fetishisms which play out the general public's anxieties and fears of the unknown, usually in a highly speculative, fear-mongering, and improbable manner. The full scope and sequence of genetic engineering is not yet apparent. What is apparent is that the sociological ramifications of genetic engineering will undoubtedly challenge traditional notions of identity formation between self, society, and its institutions. The critical questions are, “Will it be markers of inclusion or exclusion?” and “How will genomics impact access to power, equality, and social justice?” While works of fiction take a good amount on literacy license, they do provide an entertaining vehicle to inform our citizenry

about biotechnologies which could potentially threaten the exclusion and marginalization of future populations. Also, it provides the contextual platform which enables the reader/viewer to think critically and formulate questions about what is good and just for society as a whole. As possibilities for the posthuman experience expand, participation in our complex biotechnological future is not a choice, but a certainty which demands contemplation and responsibility.

In *Democracy, Equality, and Justice* (2011), Matravers and Meyer refers to a child's right to an "open" future, replete with autonomy and self-determination. The azi were deprived of this right as their place in society was pre-determined. Furthermore, they state:

Cloning is often considered an unacceptable restriction on the way the identity of a future child is formed and is accordingly considered a violation of this principle of openness, or rather, the natural uncontrolled process of the formation of human life. (p. 174)

Reproductive cloning involves somatic nuclear cell transfer (SNCT). This is a laboratory strategy which creates a viable embryo from a body cell and an egg cell. Ultimately, the embryo is transplanted into the surrogate womb to mature until birth. Dolly the Sheep was created in this way, as well as other animals such as horses, cows, dogs, and cats. However, a human being has yet to be successfully cloned. The scientific community is divided on this issue with many saying that there is no good reason to clone human beings. On the other hand, some scientists support cloning for the good of humanity. They believe the SCNT will accelerate science so prolifically that future generations will have access to life-saving technologies utilizing their own DNA. Therapeutic cloning, a subset of stem cell research, would require the embryos to die after a few days; a fact that many find morally and ethically reprehensible. Critics argue that life

begins at conception and that the creation, manipulation, and destruction of embryos diminishes the dignity of human life.

Erikson (1959) defines identity as the organized conception of self, in which a person can define his or her own values, goals, and beliefs. Morales (2009) furthers this definition by stating, "Identity is also the result of a continuous enriching process in which our entire personality acquires those individual characteristics that differentiate us from others (p. 24).

There are two principles which serve as the guiding light in a democracy. First, all human beings inherently possess equal value; and second, all humans are autonomous beings capable of self-direction. In *Cyteen*, cloning disenfranchised the cloned human from its basic rights and dignity. Today, the quest to be the first to clone a human would require extensive laboratory experimentation on the unborn child, undertaken without consent and without regard for potential abnormalities and disabilities of the child-to-be. Furthermore, the extent of harm which can be done to an unborn child through experimentation is unknown, but it would be unwise to underestimate its potential. As with the azi population that was bred strictly for research purposes, it is a distinct possibility that bitches could be tossed out with the rest of the refuse.

There is deliberate distortion and speculation in science fiction that a genetically engineered human would have a fixed identity with predictable traits and values, which is an untenable position at this time. The notion that cloning would create an exact physical and psychological replica possessing the same sense of identity and psyche is null and void. Genetic determinists believe that genes have the greatest impact on our characteristics and behaviors; some even believe they are solely responsible. But for the sake of argument, consider the azi in *Cyteen* whose identity is "fixed" via tape. An azi's psychset is not built by experiences and social reliances as in a normal human mind, but by subliminal instruction that reaffirms his or her

value-set, talents, and skills. A society that considers cloning as a legitimate procreative mode may tacitly consent to other invasive and questionable technologies as they continue to be developed.

The process of cloning inherently diminishes the ideology of a culture rich in human diversity. If we are to become a society where cloning is an accepted form of procreation, by necessity there is less variety in the gene pool. A corrupt and unjust society might choose to annihilate a certain sector of the population via selective cloning, thereby, diminishing diversity. In *Cyteen*, those who left Earth to colonize other planet stars were from a highly selective gene pool carefully vetted as the brightest and the best. Their task was to colonize and populate new worlds, teaching them the most important information. The azi served a very different, specific function. In an interview, Ari stated:

Azi are the reservoir of every genetic trait we've been able to identify. We have tended to cull the evidently deleterious genes, of course. But there is a downside to small genepools, no matter how carefully selected, there's a downside in lack of resiliency, lack of available responses to the environment. (p. 187)

It is commonly understood that a biologically homogenous species is not good; it is less adaptable to its environment and more susceptible threatening factors. Consider the Amish community who do not embrace contemporary medical practices or other modern conveniences. As a result of generations of inbreeding, their children are dying of a rare genetic disease called Crigler-Najjar syndrome. However, since 1991 Amish parents have adapted and welcomed genetic therapies in their search for potential cures for this terrible disease and have built centers for these children with special needs. The stratification of the Cyteen society, however well-

intended, only served to coerce and exploit this biologically different group in order maintain the status quo. Their identity was preordained by the Specials whose job it was to make sure Union was populated with workers and soldiers. They took special care that these “identity templates” in the form of tape were rife with beneficial skills, values, and talents for the good of Union. The azi presented no opposition to the ruling class as they had no free will or freedom of thought and action. In fact, those azi who excelled at conformity got “reward tape” which was highly pleasurable. It is easy to get excited about the possibility of culling the best genes in order to create the perfect utopian society. It is important to realize that our gene pool could be altered forever impacting future generations. There is reassurance in the notion of the continuity of the human species. The idea that humanity might fundamentally change upon the alter of biotechnology in unpredictable and unrecognizable ways represents our deepest fears and apprehensions. Certain groups may be harmed by genetic manipulation. Genetic biotechnologies will continue to proliferate and experimentation is necessary to develop potential applications. In the grand scheme of things, human beings and science are fallible. Ari Emory simply disposed of research azi gone awry. It is our social and ethical responsibility to consider the consequences, including permanence of results, of reproductive technologies in order to develop a humane approach to the genetically different posthuman.

Views of Human Procreation, Child-rearing, and Familial Relationships

Cloning represents a dangerous egression from other reproductive technologies and will undoubtedly impact social practices that have evolved over millions of years. The potential ethical and social ramifications of this novel’s means of procreation have the potential to produce a paradigm shift in society’s perspectives on child-bearing, parenting, and familial relationships.

In the most desirable of circumstances, a child is the result of a loving union between two parents. It is the fruit of their loins, as well as the product of their wills, to be nurtured and shaped in a manner consistent with generational parental and cultural expectations. Even adoptive parents who raise and love a child with whom it shares no genetic material will develop the sacred emotional bond that exists between biological parents and their children. Adoption of an unwanted child is considered altruistic and highly lauded by society. Can the same be said for children born via cloning? While the consequences of cloning to produce children cannot be articulated with specificity, it can be said that it would be tantamount to a social experiment in familial relationships. A cloned child may be relegated to a hazy position within the family structure and suffer confusion regarding their genetic origins. Cloning-to produce-children represents yet one more potential capability of biotechnological advancement to be considered in our posthuman future. In Chapter 3, I argued that biotechnological modification could potentially result in a stratified society with rights and privileges being afforded to the genetically superior. Also, as what we know as normatively human becomes more fluid, we must ensure a just and democratic society for all. In Chapter 4, I examine the concept of personal identity and its subjectivities of embodiment, as well as the commodification of bio-capital. I argue that as we embrace a plurality of embodiments, we must challenge the subject/object binary which parallels historical injustices of subjugation and objectification.

CHAPTER FOUR

ORGAN TRANSPLANTATION: IDENTITY, EMBODIMENT, AND BIO-CAPITAL

One doesn't have to operate with great malice to do great harm. The absence of empathy and understanding are sufficient.

Charles M. Blow

This chapter examines the concept personal identity with its subjectivities of embodiment. As we move forward, traditional views of embodiment must be expanded to include not only *Homo sapiens*, but other forms of embodiment including genetically engineered hybrids, clones, AI, and even animals. I am not suggesting that we completely abandon that which makes us uniquely human, however, we must grant a wider berth for the genuine consideration and validation of the experiences of the authentic inhuman “Other.” In a posthuman future, it is problematic to passively accept Cartesian mind/body duality, as well as the subject/object binary we currently practice with the nonhuman. Hayles (1999) discusses the significance of embodiment and a new treatment of subjectivity. She states:

my dream is a version of the posthuman that embraces the possibilities of information technologies without being seduced by fantasies of unlimited power and disembodied immortality, that recognizes and celebrates finitude as a condition of human being, and that understands human life is embedded in a material world of great complexity, one on which we depend for our continued survival. (p. 5)

Basically, Hayles in saying that humans cannot be understood as isolated from the technology the sustains us. We are embodied in an extended technological world. This suggests a paradigm

shift away from the traditional classifications and hierarchal structures of human exceptionalism, as well as the anthropocentric belief that intentionality is uniquely human toward one that recognizes the subjectivities and intentionality of the nonhuman.

In a world characterized by rapid technological advancement, there are endless potential hypothetical “what if?” scenarios which will challenge our sense of identity and potentially shift our ethics. What would happen if the human body becomes exploited as a source spare parts and a of site of commerce? What if beings are manufactured or cloned for the sole purpose of serving as a vessel for the highly coveted parts? What if vulnerable populations are targeted for organ extraction for wealthy recipients? What if organs could be bought, sold, and even repossessed? Although speculative science fiction works are largely fantastical, they do provoke critical reflection regarding the type of society we want to have and how we should treat all of its members. Science fiction magnifies these scenarios on a monumental scale to raise awareness of the cultural anxieties of what it means to be human in a highly technologized society.

Contemporary speculative science fiction affords us an imaginary place to experience the narrative and potential intersubjectivity of the “Other,” both human and inhuman. Through the power of imagination, it is possible to examine the real ethical dilemmas of hypothetical situations in the reconceptualization of what it means to be human. The ability to identify with the “Other,” recognize that there are conceivable possibilities for shared intentionality, shared experience, and intersubjectivity engenders empathy in the recognition that the “Other” is an intentional agent as we are.

The development of a critical conscious enables students to recognize and describe and injustice and oppression, as well as the conditions which create and sustain it. Watts, Diemer,

and Voight (2011) contend that oppression is easier to sustain when the marginalized and disenfranchised ignore it, fail to detect it, or tacitly support it. It is crucial to nurture students' critical conscious as they navigate a posthuman future of blurred boundaries between human being, machine, animal, or "Other" in order to challenge the normative subject/object binary which parallels historical injustices of subjugation, objectification, and causing harm on the basis of gender, ethnicity, race, or disability.

Repo Men Summary

My job is simple. Can't pay for your car, the bank takes it back. Can't pay for your house, the bank takes it back. Can't pay for your liver, well, that's where I come in.

Remy

Repo Men is the 2010 futuristic science fiction film in which two highly-skilled, "thug-like" bio-repossession bounty hunters, Remy and Jake, repossess transplanted manufactured organs from people who are unable to meet their contractual repayment obligations. Remy and Jake were two ex-Marines and life-long friends who had served in the war together. Rapidly changing technologies have enhanced the options available to people with organ failure. There is no longer an excruciating waiting time for a viable donor or the problems associated with organ rejection. A private corporation known as The Union exists to provide expensive organs to desperate people, as long as they agree to the outrageous credit terms and its equally outrageous APR. The Union's CEO, Frank Mercer, assures his customers by asserting, "I understand you have concerns -affordability - it's only natural. First of all, let me just reassure you that our credit department will find a plan that fits your lifestyle. And should you fall behind,

there is a three-month grace period.” After three months, the Union will send bio-bounty hunters to rip you open and repossess your transplanted organ.

The movie was based upon the book, *The Repossession Mambo* (2009), by Eric Garcia. Remy and Jake nocturnally troll the city streets in two- to three-hour shifts tracking down artiforg recipients who are in default of their contractual repayment plans or about to be in default. Their repo tool kit includes a GPS-type device which tracks organ recipients by a pinging mechanism. They are also equipped with wireless taser guns which incapacitates their clients long enough for the bio-repo men to perform rudimentary surgery removing the unpaid for artiforg. Before the gruesome and unceremonious organ retrieval ensues, the repo man states, “I am legally bound to ask you if you would like an ambulance on standby in order to take you to hospital, though you will be unable to secure another artiforg from the Credit Union in replacement.” In fact, the book takes its name from the “horizontal writhing and twitching” or “mambo” that the semi-conscious, eviscerated clientele engaged in with their dying breaths.

