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The Artificial Creation Of Life And What It Means To Be Human

Caroline Mosser
University of South Carolina

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by

Caroline Mosser

Bachelor of Arts
Upper Alsace University, 2009

Master of Arts
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Accepted by:

Daniela Di Cecco, Major Professor

Yvonne Ivory, Committee Member

Rebecca Stern, Committee Member

Susan Vanderborg, Committee Member

Lacy Ford, Senior Vice Provost and Dean of Graduate Studies

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Abstract

This dissertation is focused on the literary representations of the artificial creation of (human) life. This project is based on the belief that advances in bio-technologies have the potential to challenge core values of society and that literature offers a space to identify and address them before their actual appearance. While the texts studied do not provide actual answers to extremely complex moral questions, they offer a starting point for reflection. They question our morality in many ways, especially because they force us to think about who and what we are as human beings. This project is a study of the representations of artificial life as much as it is a study of society's understanding of what it means to be human. In that respect, this project is indebted to the figure of the posthuman.

Because this project is rooted in a discussion of actual scientific developments, I have chosen to take an historical perspective on the matter. In order to do so, I have identified four major scientific developments that have had tremendous consequences, not only in their respective fields but also on society: automation, vitalism, artificial intelligence, and cloning. I analyze the way these developments have been represented in literature and perceived by the general public, including discussions of relevant ethical issues. These ethical questions vary in scope (from the responsibility of the creator to society's response) and in focus (economical, individual, etc.). Ultimately, the diversity of the representations of the posthuman leads me to propose a practice of posthuman ethics rather than an attempt to define who or what is "posthuman."

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Introduction

In recent decades, bio-technologies have grown exponentially, giving rise to both hopeful visions of the future and a sense of discomfort regarding their possible consequences. The development of cloning technologies and the culture of cells and tissues have marked our cultural imagery because of the questions they raise: What does it mean to be human? What would be the status of a clone or of a being created in a laboratory? Is our society ready for artificial beings when we have not resolved issues dealing with gender, race, and sexuality? How can we ethically treat these creatures? Who is responsible for them – society in general, the scientists who created them, or the society/individuals ordering them? What kind of responsibilities do these new technologies entail?

These are some of the questions that were debated by the Council on Bioethics appointed by President Bush in 2001. While bioethics is a fairly recent discipline, it is a critical one due to the extent of bio-technologies and their rapid development in the past fifty years. The term "bioethics" was coined in 1970 by the biologist Van Rensselaer Porter, "denot[ing] a domain of inquiry that examines the ethical implications of advances in biomedical science and technology for everyday life, as well as for law, social institutions, and public policy" (Kass xviii). This focus on the actual technologies is, however, not shared by the Council which, instead, privileges a focus on living beings: "'bioethics' is not an ethics based on biology, but an ethics in the service of bios – of a life

lived humanly, a course of life lived not merely physiologically, but also mentally, socially, culturally, politically, and spiritually" (Kass xx–xxi). One of the most important questions at stake for the Council was to discuss the moral dilemmas surrounding genetic engineering, especially the possibility of cloning. The Council's main concern was that such practices could change parenting "'from seeing a child as an unconditionally welcome gift to seeing him as a conditionally acceptable product,' while the American Association for the Advancement of Science (AAAS) envisions parents evaluating their children according to 'standards of quality control'" (Mehlman 77), thus leading to a commodification of children and to a shift toward an utilitarian approach on life itself.

The same questions about human nature and the status of artificial life have been lurking in many forms of fiction. Debates concerning these issues are found within the scientific community and have not been settled. The average individual does not participate in this discussion because the average individual does not possess the requisite scientific knowledge. However, there are many narratives that explore the possible material or moral consequences of new technologies on society. Although these narratives are not intended to be scientifically accurate, they are still often looked down upon by scientists due to their lack of scientific facts. Rather, these narratives ask questions about the moral consequences of new technologies. Christina Bieber Lake argues in *Prophets of the Posthuman* (2013) that narratives are a privileged locus for the exploration of ethical dilemmas because they present lived experiences – even if fictional – rather than abstract, theoretical accounts:

> Narrative does not visit ethical questions abstractly; it lives them, because it lives in the realm of ethos, of persons as persons engaged with one another. […] there is a new urgency for conversation between humanistic and nonhumanistic disciplines as "they confront not only such new subjects as genetic engineering, environmental trauma, and the cognitive capacities of animals or machines, but also, and most

> intriguingly, such traditional subjects as the nature of language and the distinctive features of a specifically human being." Because these issues concern fundamental questions of humanity, the humanities, whose realm has always been the larger world of meaning and values, must now reposition itself as the "atural sponsor of the debates and controversies that swirl around such issues." (Lake xvii)

Narratives do not pretend to give us answers to these ethical questions. Rather, they function as calls for debate and reflection, and as justifications for the need for such debates. They raise the public's attention, often through extremely negative or problematic portrayals of the future, providing a ground for public discussion.