The Union is a seemingly humanitarian healthcare corporation which manufactures artificial organs, or “artiforgs” for sell and distribution to a desperate and/or dying clientele for an unconscionable amount of money. The cost of a single artiforg could run as high as six digits with exorbitant interest rates soaring upward to nearly 30% for the riskiest borrowers. Most often when, not if, the client is unable to meet his contractual repayment obligations, The Union issues a pink slip, which was tantamount to a death warrant.

One night while on organ retrieval maneuvers, Remy discovers his own humanity. He is shocked and rendered unconscious while using his defibrillators on a client whose heart he is reclaiming. He wakes up in a hospital surrounded by Jake and the CEO of The Union who have

bad news for him. Fearing the worst, he rips open his hospital gown top discovering that his chest has been vertically split. To his horror, he is now the proud owner of a mechanical heart which changes his perspective entirely. Remy became cognizant that an individual with an artiforg had a name, a meaningful life, a home and family, and was a human being.

The plot revolves around Remy's inability to repay The Union for his mechanical heart and how he avoids entrapment and bio-repossession. In order to boost Remy's income to repay The Union for his heart, Jake assists Remy in finding a "nest" of artiforg refugees whose organ repossessions would generate a great deal of income for Remy. Remy finds himself unable to fulfill his obligations as a bio-repossession man gutting people implanted with artiforgs, just as he is. Recently divorced due to his wife's objections to his occupation, he becomes involved with a woman named Beth who is transplanted with multiple artiforgs, some of which she obtained from "vultures" on the black market. Remy and Beth break into The Union headquarters for the purpose of wiping their information out of the data banks to avoid bio-repossession and certain death only to discover that they must scan their own organs themselves first. Remy slices them both open, sliding the organ scanner into their bodies for it to register "artiforg reclaimed." Having taken care of Beth first, he is in the process of scanning his own heart when Jake and Frank break into the mainframe room using grenades. In a strange twist of events, Jake defies Frank's demand to kill Remy and instead kills Frank. Cut to ending. Jake, Remy, and Beth are seen on a tropical beach surrounded by lush vegetation slurping up large, fruity cocktails. Remy is reading his book, *The Repossession Mambo*, which his son had published from a memoir Remy left him when he went into hiding fearing death at the hand of the bio-repossessor. The viewer is shocked when the screen flickers and twitches, turns to static, and then returns to the regularly scheduled programming. The next unexpected scene is that of

Jake saying his goodbyes to Remy who sustained brain damage during the grenade explosion and is now in a coma. Jake has paid off Remy's debts and Remy's brain is now connected to a neural network which will allow him to live for perpetuity in a computer-generated dream state. The final scene is more akin to a slightly comical, used car commercial than it is healthcare guidance. Frank is delivering a sales pitch:

Sweet dreams, buddy. For extensive neurological injuries, I'd have to recommend the M.5 Neural Net. We're running a special on it this month, 18% for the first year, 24% after that. Why should your loved one pass on just because of a little brain damage? That's barbaric. That's just bad science. With the M.5 Neural Net, yesterday's dreams are today's reality. Imagine your loved ones living out the rest of their natural lives in a world where they are always happy, always content, and always taken care of. You owe it to your family. You owe it to yourself. A little fruit for the fruit? Why not? Cheers.

Transplantation and Ontology

Repo Men depicts a society where the human body is commodified, brutalized, and deemed intrinsically without value. It is a world without any absolute morals, ethical responsibility, and empathy or kindness for the disenfranchised. The Union functions as a self-serving corporation that finds a way to justify and legitimize saving a life, in order to kill it, so that The Union is able to endure. We are entering new global relationships with the proliferation of tissues. For the first time, supply is succeeding demand. This excess of tissues combined with emerging biotechnologies are ushering in a paradigm shift with regard to human embodiment and identity, as well as social order. The management of cells and tissues requires careful scrutiny as there are many technical-scientific, ethical, and legal ramifications.

In *Rotten Trade: Millennial capitalism, human values, and global justice in organ trafficking*, Nancy Scheper-Hughes (2003) discusses the new relationships that are emerging between capital and labor, bodies and the state, belonging and extra-territoriality, and between medical and biotechnological inclusions and exclusions. She states:

What the Comoroffs (2001) refer to as millennial or “second coming” capitalism has facilitated a rapid dissemination to virtually all corners of the world of advanced medical procedures and biotechnologies alongside strange markets and “occult economies”. Together, these have incited new tastes and desires for the skin, bone, blood, organs, tissue and reproductive and genetic material of others. Nowhere are these processes more transparent than in the field of organ transplant, which now takes place in a transnational space with both donors and recipients following new paths of capital and medical technology in the global economy. (p. 2)

The transplantation and transfer of organs represents another avenue of discourse regarding the impact of rapid technological progress on the social and cultural milieu of the late 20th century. The earliest recorded attempts began in the early 1800s with the first successful human-to-human corneal transplant occurring in 1905. The first successful kidney transplant was performed in 1954. In 1967, the first human heart was transplanted from a 25-year old who had been killed in a car accident into a 55-year old man. Even though he died, the number of heart transplantations skyrocketed the next year. In 2001, for the first time, the total of living organ donors for the year (6,528) exceeded the number of deceased organ donors (6,081). According to national data provided by the government website, Organ Procurement and Transplantation

Network, 125,387 people are currently on a waitlist for an organ transplant. The most common organs to be transplanted are the kidneys, liver, and heart.

Transplantation biotechnologies call into questioning the ontological purity of what is deemed normatively human and evoke the horrors associated with monstrosity. In 1818, Mary Shelly published the terrifying tale of *Frankenstein* in which a diabolical doctor erroneously builds a repugnant, murdering monster. The novel foreshadowed the technological advances of the Industrial Revolution and Victorian concerns regarding science and nature. Because of his fiendishness and deviation from the normative human community, the monster was demarcated as unknown, unacceptable, and banished to the outer realm of existence...otherness. Graham (2002) states, "By virtue of his liminal status, Frankenstein refracts and shows forth the hopes, fears, and anxieties surrounding humanity's engagement with tools and technologies" (p. 61). It remains an iconic piece of science fiction still relevant in popular culture today. The idea that a creature could be formed from the residual parts of the recently dead was a fantastical, macabre story which exceeded the limits of known science. Given the burgeoning technological advancement of medical science, the lore of science fiction is rapidly becoming a potential clinical reality. Full face transplants have been successfully performed. In 1970, an American neurosurgeon Robert White performed a head transplant between Macaque monkeys. The monkey lived for eight days inviting speculation that such a procedure might eventually be possible with humans. In 2017, an Italian doctor announced that he would perform the world's first human head transplant, which is technically a body transplant. The event, to be hosted in China, will involve 150 specialists and nurses, require a 36-hour operation, and cost up to 100 million dollars. Dr. Sergio Canavero stated that the surgery would take place in China due to the unwillingness of the United States or European countries to host this groundbreaking event due

to ethical and regulatory considerations. The larger question is whether this type of surgery should happen at all. Medical naysayers cite the lack of medical data to support this type of transplantation; furthermore, they hypothesize that even if a head transplant was successful, the consequences could be more horrific than humanly imaginable. The new neural connections coupled with the foreign chemicals introduced to the head and brain could potentially unleash a level of insanity previously unknown. A person who is marginalized due to a socially abhorrent anatomy which conflicts with their socially constructed identity or group membership may feel that their humanity has been denied and that they are devalued and flawed in the eyes of the mainstream culture. Also, there is a social stigma attached to the person with a mental illness. While people with physical ailments are spoken about openly, those with mental disorders are spoken about in hushed voices. It conjures up frightening notions of monstrosity, insanity and incarceration into insane asylums. Many people associate mental illness with violent, unpredictable, bizarre, and freakish behaviors. As a result, they are fearful and reject these individuals.

Personal Identity and Organ Transplantation

As medical biotechnologies continue to instrumentalize and technologize the body, the physical markers for inclusion to humanity will become more fluid and labile. Socially accepted paradigms regarding the cultural significance of our bodies will be challenged. Our most fundamental understanding of human nature will be confounded as the lines blur between human and machine. The new biocitizen of the late twentieth century will call into question the boundaries of what we consider normatively human. Our traditional concept of humanity assumes that we share certain commonalities, or a “we-ness,” which include identity-forming

beliefs that establish us as members of the human race. Regardless of the racial, genetic, and gender variation within the species, there is a distinct and significant human cultural consciousness of inclusivity to which we are all entitled. These largely shared, enduring beliefs and ideas are reflected in our institutions and social practices and, are culturally transmitted from generation to generation. Biology is also marker of our inclusion as we possess heritable traits that have ensured our survival and the perpetuation of the species. These notions regarding the fundamentals of human identity will be reconstructed displacing natural selection with technological selection of the species as we embrace a pluralism of embodiment. In his book, *Bodies in Technologies* (2002), the phenomenologist Don Ihde posits the following, “We are our bodies – but in that very basic notion one also discovers that our bodies have an amazing plasticity and polymorphism that is often brought out precisely in our relations with technologies. We are bodies in technologies” (p. 137).

In *Technology and the Lifeworld: From Garden to Earth* (1990), Ihde differentiates between three types of human-technology relations and discusses that although non-neutral human-technological relations manifests itself differently across locales and time periods stating, “human activity from immemorial time and across the diversity of cultures has always been technologically embodied” (p. 20). Embodiment relations is the practice of enhancing our bodies’ sensory and perceptual awareness through the use of technological artifacts which are not normally spatially situated in the world. Humans engage in a symbiotic relationship with these artifacts which are not normally perceived and acted upon in our environments but function as vehicle by which to engage in the world, or to perceive and act upon one’s environment. For example, I wear glasses because I am not able to read or write without wearing them. Other examples of this type of technological device would hearing aids, telescopes, microscopes, and

such items. Secondly, he refers to hermeneutic relations which utilize our linguistic and interpretive skills to access information that is otherwise not available or understood. For example, our school policy is that if the temperature is below 38 degrees, factoring in wind chill, we do not go out for recess. In the absence of a thermometer, decision-making is problematic because that specific information is unobtainable. Lastly, he speaks of alterity relations where we enter into practices with technology that demonstrate the property of “otherness.” He uses robotic-human interaction such as getting money from an ATM as an example. My theoretical point of departure is that from a phenomenological perspective, an encounter unique to transplantation is the encounter with and incorporation of otherness within is the very condition of every embodied self. Svenaeus (2015) asserts that our embodiment is essential for our attuned and understanding being-in-the-world. But he also points out that as much as our existence belongs to the world, it necessarily belongs to our bodies. The biological processes of the body are not only essential for our being-in-the-world; they are also beyond the scope of our control. As a consequence, “the body is alien, yet, at the same time, myself.” The boundaries of the normative body are challenged with the recipient’s self-identity. Our bodies are something we peacefully coexist with until it falls ill and becomes a source of pain and discomfort. Instead of being a person engaged in and acting upon within the world, the sick person now is now embodied by their body as much as they embody it. Gunnarson (2016) states:

One can thus infer that the alienation process that Svenaeus has in mind is not one in which the body actually becomes increasingly alien, but rather one in which the person embodying the body experiences it as increasingly alien. One can also infer that this heightened awareness of the alien nature of the body is paralleled by a process of enhanced awareness of the body as an object. In “lived, bodily

discomfort” the body turns up as something that hurts and prevents me from doing what I want to do. Falling ill thus entails experiencing a mutual process of bodily alienation and objectification. (p. 88)

Katherine Hayles (1999) argues against essentialism in the context of embodiment and that there are many and varied embodied experiences, none of which are more essential than the others.

Body Ownership

Organ transplantation is a medical phenomenon that summons the ontological questions regarding the body and the self. In other words, “Am I a body or do I own a body? If I own a body, which body is mine? What grounds personal identity...memory or the body?” The harvesting, storage, and distribution of tissues necessarily evoke discussion of ethical issues regarding embodiment, personhood, and corporeal identity. Ethical issues emerge as a result of the oppositional views regarding bodily integrity and the inclusivity of human kind. On one hand, we believe in upholding the dignity of the human body. We participate in regular physical examinations with internists, gynecologists, and dermatologists. Also, we don’t hesitate to seek emergency care when necessary. There is a sense of the Christian inviolability of the sacred human body with the concomitant understanding that we must nurture and care for it. We do not harm or devalue ours or anyone else’s bodies as it can be deemed criminal by society, as well as sinful by the religious community. Blood symbolizes the oneness of the human species and our humanity. Kinship is often expressed as “you are bone of my bone and flesh of my flesh.” In the aftermath of the terrorist’s attacks on the World Trade Center blood was desperately needed. Hospitals were stretched beyond capacity with the wounded and dying. Americans responded to the national emergency coming out by the thousands to donate blood, many of whom were first-

time donors, to provide the gift of life to their fellow man in need. Waldby and Mitchell (2007) state, "In the United States gift and commodity systems for some human tissues exist side by side-for example in reproductive material, which can be both donated and sold-while others, for example whole organs, are circulated strictly as gifts" (pp. 8-9). We are socialized to be interdependent, community-oriented, and obligated to bear our fellow man's burdens giving them things that the body needs to flourish. This is our charge in life regardless of infinite diversity.

An examination of identity issues is important in relation to organ transplantation and donation. Don Ihde (2002) refers to bodies one and two as twinned bodies within a phenomenological context and discusses issues that pivot around how humans experience embodiment. He states, "Body one is the perceiving, active, oriented being-a-body that is a constant of all our experiencings" (p.69). Embodiment is sensory, emotive and is characterized by actively being in a world. Body two is the cultural or socially constructed body. This notion posits that perception has culturally informed meaning. Swindell (2007) states that there is a psychological account of personal identity and a lived-body account of personal identity. It is a question of what features and traits characterize us most consistently on a daily basis. He states, "The psychological account of personal identity is that what makes me *me* is my psychological make-up or my "mind" - that is, I am essentially my memories, beliefs, and desires, and so on" (p.2). When psychological life comes to a halt, personal identity ceases to exist. On the other hand, the lived-body account of personal identity which was developed by phenomenologist Maurice Merleau-Ponty (2002) touts that the personal identity of a conscious being is the integration of mind and body; in fact, the body is a central part of identity. This is significant because the subjective experiences of organ recipients report that they experience embodiment in

a different way after transplantation. They report sensations of not only having a part once belonging to another person inside them, but also the alien feeling of having an actual part of somebody in them.

What if I am asked, “What is your identity? Who are you?” My most immediate thought would be that I am a thinking person capable of self-direction, and therein lies my identity. The framework which composes my psychological self are basically my beliefs, memories, intellect, spirit, and soul. Also, I am a member of a certain age-group, socioeconomic status, college-educated, and a member of a professional community. I have certain interests, hobbies, and political preferences. Also, I have certain physical attributes such as blonde hair and green eyes. I suffer from asthma and other pulmonary issues. Upon reflection, my reconsidered response would be that I am the sum total of all of my parts...all of them. I don't just have a body, like I have a car or a dog. I am a body made up of many parts which are as constitutive of who I am as the color of my eyes or my choice for the President of the United States. The medical community generally adopts the dualistic Cartesian view of embodiment separating the body from its intangible elements. However, an alternative holistic embodiment point of view emphasizes that there is an intimate relationship between the self and that the body is constitutive of the self. In fact, the living body is the concrete representation of the self or of human identity. Pioneered by phenomenologist Maurice Merleau-Ponty (2002), the lived-body explanation of personal identity counters the Cartesian mind/body dualism in favor of the conscious integration of body and mind. On the basis Ponty's notion, the human body is in no way objectified but is the core of our personal identity. Therefore, to lose or give away a part of it is highly personal, subjective, and detrimental to our sense of self. In addition, organ recipients report transformative feelings regarding their ways of knowing and being in the world; in other words,

they experience embodiment differently than before. It has been well-documented that despite much improved health post-transplant that many patients suffer from emotional confusion, including psychological distress and feelings of being reborn, associated with their sense of “otherness” as a result of the illness. Jackson (2005) states:

Although organ transplants are typically spoken of as a “gift,” the organ as a gift is not grounded in an immediate social relationship between recipient and donor. As such the gift is asocial and resembles as alienated object, a commodity. This otherness of the donated organ creates feelings of deep ambivalence, disorientation, and anxiety in recipients. (p. 134)

This sense of alienation with the self reflects not only the struggle to internalize a foreign vital organ, but the realization that the organ was donated from an unknown person with which the recipient has no sense of and construes as “other.” Many recipients are concerned about the race, gender, ethnicity, socioeconomic status, criminal record, as well as other physical and intangible characteristics of the donor which they feel will engender them likewise. In other words, one might fear becoming a murderer if one receives a heart from a murderer who has just died on Death Row. Coincidentally, heart recipients report more intense feelings of transformation than those receiving kidneys.

Biological and cultural exchanges have existed for some time. The earliest biological exchanges consisted of animals, plants, and diseases, while cultural exchanges included goods, technology, and ideas. Therefore, the term biological exchange has a dual nature with biological as well as economic meaning. In contemporary society, biological exchanges are commonplace

within the healthcare system and the private sector which bank and distribute various biological material. This includes blood, sperm, ova, cells, and tissues. Thacker (2005) states:

Biological materials literally move from one body to another via a set of techniques and technologies (transfusion, insemination, transplantation). In this sense, they form a kind of network wherein biological material flow between nodes that may be individual bodies or containment systems (“banks”). But such a network is not purely biological, for it is aided by technical, medical, and legal systems that mediate the bodies and the biological materials. (p. 3)

The question of ownership of a body and its parts necessarily involves the legal and ethical dilemma of property and consent. The issue of ownership of the body is a hot topic in an age of tissue economies and generated much debate and scholarship. The philosopher John Locke believed that “every man has a property in his own person.” In a similar vein, Stephen Munzer in *The Theory of Property* (1990) stipulated that although people do not own their bodies, they do have limited property rights in them. Are we just a body or do we own our bodies? Consider this. I have a cousin who spent years on dialysis before receiving a kidney transplant. She was transferred to Tampa Bay General Hospital immediately via a plane provided by a private benefactor upon notification that a viable kidney was available due to a car wreck which claimed the donor’s life. The operation was a success but still required a lengthy hospital stay as well as several months of living in nearby housing so that she could be closely monitored. She is now the proud recipient of a new kidney via deceased donor. She is now reaping the benefits from the incorporation of a fully functioning kidney. She has a new lease on life and no longer has to undergo grueling dialysis or the pain associated with kidney failure. Does she now actually own

this kidney that was once a vital organ encased in the donor's body? Now that it is part of her body, is it really part of her? To the extent that it has restored and nourished her life forces by efficiently cleaning and detoxifying the blood that courses through her body; yes, it belongs to her because it has become a part of who she is. She is no longer a sick and debilitated person, incapable of living a normal life. Also, it has been commonly accepted that once separation occurs between the donor and the biological material, the recipient assumes the rights of ownership. However, a recipient's body does not necessarily recognize the alien biological material as part of the body and signals the immune system mount an attack on this foreign matter which requires a variety of medications, including immunosuppression drugs, to counter attack. What I am suggesting is that a person who has undergone a transplant operation is bound to experience embodiment differently. The statement "I am my body" (Merleau-Ponty, 2002) becomes problematic when the body is invaded by an alien object which serves to sustain and nourish life but, simultaneously fosters a sense of otherness.

How do we protect the rights of patients while encouraging scientific and medical advancement for the greater good of all humanity? Are tissues our property in the same sense that our homes, cars, and pets are our property? One night recently, I forgot to close my garage door. Unfortunately, my neighborhood had a series of thefts on that particular night. I don't leave things of value in my car nor do I own expensive equipment or tools. The only items of value that they could walk off with were an electric chainsaw and an edger which collectively cost around one hundred dollars. A neighbor was able to get some footage of the car and the two young men who were pillaging the garages which resulted in a swift arrest. My ownership of these items was never questioned and my rights were protected. Tissue ownership rights are not clear. In the United States, we have a right to bodily integrity which emphasizes the inviolability

of the human body, as well as the autonomy and self-direction that we exercise over our bodies. In short, we have a fundamental right to privacy, the right to exercise dominion over our own bodies, and to make medical decisions autonomously. The artiforg recipients in *Repo Men* forfeited the right to dominion over their bodies upon default of contractual obligations. Certain religious groups, as well as the Hmongs, choose not to partake of modern medicine. It is a right protected by law. We have the right to procreate in any manner we choose and have as many children as we desire. While our society values the individual's rights regarding their own body, ownership rights of body tissues have not been clearly established. The question of ownership becomes ambiguous once the donated tissues leave the body to be transplanted, banked, or to become part of medical research.

Historically, researchers, companies, and government agencies have assumed that they had carte blanche to “collect, store, study, transfer, or dispose of tissue specimens and the associated patient data,” such as patented gene lines or means of genetic testing (Hakimian and Korn, 2004). However, it has only been as recently as the 15th century that researchers at medical institutions were able to dissect and study the human cadaver and its parts without fear of legal ramifications. In *An Ethical Framework for Biological Samples Policy* prepared for the National Bioethics Advisory Commission (NBAC), Allen Buchanan stated:

The retrieval and use of human biological materials for diagnostic, therapeutic, research, and educational purposes represents a further development in the scientific study of the human body as a source of important medical information, but these same developments raise a number of ethical issues for investigators, subjects, their families, and society. (p. 90)

Walby and Mitchell (2007) ponder the consequences of new technologies challenging the boundaries of the human body and question what it means when the human body is able to be fragmented and commodified. Rabinow (1999) also questions what it means when the human body can be disaggregated into fragments that are derived from a particular person but are no longer constitutive of human identity (p. 95). The giving of tissue, which was once a declaration of the inclusivity of humanity and the bestowment of a precious gift on our fellow man, is reduced to an impersonal transaction capable of producing injustice and exploitation. If an individual's body is owned and deemed as property, are they then allowed to sell their organs, cells, and DNA? Will researchers, governmental agencies and for-profit private corporations be authorized to buy and bank biomaterials? Are these biomaterials actual human parts or are they bioinformation?

It is a widespread opinion that not all objects and services are subject to the workings of a free market economy. Certain exemptions are necessary to ensure that important social institutions are protected. For example, our judicial and military systems exist for the good of all and are exempt from a free market economy. It is a very disturbing thought that these institutions could be subject to market forces. They are considered market inalienable in that they can be given away but not exchanged. Rapid biotechnological advancement has complicated the question of to what extent is biological material inalienable. Although most would agree that tissue excision for altruistic purposes is an honorable and noble cause, there is still an unease and reluctance regarding the collection and transfer of biological materials. Anybody who has seen the warm, witty, and utterly heartbreaking Chick Flick *Steel Magnolias* (1989) can attest to the gut-wrenching angst and the fountain of tears they experienced as Shelby, who had diabetes, decides to bring a new life into the world against her doctor's wishes which necessitates a kidney

transplant. The viewer is filled with a very satisfying warm glow when they learn that Shelby's mother will go under the knife to supply her daughter with the gift of continued life. In fact, I believe any parent would do this for their child if necessary and experience no misgivings whatsoever. The viewer is spared the long, grueling transplantation and the unattractive road to recovery. In fact, the subsequent scene is a joyful fourth of July family picnic with mother and daughter in top-notch health. However, Shelby does die due to kidney failure while preparing dinner for her family prior to going trick-or-treating. *Steel Magnolias* humanized illness and organ transplantation by revealing a character who remained undaunted and decidedly normal in the face of potentially fatal consequences. Therefore, the excision of human tissue from one person and the transplantation into another is morally and ethically justified.

As human beings, we feel a sense of attachment to our bodies. The traditional understanding of bodily integrity not only consists of those inner concealed corporeal aspects of the inviolable body but has been extended to include maintenance procedures of self-care and personal hygiene. I contend that we have a unique, personal relationship with our bodies. Ladies ritualistically moisturize their skin after taking long, warm baths while some men "manscape." There are women who will not miss their bi-weekly mani-pedi at their chosen salon or neglect touching up their hair color. Such activities are not necessarily indicative of vanity, but of a relationship with their physical being. New and differing ideals of embodiment are emerging. Tattoos have become a significant part of individual identity. It is an important part of who they are, an image that is consistent with their sense of self, and worthy of attention. The same relationship exists with our inner selves, the part not visible to the naked eye. In a highly connected, chaotic world, we find ways to nourish our spirituality, minds, and bodies through religion, meditative practices, workouts, and such. Because we aspire to live long, healthy lives,

we recognize the importance of regular exams to assess our overall health. Even though we cannot see or feel our vital organs, we know that they are ours and part of what constitutes us. If the paradigm of embodiment shifts from the body as a site of cultural meaning to biological object, there is the potential for it to become an alienated medicalized, instrumentalized object subject to commodification.