This dissertation is based on the belief that advances in bio-technologies have the potential to challenge core values of society and that literature offers a space to identify and address these challenges before their actual apparition. I am not arguing that the novels studied will provide actual answers to extremely complex moral questions, such as the one previously mentioned. I will show that the evolution of the representation of the artificial creation of life maps how certain kinds of ethics operate at different moments in time and are symptomatic of their readiness to accept difference and otherness. Because of the relationship between technology and industry, the evolution of such narratives also maps a pattern of industrialization leading to the dismissal of the body, and eventually of the value of the individual. It is at the intersection of these two that we find attempts to define what being human means.

The relevance of fiction is, however, not limited to its ability to spread awareness about new biotechnologies. In *The Human Condition* (1958), Hannah Arendt argues that:

> The reason why it may be wise to distrust the political judgment of scientists qua scientists is not primarily their lack of "character" – that they did not refuse to develop atomic weapons – or their naïveté – that they did not understand that once these weapons were developed they would be the last consulted about their use – but precisely the fact that they move in a world where speech has lost its power.

> And whatever men do or know or experience can make sense only to the extent that it can be spoken about. There may be truths beyond speech, and they may be of great relevance to man in the singular, that is, to man in so far as he is not a political being, whatever else he may be. Men in the plural, that is, men in so far as they live and move and act in this world, can experience meaning only because they can talk with and make sense to each other and to themselves. (Arendt 4)

Arendt's concern echoes the often problematic focus of bioethics on practicality and of the field's roots in healthcare and legislations. Because bioethics is still predominantly a sub-category of applied ethics, it needs to open its discussions beyond the scope of healthcare policies and laws. The current focus of bioethics on practicality privileges a consequentialist approach to biotechnologies, which often leaves out concerns about the moral status of the individuals undergoing such technologies.[1] However, because biotechnologies deal with life and potential human individuals, a consequentialist approach does not take into account questions about the moral status of such beings. I believe that a deontological approach to biotechnologies is necessary as well, insofar that its focus on moral values rather than utilitarianism provides ground for a deeper discussion of the moral status of artificially created beings.[2] Following Arendt's suggestion, novels focusing on artificial creatures can be used as a first step towards answering the questions previously mentioned. These texts allow us to identify various attempts to define the meaning of "being human" by indicating how certain kinds of ethics operate at different moments of time and are reflected in specific literary periods.

[1] Consequentialism is defined in the Stanford Encyclopedia of Philosophy as "the view that normative properties depend only on consequences" and holds that "whether an act is morally right depends only on the consequences of that act or of something related to that act, such as the motive behind the act or a general rule requiring acts of the same kind" (Sinnott-Armstrong).

[2] According to the Stanford Encyclopedia of Philosophy, deontological ethics is based on "normative theories regarding which choices are morally required, forbidden, or permitted" and on the idea that, as opposed to the consequentialist approach, "some choices cannot be justified by their effects – that no matter how morally good their consequences, some choices are morally forbidden" (Alexander and Moore).

The novels I am studying are in Arendt's terminology, enacted stories that "reveal an agent, but this agent is not an author or producer. Somebody began it and is its subject in the twofold sense of the word, namely, its actor and sufferer, but nobody is its author" (Arendt 184). The agent's true self can only be revealed through a story; "who somebody is or was we can know only by knowing the story of which he is himself the hero – his biography, in other words; everything else we know of him, including the work he may have produced and left behind, tells us only what he is or was" (Arendt 186). It is the very distinction between who and what somebody is that is at stake.