At the very heart of several contentious court cases are the following issues: Who gets to determine the fate of specimens? Who “owns” the right to the human tissue specimens? According to Allen, Powers, Gronowski, and Gronowski (2010), researcher specimens are obtained from the following four sources: (a) tissues collected prospectively for a research project; (b) excess tissue from samples taken specifically for clinical purposes, such as diagnosis or treatment, which are subsequently recognized as valuable for research; (c) cadaveric tissues; and (d) tissues with reproductive or “human” potential, including egg, sperm, zygotes, embryos, and fetal tissues, which are often collected for clinical purposes, as in (a) (p. 1675). A thorough discussion of case law of ownership interests regarding specimen excision is beyond the scope of this dissertation. However, the question of to whom ownership rights in human genetic material (HGM) should be afforded trumps economic considerations for my argument. The primary emphasis of DNA property rights are situated on the broader, moral implications of the potential harms to the human being when using HGM which can be sourced back to the donor. Jefferson (2015) addresses sociocultural diversity and economic globalization stating:

The areas of debate – exclusion v. access; private v. public; altruism v. property; individual v. collective – are encapsulated in the various proposed models for ownership of human genetic material. However, each model assigns value

differentially, and therefore the selection of one over the others has vast impact over the distribution of benefits, capital, and ultimately, power, in a global society. (p. 365)

I will engage in a brief review of the most commonly accepted models for HGM. Predicated on the *Moore* case, this traditional model holds that the research participants are donors for genetic materials donors provide with the clear expectation of waiving all property rights. It is primarily economic in nature and less concerned with the collective good. The European model is a hybrid model representing large biobanks constituted of many industrialized nations. Its bifurcated nature allows for individual and collective property rights, with a clear preference for the rights of the research institution and economics over distributive justice. The free market model embraces privatization and an open market in which people would be allowed to sell their HGM to the highest bidder. While the free market model retains many distributive advantages such as increased supply and surging confidence in genetic research, financially incentivizing donors to participate in research poses a host of problems; primarily, the poorest members of society providing HGM to those most able to afford. There is no need for hypothesizing who ends up on the winning side of that arrangement. The open access model is self-explanatory. Its emphasis recognizes the importance of unfettered access to HGM data that is generated by donor contributions. This implies a large-scale sharing of benefits but limits the rights of patented health technologies which may compromise the well-being of those people relying on scientific progress. The United States currently uses the “donation model,” or quasi-rights of individuals which prioritizes the rights of the donor or surrogate decision maker over societal benefits by requiring authorization or explicit consent before harvesting cells and tissues. A report prepared by the UNOS Ethics Committee (1993) states:

Legally, the “donation model” is associated with the idea that individuals have a “quasi-property right” to their bodies, including their organs. That gives them the right of certain kinds of control, without implying an ownership right to buy or sell body parts. The “donation model” requires that a society respects the right of the individual to control the disposition of his or her own organs and tissues. The model is one of gift-giving. An individual, or in some instances, his or her authorized agent or surrogate, can make a gift of the body or parts of the body, even though selling is legally prohibited. (p.4)

According to The United Network for Organ Sharing (UNOS), a national computer system and strict standards are in place to ensure ethical and fair distribution of organs. Organs are matched by blood and tissue typing, organ size, medical urgency, waiting time and geographic location. It has been suggested that in order to increase organ supply that there be changes in the United States’ current organ and transplantation donation model. The shift to a model of deceased organ recovery system that does not require explicit consent or authorization has profound legal implications. The United States is a democratic society deeply entrenched in the cultural ideals of autonomy, individualism, and dignity. Appropriating organs and tissues with the greater common good taking precedence over individual needs and rights jeopardizes the notion of inviolability of the human body and has some potentially dire ethical consequences for society at large.

Approaching the matter from a different perspective, it is natural that we are disgusted by the notion that human beings are natural resources to be mined and excavated. Mahone (2000) states that, “Public support for products that make use of human tissue is strong, but the prospect of

commercialization of human body components evokes, for the most part, responses ranging from unease to horror” (p. 172). There are many justifications that support restricting use of commodifying biological materials.

Liminal Lives

Braun (2010) quotes Susan Squier use of the term “liminal living” in reference to tissue economies because life is taking on characteristics of duality being concurrently human and not human. Braun states, “These liminal lives represent the exchange of ideas about what constitutes life generally, and what constitutes human life, specifically” (p.16). How does biology and information redefine, categorize, and order the genomic population?” Metaphorically, DNA represents information.

The ownership of genes, DNA, and human biological material (tissues) is a controversial issue. Obviously, no person, institution, or research group can assume ownership of a person. There is no “property” in an individual; in fact, that way of thinking parallels colonialism and slavery which is unthinkable in contemporary culture. When a sample has been separated from the human body and procured by a hospital or researcher with the informed consent of the donor, the donee has a vested interest in this genetic material. However, he or she does not own it. Also, a body transplant raises bioethical questions about the identity and rights of the recipient. The idea that the human body is composed of commodified, commutable parts is not only the lore of science fiction horror, it is a reality that poses a host of social, economic, cultural, and physical questions. Inherent in this discussion of two views of biological life, the first being the lived-in body reflecting Maurice Merleau-Ponty’s notion that the personal identity of a conscious being is the integration of mind and body; in fact, the body is a central part of identity. The second view being that the body is a

metaphor for information, a collection of parts to be disaggregated, commodified, and subject to biological exchange. Thacker (2006) states:

In short, molecular biology has continually dealt with the tensions between two views of biological life; one view is that biology is disassociable from biological materiality, from the very “stuff” of life (molecules, cells, tissues, and so on). Another opposite view is biological life is a kind of immaterial pattern or sequence, information that is separate from its material instantiation. These tension between content and form, quality and quantity, sequence and structure revolve around the basic premise that biology is information. However, the key to understanding the complexities of genetics and biotechnology is the realization of the paradox at the core of the concept of biological exchange: that biology is information, and crucially, that information is both material and immaterial. (p. 20)

Therefore, if biology is information, and that information is both material and immaterial, the groundwork is established for biological exchanges to be elevated to the economic, political, and cultural global arena. There are controversial issues surrounding globalization of biological exchanges, in the forms of bioinformatics and genomics, which have potentially unjust and exploitative consequences. Researchers and institutions favor a regulatory scheme of control and governance debating that ownership rights for removed tissue would thwart their ability to store tissue in accordance with their needs and stymie medical innovation. Furthermore, they contend that the market forces of a global commodification would naturally increase the number of available tissues due to financial incentivization. However, the larger concern is the fair and just balance between respect for the dignity of the human being and commodification for the collective good. If transplantation becomes commercialized, there is the potential for the deliberate creation

of a society in which people are either organ donors and organ recipients. Also, if our bodies are classified as a source of human biological material, those charged with the management of banked tissues would have a social and ethical duty to respect the wishes of private citizens who may not want to be tissue donors or have their privacy invaded by a breach of confidentiality. There must be a just and equitable distribution of the burdens and benefits of human biological materials research which would include improved health and therapeutic access as well as a financial benefit. As we foray into the future of population genetics, there is a potential for genetic difference to become the new face of racism for the biotechnological age. It remains to be seen if the prolific and unfettered use of the science of information in the form of genetic databases relegate our bodies to merely biological entities consisting of cells, tissues, molecules, chromosomes, and genes to be pilfered as objects of production in the biotech industry.

The Jigsaw Man Summary

Larry Niven's, *The Jigsaw Man*, was published in 1967 and is a speculative, dystopian short story depicting the fictional, shady enterprise of organlegging in the late-21st century. Society has rejected the ideology of "inhumane" death penalties eschewing beheading, hanging, electric shock, and lethal injection. In the future, alleged "criminals" convicted of capital offenses face compulsory donation of all vital organs for repayment to society for their crimes. High demand for organs has criminalized more and more offenses thereby lowering the bar for execution over extended period of time. Specifically, organlegging combines the terms "organ" and "bootlegging" which literally translates into the piracy and smuggling of organs. Organlegging was the illegal commerce of black market human organs for transplant. The narrative begins with the introduction of Warren Lewis Knowles (Lew) who is imprisoned and only a day away from a speedy trial in which he is sure to be convicted and condemned to death. Lew's jail

mates, an old man and a largish, moronic-looking teenager, are housed in adjacent cells on his left and right. The old man strikes up a conversation with him volunteering that the teenager was, in fact, an organlegger which chilled Lew to the bone. Bernie, the young man, did not do the killing but was the snatcher who prowled the streets at night looking for lone people to abduct. He was the only incarcerated member of a ring of three snatchmen who were caught doing their unsavory deeds. One of the snatchmen was killed attempting to evade capture and the third was being wheeled into the hospital next door to the courthouse. He had been tried, found guilty, and denied appeal. Why happens next is horrific.

The interns lifted him from the table and inserted a mouthpiece so he could breathe when they dropped him into freezing liquid. They lowered him without a splash, and as his body temperature went down they dribbled something else into his veins. About half a pint of it. His temperature dropped toward freezing, his heartbeats were further and further apart. Finally, his heart stopped.

Even more horrifically, some prisoners were still alive at this point and endured a brutal evisceration semi-consciously. Organ harvesting was conducted via a line of machines, called the doctor, on a conveyor belt which skillfully and mechanically made a series of incisions in which the heart was removed. At this point, the organlegger was officially dead. His heart and skin, still very much alive, were immediately stored. The skin remained in one piece.

The doctor (machine) took him apart with exquisite care, like disassembling a flexible, fragile, tremendously jigsaw puzzle. The brain was flashburned and the ashes saved for urn burial; but all the rest of the body, in slabs and small blobs

and parchment-thin layers and lengths of tubing, went into storage in the hospital's organ banks.

Lew is shivering in terror when the old man informs him that they would never take him like that because he was the doctor who Bernie snatched for. He is shocked by the fact that he was imprisoned with professional killers. When he found himself facing incarceration, the old man implanted himself with a bomb which he sets off during his conversation with Lew causing an explosion in the jail cell. Lew was able to escape through a hole, make his way to an office window which he breaks into, to find himself in a hospital where he smashes up the organ tanks destroying large amounts of equipment and harvested organs. Fast-forward to his court proceedings after being recaptured and brought to trial where he is certain he will be convicted of a capital crime, Lew is feeling very satisfied with himself because he believes that he has finally done something worthy of his impending death sentence. He was no longer afraid.

The cause of it all was the organ banks. With good doctors and the sufficient flow of material in the organ banks, any taxpayer could hope to live indefinitely.

What voter would vote against eternal life? The death penalty was his immortality, and he would vote the death penalty for any crime at all.

Lewis Knowles was feeling quite satisfied with the destruction he had wrought and was content to suffer the consequences when the prosecution read the charges of which they were confident he would be convicted...repeated traffic violations.

The state will prove that said Warren Lewis Knowles did, in the space of two years, willfully drive through a total of six traffic lights. During that same time period Warren Knowles exceeded local speed limits no less than ten times, once by

as much a fifteen miles per hour. His record has never been good. We will produce records of his arrest in 2082 on a charge of drunk driving, a charge of which he was acquitted only through...

Lew's lawyer shouted "Objection!" which was followed by a swift "Sustained!" by the judge. After all, an acquittal would mean the court must assume him not guilty. The capital offense does not even appear on the charge sheet. He is not being charged for ransacking the organ storage because the prosecution is confident he will be convicted on the original traffic offenses. What happens when the death of one genuine criminal can save the lives of twenty tax payers? Morals change. Human technology can change human morals.

Organ Commodification

The portrayal of biological change is a trope of horror and suspense for best-selling authors like Michael Crichton, Dean Koontz, and Stephen King whose foray into science fiction established the inroads as well as created a platform for the more complicated conversations regarding biotechnologies. Speculative science fiction spurs contemplative questioning such as: How will prolific advancements in biotechnologies affect our most deeply held values about being human? Will these developments serve the betterment of humankind or will it only magnify the differences that divide us and diminish its most vulnerable members? Increasingly, subgenres of ideological literature and film dealing with technology and medical technology are becoming more appealing to mass audiences. Organ transplants, as presented in *The Jigsaw Man*, are presented as a form of exploitation. Larry Niven's narrative poses several thought-provoking ethical and moral questions to consider as technologies which will make organ transplantation more available proliferate. How great a demand will there be for organs if people

can extend their lives by replacing their organs as they fail? How will the tissues for massive transplantation be procured, banked, and distributed? How will society keep the organ banks fully stocked as consumerism increases? It could be argued that violent criminals could be sacrificed in this way to repay their debt to society, regardless of whether or not they were willing donors. However, murderers are in limited supply still leaving a gap between supply and demand. What lengths will society go to ensure that fresh organs are in plentiful supply? The issue this chapter seeks to explore is: How willing is society to create and exploit the “other” to live longer, healthier lives? Also, in what ways might society attempt to achieve this? Does society truly comprehend that every legal, social, and moral decision and choice that is made regarding transplantation bears consequences on an infinite number of future generations potentially skewing perceptions of right and wrong for perpetuity? It can be said that if one is willing to “buy” an organ, then one is willing to exploit another human being, essentially “othering” them. Therefore, the commercialization of transplant medicine has the potential to create a permanent underclass of organ donors which is subservient to the class of organ receivers. This willingness of society and its institutions to sacrifice fellow human beings in favor of a better life is an egregious assault upon the ideals of a just and democratic society.

Felons as Bio-Capital

Given the increasing scarcity of fresh human organs for transplantation, it has been suggested that organs be procured from convicted felons upon their death. On the surface, this seems like a plausible solution to the issue; however, the troubling data indicates that those already residing in the margins of society will be subject to further persecution. According to a study on the National Registry of Exonerations, race is the critical factor in determining guilt or innocence in a court of law. The data suggests that black people are seven times more likely than white

people to be wrongly convicted of a murder for which they were later exonerated. Researchers Samuel Gross, Maurice Possley, and Klara Stephens (2017) analyzed years of exoneration data, looking at how race may influence whether someone is wrongfully convicted — and later cleared — of a crime they didn't commit. The authors state:

African Americans are only 13% of the American population but a majority of innocent defendants wrongfully convicted of crimes and later exonerated,” the researchers write. “They constitute 47% of the 1,900 exonerations listed in the National Registry of Exonerations (as of October 2016), and the great majority of more than 1,800 additional innocent defendants who were framed and convicted of crimes in 15 large-scale police scandals and later cleared in ‘group exonerations. (p. 1)

For murders, researchers found not just that black people were more likely than white people to be wrongfully convicted, but that innocent black people spent more time in prison before they were exonerated: They also found the following:

- African Americans imprisoned for murder are more likely to be innocent if they were convicted of killing white victims. Only about 15% of murders by African Americans have white victims, but 31% of innocent African-American murder exonerees were convicted of killing white people.
- The convictions that led to murder exonerations with black defendants were 22% more likely to include misconduct by police officers than those with white defendants.
- Exonerations of innocent murder defendants take longer if the defendant is black, 14.2 years on average, than if he is white, 11.2 years. For death row exonerations in the

Registry the average delays and the difference by race are larger, 16 years for black defendants and 12 years for whites.

In an article for the *McKinney Law Review*, Hinkle states:

The federal death penalty represents the ‘most arbitrary and racially discriminatory use of the death penalty in the nation.’ For example, Janet Reno, the Attorney General for the Clinton Administration, approved ten death penalty prosecutions, all of which were against African-Americans, between her appointment in 1993 and 1995. The discriminatory application of the death penalty, coupled with a law allowing organ procurement upon execution, would have tragic effects. African Americans would continue to receive a disproportionate number of death sentences thereby providing organs for the rest of society. (pp. 606-607).

From this standpoint, the procurement of organs from prisoners clearly presents a moral and ethical dilemma. Considering the fact that blacks are disproportionately represented in the inmate population coupled with data that supports blacks are more likely to be sentenced for a murder they did not commit, it appears that harvesting organs from this population would be tantamount to biotechnological slavery of a minority group. Contemplate the chilling implications of targeting groups of people in order to increase the number of death penalties, thus increasing the organ supply for the betterment of the common good. This speculative scenario depicts an immoral and unethical organ procurement system ushering in a new form of racism which would only serve to further alienate and objectify the already disenfranchised. Inmates are basically tethered to a limited space and are coercively docile. When one is convicted of a

heinous crime, despite the knowledge that our judicial system is flawed, society finds it easier to do more harm to them. If our society begins to view death due to organ failure as problem to be solved instead of part of the natural order of things, we must mediate the mechanisms for increasing the number of organs available for transplant via dehumanizing machines and technology with good moral sense with a mind toward protecting the dignity of the embodied person.

Also, the issue of informed consent of convicted felons must be considered. Waldy and Mitchell (2007) refer to informed consent is the mechanism that transforms a gift into a property and is also the central bioethical principle governing a patient's relationship to participation in biomedical research. The primary function of informed consent is to protect the donor from exploitative medical pressure and potential harm in the form of instrumentalization and commodification. Lupton (1997) states that potential participants in biomedical research have the right to be fully informed of the possible dangers and risk associated with medical research and procedures. It is also their right to either give or refuse consent so that the dignity and autonomy of the embodied human being are preserved; dignity and autonomy being key characteristics of a human being. Prisoners represent a highly vulnerable population who have a limited capacity of providing voluntary informed consent due to the possibility of coercion. Vulnerable individuals and groups are more apt to be victims of exploitation which is morally wrong-minded. Due to the restriction of individual freedom in the prison system, it is highly unlikely that a person convicted of murder, regardless of guilt or innocence, would feel empowered to make independent decisions and autonomous informed consent regarding the donation of organs from their own bodies. In a recent report, China has been found guilty of harvesting organs from prisoners without their consent or familial consent. In a study examining

the how successful the transplantation community has been in preventing unethical research, researchers identified 445 studies involving 85,477 transplants in which an incomprehensible 92.5 percent neglected to disclose whether or not organs were obtained from executed prisoners. Also, 99 percent failed to disclose if organ sources gave consent for transplantation. Over 90% of the organs transplanted in China before 2010 were procured from executed prisoners. There is documented evidence that organs were also procured from incompletely executed, still-living prisoners to keep the warm ischemic time of the sourced organs as brief as possible. More than 400 scientific papers resulted from this body of research which violated ethical standards in harvesting countless organs from prisoners. A call has been made for the retraction of this research pending investigation due to the fact that international ethics rules regarding donor consent for organ procurement were violated. This large body of unethical research generates questions regarding the lengths that the global transplantation community will go to for biomedical information and keeping fresh organs in plentiful supply. It is an obscene violation of human rights and medical ethics, not to mention that it is a breach of the doctors' oath to above all do no harm. Two fundamental characteristics of being a human being are autonomy and dignity. The unethical organ harvesting from executed prisoners compromises both. The debate over using executed prisoners exists on several different fronts and not all are germane to my discussion. Most countries which employ the death penalty do so prudently for the most monstrous of crimes, using it sparingly and judiciously. As was evidenced in *The Jigsaw Man*, boundaries were exceeded as the lust for organs increased, resulting in the capitalization of minor crimes. In the *Medicine, Crime, and Punishment*, Diflo (2004) states:

China, however, classifies more than 68 offences as capital, including under some circumstances car theft, embezzlement, and discharging of a firearm. Each year,

the number of executions in China exceeds by at least two-fold the total number of executions in the rest of the world combined. Official government figures put the number of executions at around 5000 annually, but independent groups and Chen Zhonglin, a National People's Congress delegate quoted in the China Youth Daily estimate the actual number to be twice that. Of this figure, it is estimated that 1600 executed prisoners will donate some 3200 organs annually. (para. 9)

Organ harvesting from executed prisoners without informed consent not only violates the tenets of medical ethics, but also disregards Kantian concepts of human dignity. Furthermore, these indignities parallel the crimes against humanity in concentration camps at the hands of German physicians under the Nazi regime. Furthermore, once human rights in organ donations are allowed to surreptitiously occur to a vulnerable population, it stands to reason that more will follow. In the last scene from *The Jigsaw Man*, Lew was sentenced to death for repeated traffic violations, not for vandalizing the organ bank. As stated earlier, the judicial system is already flawed. Prisoners on death row constitute a target population who can be easily exploited by denial of representation or appeal. Another consideration is that the various methods of execution also destroys the organs yielding them useless for transplantation resulting in the temptation to utilize organ donation as a method of execution. This would require nullifying or modifying the dead donor rule which is the legal and ethical command based upon society's respect for human life requiring that donors not be killed to attain their organs. Furthermore, it places the physician in the role of executioner. Our conceptualization and praxis of organ procurement is a slippery slope that must be ethically negotiated so that the demand for organ donors doesn't precipitate a shift in our values.

The infringement of ethical boundaries of organ procurement is the result of an expanding and global market for viable, transplantable organs. The acquisition of these organs must be mediated by ethical restraint with human rights and justice at the forefront. The quest for a steady supply of organ banks to ensure supply is able to meet demand should not come at the expense of human dignity, autonomy, and social justifiability.

Financial Incentivization of Organ Donation

The economically disadvantaged represent another group capable of exploitation at the hands of an unjust transplantation system. Every day people die a slow and painful death waiting for a viable kidney to become available for transplantation. Due to the epidemic of American obesity, as well as other health and lifestyle factors, there is an explosive rate of diabetes and hypertension which, in turn, results in crisis numbers of people in kidney failure. This increasingly high demand for kidneys far exceeds the number available. Cadaveric kidneys represent a limited supply because so few people expire in such a way that their kidneys remain viable, thereby, increasing the lust for live kidney donation. The Medicare system allows for universal entitlement of dialysis and is overwhelmed by the excessive cost supplying it the masses in need for it. However, kidney transplantation represents an alternative and possibly more cost-effective method of keeping patients alive and healthy. There is the potential for the creation of a subpopulation willing to become “live vendors” to supply this much needed commodity for financial gain. Eric Cohen (2006) refers to this as the “new commerce of the body” and describes this futuristic market as “a form of cannibalism by the weak of the strong.” In other words, people on dialysis, disproportionately poor and black, are at risk of being preyed upon by the wealthy and desperate. Leon Kass (1972) was an outspoken opponent of an organ

market stated, “Once the principle of private right and autonomy is taken as the standard, it will prove difficult - if not impossible – to hold the line between donation and sale” (p. 247). In terms of a free market economy, viewing organs as a commodity to sold and bought by willing donors and recipients makes good sense. However, if we eschew the notions of bodily dignity and integrity succumbing to the urge to engage in organ trade without regard to what is just for all members of society, we are in danger of becoming a culture who views the body as a commodity and site of commerce which will fundamentally change what it means to be human.

Transplantation practices should be vehicles of greater social justice as opposed to an exploitative system victimizing an already marginalized destitute underclass. In the film *Dirty Little Things* (2003), the main character Okwe discovers that his employer Sneaky, a hotelier, is operating a side business arranging organ donations from poor immigrants in exchange for forged passports or immigration documents. Over time, Okwe is drawn into Sneaky’s world with his convincing and compelling stories of saving lives. As it turns out, Okwe is a surgeon himself and it is his own virtue that sways him to the dark side believing that he is better suited to meet the needs of these desperate people than the incompetent surgeons employed by Sneaky. Is it morally permissible for people to sell and buy transplant organs? Also, should organs be commodified in a free market system even when the donors are consenting adults and aware of the risk and consequences.