Literary representations of the artificial creation of life provide us with alternatives to what Lake identifies as "the assumptions of scientific naturalism [which] produce a kind of blindness to the larger human story, a blindness that prevents both an adequate account of morality and an adequate view of the moral actor himself" (32). Until the Enlightenment, the story of man had been religious. The origin and meaning of man's existence were found in the religious myth of creation, which in turn was one of the most dominant stories of the Western world. The gradual secularization of the West has challenged this myth and it has therefore been necessary to find alternative answers to the questions of the origins, meaning and purpose of man. Because new accounts of the creation of life challenge the core values of society as well as the justifications to its established patriarchal order, they are inherently subversive.

The myth's subversion relies principally on the creature which embodies what is not part of traditional Western discourse. The distinction between man and creature is crucial as it also alludes to the distinction between self and other. By providing the perspective of the other/creature, narratives portraying artificial beings challenge our

consumer society's ethics which have shifted morality from responsibility to self-fulfillment:

> The collateral victim of the leap to the consumerist rendition of freedom is the Other as object of ethical responsibility and moral concern. […] the dominant consciousness of an advanced technological capitalistic society clearly tends toward a utilitarian ethic, an ethic that permits other beings to be used – consumed – when it can be proven to serve the individual or the greater good. […] contemporary America is a society of individuals who think of their lives as a project, who look to technology to solve their problems, who value individual autonomy above most other things, and who are enculturated to believe that money can buy happiness. (Lake 18)

The novels I have chosen give a voice to the creature as the Other whose narrative operates as an *interpellation* reminding us of our responsibility to the Other. I am here drawing on Emmanuel Levinas' concept of the inter-human, which defines ethics as embracing one's responsibility in the face of the Other's suffering:

> Properly speaking, the inter-human lies in a non-indifference of one to another, in a responsibility of one for another. The inter-human is prior to the reciprocity of this responsibility, which inscribes itself in impersonal laws, and becomes superimposed on the pure altruism of this responsibility inscribed in the ethical position of the self as self. It is prior to every contact which would signify precisely the moment of reciprocity where it can, to be sure, continue, but where it can also attenuate or extinguish altruism and disinterested. […] The inter-human lies also in the recourse that people have to [sic] one another for help, before the marvelous alterity of the Other has been banalized or dimmed in a simple exchange of courtesies which become established as an "interpersonal commerce" of customs. (Levinas 165)

It is the narrative of the creature as *interpellation* that creates the possibility of the discussion on the ethical issues at stake in the artificial creation of life. I will show that these texts indicate how certain kinds of ethics operate at different moments in time and allow us to define the meaning of "being human." They tell us about a time's readiness to accept difference and otherness. The underlying assumption throughout my analysis of the representation of the artificial creation of life is that these narratives will provide answers to the following questions: What kinds of ethics do different periods of literature offer?

What does it tell us about our relationship with otherness and science? What does it mean to be human at given moment in time? The questions these texts raise deal with the limit of our definition of human. We already use technology to enhance ourselves (glasses for instance), but at what point will we lose our humanity if we enhance our bodies? What are the risks at stake if we decide to create new versions of ourselves? What kind of society would be willing to promote enhanced beings?

For this project, I will focus on narratives written from the Nineteenth Century onwards because of the shift caused by the Eighteenth Century Enlightenment and the Industrial Revolution in the late Eighteenth and early Nineteenth Centuries. Because of the relationship between technology and industry, the evolution of such narratives reveals a pattern of industrialization leading to the dismissal of the body and its objectification. Similarly, the medicalization of reproductive practices pinpoints often problematic gender dynamics and challenges definitions of the meaning of being male or female. While the development of science and technology has not yet proven to be able to create artificial life, the past fifty years have seen improvements that suggest it will be possible in the near future. I will focus on the figure of the artificial creature and its evolution throughout the past two centuries and will identify the main stages of its development as each of them presents a new creature informed by its contemporary technologies and society. In order to do so, I have identified four major scientific developments that have had tremendous consequences, not only in their respective fields but also on society.