Although *Dirty Little Things* is a work of fiction, it poses the moral and ethical issues we are facing today as biotechnologies make prolific advances in transplant medicine. A primary objection to procuring organs from live donors is a potentially exploitative and risky enterprise. Kidneys, unlike other organs, can only come from living donors who are willing to

part with one of theirs. If an individual can function normally with only one kidney, why shouldn't they be allowed to sell or organ for profit. I can think of many different reasons people facing dire financial straits would choose this option to solve a crisis. Typically, it is a family member that step up to the plate when a kidney is needed. Due to the severe shortage of available organs, it has been argued that we should shift from the voluntary altruism market that is currently in place in the United States to either a paid market or presumed consent. Kaplan and Parent (n.d.) of The Hastings Center state:

Two basic strategies have been proposed to provide incentives for people to sell their organs upon their deaths. One strategy is simply to permit organ sales by changing the National Organ Transplantation Act (NOTA), the federal law that bans them. Then, individuals would be free to broker contracts with persons interested in selling at prices mutually agreed upon by both parties. Markets already exist on the internet between potential live sellers and people in need of organs, but these transactions are illegal. The other strategy is a regulated market in which the government would act as the purchaser of organs – selling at a fixed price and enforcing conditions of sale. (para. 11)

A major criticism is that it will be primarily the economically disadvantaged, which includes a disproportionate number of African-Americans, will want to sell their body parts. If a parent is faced with not being able to house or feed their family, they might opt to sell an organ. It's not exactly a level playing field when a person is not able to provide for the basic needs of their family while a wealthy person is enticing them with fat check for one of their kidneys. This is a horrific predicament that enables on group of people (the wealthy) to take advantage of another

group of people (the poor). The dignity, autonomy, and free will of the donor disappear to in this circumstance rendering less than human, “othered.” Shafer and Cunningham (2010) state:

Advocates of social justice might think that this provides a unique way for an impoverished man to care for his family. He can live adequately with one organ, and the price is a princely sum in his community. The reality is less attractive. First, the power distance between donor and potential recipient is great. The group identified as prospective donors are vulnerable because of their low social status, their ethnicity, their gender, their age, or their incarceration. Even though they are called 'donors,' many part with their kidney under the enticement of the promise of a rich reward. Staggering under a load of debt, they grasp at this hope of improving their lot in life. Others are simply coerced (with brutal force) or deceived. In the hospital for one purpose, they wake up from surgery to discover their kidney has been removed without their consent. (para. 6)

Another reason that donors should not be allowed to sell their organs is that they assume a risk, especially when they sell a kidney. As autonomous adults, we are responsible for our decision-making and are generally aware of the potential risks associated with our decisions. I enjoy tandem skydiving jumps with a group called Tsunami Skydivers. They organize skydiving boogies all over the world and I have been able to skydive in Belize and Costa Rica on several occasions. The jumper is issued a disclaimer by this organization addressing the risks which the participant must sign. It is a mutually agreed upon transaction between two equal parties. Organ donors assume a great risk when they give up a kidney. While one can live with only one kidney, the situation becomes deadly is the donor's remaining kidney becomes diseased.

While the scenarios depicted in dystopian *The Jigsaw Man* is fantastical and highly unlikely to happen, it serves to stimulate critical consciousness regarding issues in organ donation in a rapidly advancing biotechnological environment. It demonstrates how groups of people can become marginalized and exploited for commercial gain, particularly the vulnerable populations of the economically disadvantaged, the ill, racial and ethnic minorities, and prisoners. History is replete with accounts of egregious medical experimental research performed on inmates under the guise of the best interests for public welfare. Most pharmaceutical research utilized prison populations for their drug research including studies on dangerous chemical warfare agents. In 1946, a U.S. government-led research project deliberately and coercively injected Guatemalan prison inmates with syphilis, an act which President Barack Obama would later personally apologize for directly to Guatemalan president Alvaro Colom. Is it possible that society would endorse a penal system in which prison cells are populated by people incarcerated for the sole purpose of organ donation? Where once the black body was a site for enslavement and colonization, will now the condemned man become that site? What does this say about a society which takes unfair advantage of the vulnerable for commercial gain? Exploitation occurs *de facto*; it occurs in sweatshops which take advantage of children and undocumented migrants as well as in pharmaceutical research targeting the poor in third world countries. Karl Marx stipulated that exploitation was inherent in economic and political systems and was a phenomenon that characterized capitalism and class-based societies. Structural exploitation refers to a characteristic of institutions or systems in which the “rules of the game” are unfairly twisted for the benefit of one group and the detriment of another. Most certainly, slavery was an exploitive relationship that caused irreparable harm to a group of marginalized people. Is it possible that biotechnological advancement could shift society in such a way that it was

permissible to perceive a prison population as a host organism for mounting transplant needs? What measures might society take to ensure organs remain in plentiful supply? If I am dying and my only chance at survival is an organ transplant from a prisoner on death row who is facing execution anyway, would I hasten his death? Unprecedented medical achievements could pave the way for exploitation and harm reminiscent of historical injustices perpetrated on vulnerable populations and reflective of a society which is bereft of empathy and compassion for its fellow members. Frantz Fanon (1952) stated, "It is through self-consciousness and renunciation, through a permanent tension of his freedom, that a man can create the ideal conditions of existence for a human world... Why not simply touch the other, feel the other, discover each other?" (p.206). It is through the lived narrative of the "other," via speculative fiction, that one experiences the instrumentalized, subjugated "other" inviting critical reflection of a changing world which increasingly colonizes the body.

In Chapter 4, I examined the concept of personal identity with its subjectivities of embodiment. I argue that views of embodiment must be inclusive not only to *Homo sapiens*, but to other forms of embodiment including genetically engineered hybrids, clones, artificial intelligence (AI), and even animals. Also, as we navigate a posthuman future characterized by commercialization and manipulation of our physical being and blurred boundaries between human being, machine, animal, or "Other," I argued that we must challenge the normative subject/object binary which parallels historical injustices of subjugation, objectification, and causing harm on the basis of gender, ethnicity, race, or disability in favor of a new treatment of subjectivity that acknowledges and embraces a multitude of embodiments in reconceptualizing what it means to be human.

In Chapter 5, I argue that we must revisit the purpose and goals of education as we foray into a future characterized by rapid technological change. Paradigms regarding traditional pedagogical structure and standard setting will necessarily shift as the demands of the world change. Science fiction literature and film function to congeal disparate fields of learning truly providing a socially just and democratic education stimulating empathy and critical thinking regarding critical social issues like racism, sexism, and poverty, and has the power to awaken the reader to a greater understanding of equity and social justice.

CHAPTER FIVE

EDUCATION FOR A DEMOCRATIC AND SOCIALLY JUST SOCIETY

*When I heard the learned astronomer,
 When the proofs, the figures, were ranged in columns before me,
 When I was shown the charts and diagrams, to add, divide, and measure them,
 When I was sitting heard the astronomer where he lectured with much applause in
 the lecture-room,
 How soon unaccountable I became tired and sick
 Till rising and gliding out I wandered off by myself
 In the mystical moist night air, and from time to time,
 Looked up in perfect silence at the stars.*

Walt Whitman

As we foray into a future characterized by rapid technological change, we must revisit the purpose and goals of education. Paradigms regarding traditional pedagogical structure and standard setting will necessarily shift as the demands of the world change. Clearly, the present system of standard setting and state testing are incapable of measuring progress of the mastery of skills necessary for a changing world. Necessity is the mother of invention. Education is a cornerstone of our society. Historically, learning paradigms were invented for the Agricultural Age and reinvented for the Industrial Age. Educators are facing the daunting task of educating students in anticipation of a world which cannot be predicted with an outdated mentality. Future students will be challenged with the complexities of living, learning, and working in a diverse and rapidly changing world which we cannot even imagine. We cannot assume that education

will or should look the same. It will require stepping out of the box to develop a new educational philosophy and innovative practices which deviate from the traditional pedagogical goals of basic content retention. It is crucial that we reconsider the future world our students will create and inhabit. We must equip them with the ability to synthesize, make meaning of, and adapt to rapid change. Educators must stimulate imagination, creativity, and inventiveness. Students will require critical thinking skills, problem-solving and collaboration skills, and technological literacy if they are to successfully navigate the future.

I am in full agreement with the educational pedagogy which Doll (2000) proposes. She states, "Curriculum theorists have long called for writers do best: create fictions" (p. xi). It is through the readers' engagement with various forms of fiction that yields the most transformative insights and valuable learning experiences. Through the examination of science fiction, the reader is called upon to emancipate and transform their consciousness. Myths, images, and metaphors are a fascinating way to explore the human condition. The reader not only interacts with and extracts knowledge from the text but collaborates with it in order to interpret deeper meaning and gain wisdom. This occurs when there is an interaction between the language of the text, the reader, and the instructor. They invent and interpret relationships between history, culture, geography, language, and identity. Literary fiction becomes a means of inquiry and of self-knowledge. It stimulates critical thinking regarding critical social issues like racism, sexism, and poverty and has the power to awaken the reader to a greater understanding of equity and social justice.

Empathy

The central theme of Milan Kundera's novel, *The Unbearable Lightness of Being* (1984), is compassion. He laments, "there is nothing heavier than compassion. Not even one's pain

weighs so heavy as the pain one feels with someone, for someone, a pain intensified by the imagination and prolonged by a hundred echoes.” Neill (1996) writes that this “co-feeling” or “feeling with” is much the same as empathy. It is the ability to not only live with the other’s misfortune but also to feel him with the full range of human emotions. Furthermore, he states, “This kind of compassion...therefore signifies the maximal capacity of effective imagination, the art of emotional telepathy” (p. 253). Therefore, empathy is essentially an imaginative process by which one is able to adopt another’s perspective as if it were their own.

We all live and experience our own version of reality. A reality that restricted by our senses, our temperament, and our experiences. It is the only reality that we will ever truly know. However, it is crucial to our personal development, our relationships, and to society itself that we make the effort to try and experience other people’s realities as well. This is accomplished through empathy. Simply stated, empathy is the active attempt to understand another person’s perspective, their emotions, and their reality. We are social animals and our ability to communicate and understand each other’s emotional states is key to maintaining our relationships. The ability to put ourselves in another person’s shoes is essential for peaceful coexistence on this planet. It is little wonder that the ability to empathize is hardwired directly into our brains. One area that assists in this process is the right supramarginal gyrus which helps us distinguish our own emotional state from that of another. The right supramarginal gyrus is also responsible for compassion. Max Planck conducted a study which was published in the *Journal of Neuroscience* on October 3, 2013 which found that the trait of egocentricity is innate for human beings. However, there is a particular part of our brains, the supramarginal gyrus, that recognizes lack of empathy and autocorrects. Lead researcher Tania Singer (1993) stated, “When assessing the world around us and our fellow human, we use ourselves as a yardstick and

tend to project our own emotional state onto others” (para.2). Therefore, our own emotional state can potentially distort our understanding of other people’s emotions. The right supramarginal gyrus ensures that we can decouple our perception of ourselves from that of others. The research team also found that affluence impacts empathy. People who live more prosperously were less likely to empathize with another’s circumstances, suffering, or pain.

Our ability to critically observe and assess what other people are experiencing plays a critical role in empathy. Studies from the science journal, *Neuron*, suggest that we have a system of mirror neurons in our brain that causes us to mimic the actions of others which is why we are drawn in when we see a person yawning and return a yawn in reply. Also, when we observe someone joy, pain, or heartbreak, we experience the same sensation to a certain extent. These reactions are primarily driven by subconscious reflexes. In order to be truly empathetic, one must actively think beyond one’s self and their own concerns. It is through the powers of observation and wonder that we develop an empathetic response to another’s experience. By focusing on the subject’s state of being and being genuinely concerned for their well-being, we resist the urge to judge categorize, or label. Learning more about other’s experiences is a key element to seeing the world through another’s eyes. We can often find a shared common ground regardless of differences in perspectives and circumstances. Empathy promotes an open mind, staves off prejudice, and builds inclusivity thereby expanding our sense of what is moral. Without this aptitude, we are likely to marginalize and label groups of people outside of our familiar groups as the “other,” the inferior, or the enemy. It is an imaginary line in the sand that prevents us from experiencing the “other.” It dissects us from the realization that there are a plurality of perspectives and that they are all part of the shared human experience. The good news is that empathy and compassion can be learned and fortified at the neurobiological level.

Our brain's neural circuitry is malleable and can be rewired by knowledge, practicing the "do unto others as you would have them do unto you" philosophy, and with choices of mindset and behavior.

Empathy and Fiction

Reading fictional work, attending the theatre to see a play or musical, and watching movies are activities that we do on a day-to-day basis in our lives. These and similar activities are referred to as the experience of fictional narratives (Oakley, 1999). Also, they represent a diversion from stressful daily demands as well as stimulate intelligence (Oakley, 2002). The fictional narrative experience may have a significant and profound experience on how we feel and behave in our daily lives (Poulson, Duncan, and Massie, 2005). It has been posited that fictional narratives elicit personal insight and development and, therefore, is a very important tool in self-understanding (Oakley, 1999).

"Reading," according to the writer Joyce Carol Oates, "is the sole means by which we slip, involuntarily, often helplessly into another's skin." The notion that literature functions as a vehicle for transporting one into the thoughts and feelings of others reaches as far back as Aristotle. Researchers have only recently begun to their attempts to validate this phenomenon empirically. Specifically, research has aimed to determine whether the effects of the fiction experience influences the empathy of the reader (Mar, Oatley, and Peterson, 2009).

Researchers have argued that fiction may prompt more intense emotional and behavioral effects than reading nonfictional texts, professional and scientific publications, newspapers, journals, etc. (Goldstein, 2009). Through the imaginative use of the fictional narrative elements

of characters, events, plot, and setting, the reader may experience transportation into the story and become more empathetic via the narrative (Bal, Butterman, and Baker, 2011).

David Kidd and Emanuele Castano published a study in 2013 in the journal *Science*. It suggested that reading “literary” stories immediately improved participants’ abilities to read the facial expression, therefore the inner emotional states, of other people. In this widely publicized study, participants were instructed to read one of six texts. Afterwards, they were administered the **Reading the Mind of the Eyes Test (RMET)**. Participants were required to look at photographs of actor’s eyes and select one of four possible emotional states of mind the image represented. The photographs included a raised eye which could represent surprise, panic, or warning of impending anger. The number of correct answers indicated a measurement of theory of mind, or the ability to attribute the full range of inner emotional states that motivate action. In order to recognize those participants who had a lifetime exposure to literature, the researchers administered **The Author Recognition Test** which is commonly used in literature studies. The name is self-explanatory; measurement is simply the number of authors the participant recognizes. The paper says, “The most plausible link between reading fiction and theory of mind is that either individuals with a strong theory of mind are drawn to fiction and/or that a lifetime of reading gradually strengthens the mind.” Either way, this is valuable information and a shameless plug for the importance of the humanities.

Goldstein attempted to replicate the notable findings of the original study unsuccessfully. However, he did discover a common result which was lifelong readers of fiction had significantly higher scores on the **RMET**. Limitations of this important study state that this is strictly a correlation, not a causation. The important implication is that people who are lifelong readers tend to be more adept at imagining other people’s thoughts and emotions.

In 2012, Dan Johnson published a study in the journal *Scientific American Mind* in which he found that fiction transports one into a story and serves to increase empathy and prosocial behavior. In this study, Johnson wrote a short story designed to induce compassionate and empathetic emotions for the narrative's characters and to model prosocial behavior. The participants were run in the study individually. Each person read the story and the test procedures. Afterwards, the researcher dropped six pens and recorded whether participants helped to pick them up. Johnson found that the empathy induced by reading the short story prompted the participant to help Johnson pick up the pens. In other words, reading does promote empathy and the natural instinct to help another person.

Fictional narratives function as a platform by which to experience the whole range of human emotions, such as joy, fear, and surprise (Oatley, 1999). Goldstein (2009) posits that fictional narratives provide a safe harbor in which a reader can freely experience the gamut of emotions without the need for self-protection. Readers are allowed and encouraged to suspend their disbelief through transportation into the alternative narrative world experiencing sympathy for a fictional character. They can disconnect from their own lives and enter unabashedly into a fictional realm which represents a radical departure from their everyday lives. Avid readers know how it feels to become so engrossed in a book losing all track of time, forging connections with characters, and changing personal perspectives. It stands to reason that fiction has a greater impact on feelings of empathy than non-fiction.

Mar, Oatley, Hirsh., Dela Paz, & Peterson (2006) argue that fiction experiences enhance imaginative thinking by activating neural processes. The Immersed Experiencer Framework, introduced by Zwann (2004), explains language comprehension by three mechanisms. Initially, neural webs are activated when a person reads fictional text. Events in the story are simulated

mentally by the reader. Thirdly, readers integrate what is read with existing mental models actively processing and integrating these texts in their own human experiences. There is evidence to suggest that reading about or seeing another person experiencing particular emotions and events activates the same neural structures as if a person was experiencing the events themselves (Gallese, 2001). Therefore, through the imaginary process of reading fiction, one is able to transport themselves telepathically into the life experiences, thoughts, and feelings of others, which in turn, influences empathy.

Empathy and Film

In "Empathy and Film (Fiction)", (1996), Alex Neill suggests that empathy is an imaginative activity that involves taking another's perspective on their experiences, "imaginatively representing to oneself the thoughts, beliefs, desires, and so on of another as though they were one's own" (p. 254). Advances in neuroscience have provided brain-based explanations offering insight into the mechanisms which make us social animals and capable understanding other people's perspectives. Located in the premotor cortex are a cluster of brain cells loosely called "mirror neurons". In experiment conducted with macaque monkeys, neuroscientist Giacomo Rizzolati and his colleagues accidentally discovered that mirror neurons discharge not only when the monkey intends or performs a goal-directed action, but also when they observe another subject performing a similar action (Gallese and Stamenov, 2002). Later discoveries found that the human brain possesses neurons identical to those discovered in macaque monkeys. Visual experiences are linked with the brain pattern in the premotor brain activated when one is planning the execution of such an action oneself; therefore, vision is coupled with the intent to act. These patterns represent sensory, motor, and emotional information. Mimicry is an essential element of social interaction in real life and is central to the film experience as well.

We are viscerally impacted via mirror neuron networks when we observe the deeply emotional experiences of others, whether in real life or elsewhere. Do we not smile when we observe people in joyful situations on TV and in movies? In the movie *Titanic* (1997), tears well up in sympathy as Kate Winslett's character (Rose) is forced to disengage her hand from Leonardo DiCaprio's character (Jack) when she realizes that he is dead. Our brains are hardwired to empathize with other people's emotional states. We are simply mirroring the inner courings and expressions of the characters we are observing. The cinema experience taps into our brain's circuitry enabling us to experience the pleasure and pain of others as our own.

A research project conducted by Gal Raz (2012) and a team of neuroscientists illustrated how film viewing could regulate empathy. Participants viewed the excerpt from *Sophie's Choice* in which she was forced to choose between the lives of her two children at the command of a Nazi officer. The film was rife with affect as evidenced by the close-ups of Sophie's screaming face, the anxiety-ridden countenances of the children, and the evil face of the officer. Researchers monitored brain scans during the viewing and found that the limbic center, responsible for empathetic grief, was highly activated during the above-mentioned scene. They refer to this as embodied empathy and is the more visceral in-the-moment empathy one feels when you observe intense feelings of pleasure or pain, such as seeing Hannibal Lecter cut off his own hand to escape capture in *Hannibal*. I found myself pulling back my own hand and grasping it with the other to escape the knife. This study further validates we are neurologically predisposed to resonate with others, whether they are real-life or an imaginary character.

Cinema has the ability to generate more tolerance, compassion, and empathy in the real world. Reknowned film critic Roger Ebert thought so. "The purpose of civilization and growth is to be able to reach out and empathize a little bit with other people," said Ebert in "Life Itself,"

a 2014 documentary about late film critic's life and career. "And for me, the movies are like a machine that generates empathy. It lets you understand a little bit more about different hopes, aspirations, dreams and fears." Nearly 100 years ago, Charlie Chaplin helped audiences empathize with European families immigrating to the US. In a scene in his 1917 silent film "*The Immigrant*," Chaplin's character, the Tramp, kicks an immigration official upon arrival at Ellis Island following a trans-Atlantic voyage on ship full of European immigrants. During the disembarkation process, the travelers were herded behind a barrier like cattle. As a result of weariness and frustration at the ill treatment, Chaplin tees up a swift kick in the pants to the offending officer. Chaplin was worried that the enactment was offensive and shocking. However, audiences loved it and the movie was a sensation. It was a scene that helped audiences empathize with the hardships immigrants faced.

Dr. Jim Coan, associate professor of clinical psychology and director of the Virginia Affective Neuroscience Laboratory at the University of Virginia affirms Ebert's proclamation. Coan asserts that when we immerse ourselves in the perspective of another person, we subtly accrue those perspectives into a own universe generating empathy. In a study examining the link between storytelling, brain chemistry, and empathy, Zak and his team of researchers found that watching a compelling narrative can alter brain chemistry. The research project's participants were shown a film about a father raising a son with terminal cancer. They found that participant's brains responded with the production of two neurochemicals, cortisol and oxytocin. Cortisol focuses attention by triggering a sense of distress, while oxytocin generates empathy by triggering our sense of care. The study discovered that the more oxytocin gets released, the greater the empathy participants reported feeling for characters in the film. Also, those who produced more cortisol and oxytocin while viewing the film were more likely to donate money

to charities subsequently. The researchers liken empathy to a muscle, the more you use it, the stronger it becomes. Therefore, cinema is essential to building a compassionate, empathetic world.

Science Fiction and Empathy

Science fiction is in a unique position to evoke empathy because it was born out of the Romantic philosophy of the nineteenth century. Scientific romance is the archaic term for the genre of fiction that we currently know as science fiction. The literature of the nineteenth century was rife with gothic tropes such as far-away settings, travel narratives, supernatural characters, castles and haunted houses, and darkness, death, and curses. The Romantic philosophy emphasized the highly emotional and passionate components of the human condition, complete with the psychological complexity and madness of the human mind. The Romantic philosophy had as its goal to evoke intense, visceral emotional reactions to the gothic and horror stories which were being produced as a response to the rational, objective scientific writing of this time period. Feelings, emotions, and imagination trump rationality and logic.

Rapid change is a dominant theme in our world today. Science fiction is in a unique position to address unprecedented moral dilemmas such as the genetic engineering of humans and artificial intelligence. Its ability to invoke empathy lies in the fact that it metaphorically imagines the future and approaches very real scientific challenges such as global warming. It draws heavily on fanciful, invented worlds which is highly engaging. It is the only genre which is steeped in “what if?” scenarios. Will we survive an apocalypse? Are there aliens out there somewhere? We generally turn to works of the imagination to ponder questions such as these. Although fantastical, science fiction is a realistic, influential influence in guiding readers to be

long-term visionary thinkers regarding the kind of world we want to shape. For example, while it is difficult to recognize systems of oppression in our own society, science fiction offers a fantastical platform for contemporary issues to be played out and contemplated. It is through this imaginative reality that inspiration and empathy are generated.

The Moral Imagination

In her book *From Disgust to Humanity: Sexual Orientation and Constitutional Law* (2010), Martha Nussbaum states:

That “terrified” gay teenager needs, and deserves, equal respect, and sphere of liberty equal to that enjoyed by others. Before he is likely to get these things, however, something else has to be present in the world: the capacity to imagine his experience and that of other gay and lesbian citizens. Disgust relies on moral obtuseness. It is possible to view another human being as a slimy thug or a piece of revolting trash only if one has never made a serious good-faith attempt to see the world through that person’s eyes or to experience that person’s feelings.

Disgust imputes to the other a subhuman nature. How, by contrast, do we become able to see one another as human? Only through the exercise of imagination (p. xvii).

Nussbaum utilizes the concept of disgust to highlight the that empathy is necessary for social justice. What are the consequences for dehumanizing those who reside outside the sphere of our empathy? Like Doll, Nussbaum defends literature as one of the nutrients which sustains our soul. She argues that novels are nourishing because they broaden the scope of our empathy and develop the moral imagination. How do we begin to imagine the experiences of others? How do

we cultivate the capacity for imagination? We read a good book. We watch a television program or go to the movies. Some might even go to a play or opera. Through these activities, we are able to live multiple lives and experience times, places, and experiences not personally lived. The creative arts of writing and film making support the narrative imagination by making spaces for the human empathetic imagination to take root and thrive because they provide a different way to see the world. Film and literature function as medium by which we can make meaning of the world in which we live. They foreshadow challenging changes in our society and connect us with those residing in the margins whose voices have been silenced. Once we have experienced the life of another through film or fiction, it becomes more difficult to see them as the “other” and do harm to them. It has been my contention that literature and film are educative instruments which enable students to think critically, stimulate the imagination by presenting ideas which are far beyond that which we know is currently possible, and develop a critical consciousness to more effectively navigate an unknown future. Huck (1987) asserts that these tools allow us “to take us out of ourselves and return us to ourselves as a changed self and to enlarge our thinking while educating our hearts” (p. 56) with the goals being to teach students to think autonomously and critically, feel for the marginalized other, and question the dominant narrative. By developing the critical consciousness, students will discover that their world is not a fixed place, that there are no absolute truths, and be able to embrace the plurality of perspectives which share their world. Maxine Greene posited that above all, imagination is what makes empathy possible. In fact, “it is what enables us to cross the empty space between ourselves and those we teachers have called ‘other’ for many years...of all of our cognitive capacities, imagination is the one that that permits us to give credence to alternative realities” (1995, p. 13). For Greene, noticing deeply was the “doorway for imagination” which allows us

to open up to unknown possibilities. Akin to Greene, bell hooks (2009) also believed that imagination plays a critical role in the ability to see things in perspectives which differ from our own stating that it serves to “illuminate those places not covered by data, facts, and proven information” (p. 59). It is through the act of imagination that we teach our students to think reflexively and become agents of transformation. Literature and film foster critical thinking by stimulating the imagination proving a more humane education than traditional paradigms.