The first scientific development I will address is also a philosophical one. Drawing on the works of René Descartes and Julien Offray de La Mettrie in the Sixteenth and Seventeenth Centuries, I will analyze the evolution, throughout the Eighteenth and early

Nineteenth Centuries, of the automaton from a popular form of entertainment and spectacle to its literary representation in Auguste Villiers de L'Isle-Adam's *L'Eve future* (1886). I have chosen this novel because it relies on actual technological artifacts (Thomas Alva Edison's talking dolls) to address the philosophical and metaphysical questions raised by Descartes and La Mettrie's understanding of man as a machine. In parallel to the development of mechanics, the Seventeenth and Eighteenth Centuries saw the emergence of biology and medicine as independent and respected disciplines. Because of its long-lasting influence on the popular imagery of science and technology, I will focus Mary Shelley's *Frankenstein, or the Modern Prometheus* (1818) as representative of the debates about scientific progress' possible infringement on the sanctity of life and social order. I am considering these two types of scientific discourse as the origins of the modern narrative of the artificial creation of life. Following the model of the Industrial Revolution, the third significant scientific development is that of computing and artificial intelligence during the first half of the Twentieth Century. I will analyze the development of the figure of the robot from Karel Čapek's *Rossum Universal Robots* (1920), in which robots replacing workers rebel against humanity, to Philip K. Dick's androids who behave, mostly, like human beings in *Do Androids Dream of Electric Sheep?* (1968). In contrast to these threatening figures, I will discuss the benevolent robots longing for humanity in Isaac Asimov's *The Bicentennial Man* (1976) and Roger Zelazny's "For a Breath I Tarry" (1966).[3] Lastly, I will address cloning as the latest attempt to artificially create life. Because of the sheer amount of young adult novels featuring clones and because I believe that young adult

[3] A discussion of the figure of the robot would not be complete without including the works of Isaac Asimov as his *Robots* cycle has shaped the modern representation of robots through his definition of the three laws of robotics which have become key elements of science-fiction (in literature and film).

fiction is a fruitful platform to discuss social justice, I have decided to focus my analysis of clones on five young adult or cross-over novels: Kazuo Ishiguro's *Never Let Me Go* (2005), Nancy Farmer's *The House of the Scorpion* (2002), Charlotte Kerner's *Blueprint* (1999), Lesley Chance's *Deconstructing Dylan* (2006) and Eva Hoffman's *The Secret* (2001). I have chosen these particular novels because their approach to cloning is based on questions of identity, which is critical in the definition of what it means to be human.

The narratives of artificial creatures can be divided into two different subcategories: the narrative of a human being facing various creatures and the narrative of the creatures themselves. The confrontation of these two perspectives highlights many of the ethical issues at stake as it reveals the difference between what we know is the right thing to do and what we actually do or would do. While the narratives from the perspective of man being tend to portray a society that does not treat human beings ethically, the narratives voicing the creatures raise questions about the way we, as individuals, would behave towards them. I will focus on the relationship between the creature and society (including its maker) as well as the question of responsibility. While literature does not provide clear answers to the ethical dilemmas stemming from the artificial creation of life, it offers insights to the ethical values that dictate society's behavior towards such creatures. The motif of artificial life becomes a representation of the Other, embodying the dialectic of the self versus the Other. This project is a study of the representations of artificial life as much as it is a study of society's understanding of what it means to be human.

A Genealogy of the Creation of Life

We tend to attribute the development of artificial life to the modern era and the postmodern world, as a symptom of the "death of man." However, its roots appeared much

earlier in history. The narrative of the creature is embedded in two different traditions: the myth of creation and the figure of the automaton (which would later become the android). While traditional myths of creation address the question of the origin of humanity in an attempt to provide meaning to the existence of humanity and the world, the figure of the automaton is symptomatic of man's relationship to the creation process – his own and the one of artificial beings. The development of the automaton as a technological artifact follows a pattern similar to the evolution of the creation myth. This similarity highlights their connection and the necessity to include both in a study of the representations and meanings of the artificial creation of life.

Two studies are especially helpful to provide an historical account of these developments: Boyd Peterson's *Myths of Male Mothers* (2007) and Eric Wilson's *The Melancholy Android* (2006). Peterson's study of the evolution of the myth of man creating life, up to the Nineteenth Century, provides a genealogy of the creation myth focusing on the slowly changing perspective of man as God's creature to man as the usurper of God's role as creator. Wilson offers an historical account of the evolution of the figure of the automaton. He identifies five major stages within its history – the ancient and classical eras, the medieval and early modern eras, the Enlightenment, the Romantic era, and finally the modern era. These different stages can also be found in the various myths of creation throughout the centuries.

For Wilson, the figure of the android is critical because it functions either as a psychic projection of its creator or as a form of "doubling as splitting." In the first case, the ambivalence between the creator's love and loathing of human life is transferred to the android, which often becomes a being free from physical ailment but deprived of awareness

and therefore humanity. When this projection reflects the creator's unconscious desires rather than his ideal of what man should be, it becomes doubling as splitting in so far as the automaton embodies what the creator cannot accept about himself.[4] Wilson offers a religious interpretation of the automaton in which he argues that:

> Humanoid machines reflect forms of melancholia that have resulted from what human beings have perennially called "the fall." These kinds of dejection are inseparable from self-consciousness, the painful rift between mind and matter, knowing and being. To heal these splits, humans have created mechanistic doubles untroubled by awareness of the self. These new Adams embody the spiritual potential of their suffering creators – the possibility that human beings might be able to transcend their self-centered fears and desires and return, egoless, to Eden. However, though these mechanisms often issue from noble longing, they sometimes emerge from selfish urges to perpetuate the ills of the fall. In these cases, the android is not a redemptive technology but a stifling contraption – not miracle but monster. (2)

Humanoid machines, or androids, are therefore symptomatic of the accursed desire to reach eternal life, which is characteristic of human hubris.

During the ancient and classical eras, creation myths were focused on the deity/deities' creation of man rather than on man himself. In Greek and Roman mythologies, the creation of life often originates in a dispute between gods, or in an act of rebellion against Zeus/Jupiter. The most detailed versions of the creation of mankind in classical literature and mythology are the Greek myths of Prometheus and of Deucalion and Pyrrha in Ovid's *Metamorphoses*:

> Either creator god, source of a better world, seeded it from the divine, or the newborn earth just drawn from the highest heaves still contained fragments related to the skies, so that Prometheus, blending them with streams of rain, molded them into an image of the all-controlling gods. While other animals look downwards at

[4] Doubling as splitting is a common motif in Nineteenth Century literature. Some of the most well-known examples are found in Stevenson's *Dr. Jeckyll and Mr. Hyde* (1886), Wilde's *The Picture of Dorian Grey* (1890), Poe's "William Wilson" (1839).

> the ground, he gave human beings an upturned aspect, commending them to look towards the skies, and, upright, raise their face to the stars. (Book 1, v.68-88)[5]

It is this version of the creation of life that is present in most of the theological representation of the creation of man: man has been made from clay by God(s). The same imagery is also used in the myth of Deucalion and Pyrrha. According to the Greek version of the flood, Deucalion and Pyrrha are the only survivors and, through an oracle, receive instructions from the gods on how to recreate the human race:

> They descended the steps, covered their heads and loosened their clothes, and threw the stones needed behind them. The stones, and who would believe it if it were not for ancient tradition, began to lose their rigidity and hardness, and after a while softened, and once softened acquired new form. Then after growing, and ripening in nature, a certain likeness to a human shape could be vaguely seen, like marble statues at first inexact and roughly carved. The earthy part, however, wet with moisture, turned to flesh; what was solid and inflexible mutated to bone; the veins stayed veins; and quickly, through the power of the gods, stones the man threw took on the shapes of men, and women were remade from those thrown by the woman. (Ovid Book 1, v.381-415)

Even though the two characters are not gods, they are the actors who embody the gods' will. The creation of life is, therefore, a god-like prerogative. It is on this first type of creation myth, and especially on the description of the creation in Genesis in the Bible – "then the LORD God formed man of dust from the ground, and breathed into his nostrils the breath of life; and man became a living being" (Genesis 2,7) – that the Western world has built its version of humanity's genealogy. Genesis remains the main source of inspiration for the myth of creation mainly because it was – and still is – a core principle of Catholic, Jewish, and Protestant faiths. It was therefore the only accepted version of the creation of man for many centuries.

[5] This Promethean version has the peculiar characteristic of being rebellious, and it is this aspect of the myth that will be remembered and become a major motif of Eighteenth Century Romanticism.

Another relevant Greek myth is that of Pygmalion in which the Goddess Venus gives life to the statue of a perfect woman made by Pygmalion because she is pleased by his prayers and devotion:

> But, with wonderful skill, he carved a figure, brilliantly, out of snow-white ivory, no mortal woman, and fell in love with his own creation. The features are those of a real girl, who, you might think, lived, and wished to move, if modesty did not forbid it. […] 'Golden Venus, for she herself was present at the festival, knew what the prayer meant, and as a sign of the god's fondness for him, the flame flared three times, and shook its crown in the air. When he returned, he sought out the image of his girl, and leaning over the couch, kissed her. She felt warm.