Science Fiction as the Solution

It has been my intention to argue that there is a relationship between science and science fiction via metaphor. Also, it is through the genre of science fiction that students develop a critical conscious, a moral imagination, and ultimately empathy. Human acceptance of change is difficult and resists authoritative statements of fact, as has been identified in applied and psychological studies (Nyhan, Reifler, Richey, & Freed, 2014). Science fiction is an effective agent for change, and Stableford (1979) suggests that it also has a “directive effect” on how people interpret science. Marshall Tynn (1985) concurred and posited that science fiction equips us to see change as natural and inevitable. Science fiction resides at the intersection of numerous disciplines and is uniquely qualified to tell the stories hard science is incapable of telling.

The British physicist and novelist C. P. Snow stated in his famous *The Two Cultures Rede Lecture* (1959), “I believe the intellectual life of the whole Western society is increasingly being split into two polar groups”...the “literary intellectuals” and the “physical scientists.” The two culture split represented the chasm that he felt existed in academia between science and the humanities. In a rapidly changing, technologically driven world, there is a disenfranchisement of

the humanities, which is thought to be anachronistic. The two disciplines traveled bifurcated paths never to cross or overlap, occupying two very separate realms. The science curriculum consisted of reading Einstein and Newton, discussing vocabulary and theories, and memorizing factual information instead of serving to explore the complexities of a changing world and of human nature. According to Slingerland (2012),

One of the most fundamental of the concerns aroused by consilience is the question of how we conceive of human beings. Perhaps the most common way of characterizing the difference between the “two cultures” of the sciences and the humanities—at least from the humanities side of the fence—is to invoke the idea of different modes of knowledge. The humanities are typically characterized as involving a unique mode of apprehension, consciousness studying consciousness or “understanding” (Verstehen), while the sciences engage in mechanistic “explanation” (Erklären). The latter, on this account, is adequate to deal with the movements of dumb, inert physical objects, but the former is the only way to grasp genuinely human meaning. (p. 10)

As we traverse the 21st century, the barriers which kept these two disciplines apart are crumbling. The two are merging as we are faced with issues which cannot be examined from a single perspective, such as what it means to be human. Discovering the nature of the mind is now a burning question in the area of cognitive science. As technological advances continue to proliferate raising issues related to hybridization with machines and the ethical manipulations of humans, questions with broad social implications will have to be addressed. Scientists would be well-advised take a page from learned philosophers who ponder ideas in broader, more

interpretive contexts. The humanities must be willing to partake of the burgeoning technological advances as well.

Madeline Grumet (1981) writes that curriculum is, “the collective story we tell our children about our past, our present, and our future” (p. 115). What role will the biosciences and technology occupy in these stories? Noel Gough (2004) ponders what the ethical and material possibilities for becoming cyborg will be as we mutually construct our stories alongside posthuman technologies. Graham (2002) in *Representations of the Posthuman*, states that “the activities of storytelling and myth-making are constitutive, a crucial part of building the worlds in which we live. In this context, ‘a world’ may be composed of material objects, the products of human fabrication; but also comprises signs and symbols which create an environment of meaning which is value-laden and binding” (p. 223). In agreement, Ursula K. Le Guin (1976) writes:

All fiction is a metaphor. Science fiction is a metaphor. What sets it apart from older forms of fiction seems to be its use of new metaphors, drawn from certain great dominants of contemporary life – science, all the sciences, technology, and the relativistic and the historical outlook, among them. Space travel is one of these metaphors; so is an alternative society, an alternative biology; the future is another. The future, in fiction, is a metaphor. (p. 5)

Science fiction has the ability to play a signification role in influencing models of reality and real-world policy. Van Dijck supports the view by stating, “Science fiction, throughout the centuries has been a significant cultural tool for comprehending and evaluating the scientific, moral and social consequences of new technologies...besides

projecting a possible future, science fiction often entails criticism of present technological or social arrangements” (p. 9).

In *Popular Culture* (2005), Weaver recognizes the concomitant dangers of constructing our reality around textual and visual images so prevalent in modern culture. He states, “Those who revel in the joy of popular culture without constructing their own meanings of the images are destined to be manipulated by those who construct meaning for them” (p. 16). Therein lies the complicated conversation of the biosciences as it relates to curriculum studies. Weaver (2005) also cites William Reynolds as coining the term, “cultural curriculum studies” (p. 103). He states that this term, “recognizes that if we are interested in the ideas, identities, and learning habits of young people, we cannot avoid the effect of popular culture” (p. 104). The conversation between biotechnology, cultural studies and curriculum theory is an avenue of inquiry whose time has come due to the inclusion of popular culture as a legitimate vehicle for understanding the posthuman condition. It is the conduit for the interpretation of reality, but make no mistake, it must be interpreted as information presented through a medium is subject to the biases of those who control the medium. Weaver (2010) argues that it is within these crosshairs that we will encounter the most important, complicated posthuman conversation stating, “This new context is the intersection where the biosciences and biotechnologies meet the posthuman. It is an intersection as culturally important as any other in recent intellectual history” (p. 33).

In a 1924 interview featured in *The Saturday Evening Post* titled “What Life Means to Albert Einstein,” he stated, “Imagination is more important than knowledge. For knowledge is limited to all we now know and understand, while imagination embraces the entire world, and all there ever will be to know and understand.” This is precisely why science fiction should be

considered as important, if not more important, than the regularly programmed classics that have been taught since my parents' time. Einstein's prophetic quote validates the idea that science fiction is the genre of the future because it embraces an unknown future speculating upon a world that may exist 100 or 1000 years from now. This requires imagination. Joanna Russ (1995) defines science fiction as "a literature that attempts to assimilate imaginatively, scientific knowledge about reality and the scientific method, as distinct from the merely practical changes science has made in our lives" (p. 7). This imaginative approach not only incorporates the disciplines of mathematics, physics, chemistry and biology, but also has the ability to excite, fascinate, and encompass the human condition. As I stated earlier in this chapter, science fiction has a tremendous impact on human consciousness and critical thinking. Perceived as initially being a "Western" phenomenon, the rise of science fiction within the industrialized world is a reflection of the cultural modes linking society, science and technology together, growing with these forces, expressing and evaluating them, relating them meaningfully to human existence (Franklin, 1966, p. 1). We are living in an increasingly globalized world; therefore, there is an increased dependence on industry and commerce. As argued in previous chapters, science fiction has heralded in some of the most significant scientific discoveries of the 21st century. Science fiction functions as the platform by which to address the anxiety felt due to the rapid advancements of the biotechnologies and speculative "what if?" scenarios. It is simultaneously imaginative, creative, and innovative as it addresses complex posthuman questions. It is cross-curricular in that it widens knowledge of a variety of disciplines weaving together an intricate, mind-expanding tapestry of science, literature, and the humanities. As argued in previous chapters, science fiction literature and film do contain themes which bear consideration in a posthuman world. As a genre of imagination, it poses hypothetical questions which impact the

human condition. Classic works of literature, while very valuable, do not contain the in-depth and abstract ideas which provoke critical thinking about our changing world and the human condition. Students employ the fantastical in science fiction to explore speculative questions about technology, the future, and human nature. Through science fiction, students are in a compelling position to identify the concepts of scientific and the suspension of disbelief.

We are living in a social and political time of absolutism. President Trump's aggressive and often insulting rhetoric is fueled by threat and absolutism. His executive actions regarding the funding of the border wall and his refusal to comply with House subpoenas for documents related to Ukraine demonstrate his absolutist view of executive power. Nearly all of the factors of education are based upon absolutes. Time and place, assessment techniques, and curriculum are all absolute factors. The notion that education should be standardized is wrong-minded because it stifles autonomy and creativity. One-size does not fit all and learning outcomes will not be the same for every student. The mandated Common Core curriculum was an attempt to apply business practices to education and came as a package deal with new teacher evaluations, higher stakes testing, and increased austerity cuts. And it has done nothing to teach students to challenge ideas and think outside the box. Most educators (in the classroom) believe that creativity and imagination have been sacrificed at the alter of Common Core. It discourages reading novels and most fiction with a reading goal of 70% nonfiction. If a student reads 100 books, only 30 should be fiction. We are living in a complex and uncertain world which will require new approaches to help students acquire the necessary literacies. We will have to nourish students' imagination and creativity, which are the touchstones of human exploration and discovery, through the critical teaching of science fiction to navigate a rapidly changing, socially just world.

Science fiction writer, Jack Williamson, expressed the appeal of science fiction and its usefulness in education in his book *Education for the Future – Teaching Science Fiction* (1980). Williamson asserts that it has a timely sense of realism that is lacking from so called “realistic” fiction (e.g., the novels of Harold Robbins) and establishes the thought that, however unreal or weird its machines or alien motifs may appear, it drives the acknowledgement that technology and imagination are changing our world. Science fiction also allows us to think the unthinkable, to explore a scenario from different viewpoints without having to experience the horrors of the reality of such schemes (apocalyptic scenarios, for example). Additionally, it offers us freedom to think, and to say what we think without inhibitions.

In education today, standardization and conformity are dominant themes. Science fiction literature and film narratives offer an entertaining alternative to traditional texts, which students often consider boring and anachronistic, creating a space for exploring complex ideas which have wider implications for society. Carl Sagan himself was influenced by science fiction as a child. He ponders that, “the greatest human significance of science fiction may be as experiments on the future, as explorations of alternative destinies, as attempts to minimize future shock. The fact that some SF is not of the highest quality is irrelevant [...] ten year olds do not read the scientific journals” (Sagan, 1997, p. 23). I argue that science fiction’s inclusion into the school curriculum is essential due to its ability to create these imaginative spaces which, in turn, produce some of our greatest thinkers, as it did Carl Sagan.

J. R. R. Tolkien proclaimed his perspective on fantasy (and all speculative fiction) by stating: “Fantasy is escapist, and that is its glory. If a soldier is imprisoned by the enemy, don’t we consider it his duty to escape? . . . If we value the freedom of mind and soul, if we’re partisans of liberty, then it’s our plain duty to escape, and to take as many people with us as we can!” In my

dissertation inquiry, the most personal, significant discovery is how science fiction engages us to envision the kind of future that we wish to create. Through the tensions that are presented in the narratives, we become cognizant of the scenarios we wish to avoid. During my research, I read a great deal about other novels and films that I did not discuss in my work and was fascinated by the metaphorical representations and what they actually represented. I loved *The Twilight Zone* when I was growing up never realizing that much of it was sociopolitical commentary. As the scholars Hassler and Wilcox (2008) observed:

The politics of the real world on our planet continues with events, with struggle, with individual and collective success and failure. The fictional world of science fiction continues to be reinterpreted, newly invented and widely attended to in our culture. (p.vii)

There are continuous and meaningful connections between politics and science fiction. Rod Serling viewed writing and story-telling as political acts with much of his fiction permeated with socially significant moral and political themes. The extent of this in science fiction was very surprising to me.

Rapid technological change will impact societal structure, traditional hierarchies, and what it means to be human. The school curriculum should be freed from the binding ties of standardization and conformity. The purpose of education should not be instrumentalized knowledge, the passive transmission of information, or the banking model, which Freire detested. Its goal should be to socialize and humanize students. A socially just and democratic education will enable students to comprehend and adapt to a changing society equipping them with the skills to assume a productive and purposeful life. This curriculum can be realized at the

intersection of technology, literature, and science fiction. It is necessary to congeal disparate fields of learning to impart a crystallizing education incorporating science, technology, aesthetics, history, and philosophy to students. Science fiction film and fiction are in an unparalleled position to facilitate vision, understanding, and an appreciation of cross-curricular studies providing a lens by which to ignite the imagination, foster critical thinking skills, and the development of a critical consciousness which is crucial to navigate a posthuman future.

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