The importance of Pygmalion's myth lies in its depiction of a man creating a simulacra of human life and reflects the many accounts of moving statues and talking heads that can be found throughout the ancient and classical eras: Deadalus' automatons in the Minotaur's labyrinth in the myth of Theseus; Hero of Alexandria's mechanical animals (circa 50-200 CE); the singing statue of Memnon in Egypt. These androids, whether fictional or real, share a religious or at least a spiritual significance. In *Androids and Intelligent Networks in Early Modern Literature and Culture* (2013), Kevin LaGrandeur identifies automata as either playful artifacts for the rich or tools for religious orders – most of them belonging to the latter category:

> They are also symbols of power because the magnificence of their design projects the status of their owners. The marvelous mode of their operations instills in observers a reverence for their makers' apparent command over nature and its processes, and thus clever automata were important tools for Egypt's priests. The enhancement of power was the main aim of mechanical devices for religious purposes. […] They were instruments meant to awe the crowds and to increase priests' holds over worshippers. Because observers who saw these devices knew nothing of their hidden mechanisms, they assumed that their owners had godlike knowledge of things. (29)

These examples tend to privilege a utilitarian perspective of the automaton in the sense that it is merely a tool or a means to power for its owner. However, it is also necessary to take into account the dynamics between owner and automaton because the automaton becomes

an extension of the will of the owner and redefines the identity or, at least, the agency of its owner.

In the medieval and early modern era, we find the second best-known myth of the creation of a living being, the Jewish myth of the Golem – a direct reinterpretation of the first chapter of the Book of Genesis in which man becomes the creator of life with God's help:

> Based on a mystical Jewish reading of Genesis chapter one where God creates by speaking the world into existence, the golem is a humanoid creature without a soul which is created out of dirt, using a magical incantation of God's divine name. […] The legend of the golem is tied back to the magical uses of the *Sefer Yetzirah* (or Book of Creating) which was written sometimes between the third and sixth centuries BCE. To create a golem one needed virgin soil from which to sculpt a human form. When the participants in the ceremony danced around the form chanting the letters of the divine name of God in accordance with a set of detailed directions, the golem would arise and come to life. (Peterson 12)

In this version of the myth of creation, the religious aspect is still predominant. However, a new dimension is added to the idea of the process of creating life: magic and, more precisely, alchemy.[6] The myth of the Golem can be seen as a new step within the evolution of the myth of creation because it provides a new paradigm: it is a man who is trying to create life by using God's words. The myth of the Golem, therefore, marks the shift from a God-centered myth to a man-centered myth.

The Enlightenment and the development of new sciences sparked a challenge to religious narratives of creation and allowed secular theories to be considered. The myth of a magical creation of life by man evolved into the pseudo-scientific myth of the

[6] Alchemy is composed of three branches: one is focused on finding the "elixir of life," one on finding the "philosopher's stone," and one on finding a way to turn any metal into gold.

homunculus.[7] The best-known rendering of the attempt to create life through alchemy is found in *Philosophia Saga* (1536), a treaty written by the medical doctor and alchemist Paracelsus:

> If the sperm, enclosed in a hermetically-sealed glass, is buried in horse manure for about forty days and properly "magnetized," it begins to live and to move. After such a time, it bears the form and resemblance of a human being, but it will be transparent and without corpus. If it is now artificially fed with the Arcanum sanguinis hominis until it is about forty weeks old, and if allowed to remain during that time in the horse manure, in a continually even temperature, it will grow into a human child, with all its members developed like any other child, such as may have been born of a woman, only it will be much smaller. (Qtd in Peterson 12).

Peterson highlights the rationality of Paracelsus' discourse, which is very similar to the description of a scientific experiment. His attitude towards the myth of creation marks a shift from a religious or mystical discourse to the realm of a possible science that is not yet known. However, this type of magical discourse remained a minor aspect of medicine because it was condemned by religious and political institutions; and the Christian representation of the creation prevailed.[8]

Because scientists were looking for an empirical explanation to the creation of man, Paracelsus' theory and pseudo-sciences like alchemy were soon rejected and ridiculed by the scientific community. At the same time, the religious account of man's creation as

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[7] The most well-known literary representation of the creation of an homunculus is to be found in Goethe's *Faust* (1808).

[8] John Milton's *Paradise Lost* (1667), a lyrical rewriting of the myth of man's creation found in the Bible, was a much more influential representation of man's creation. He uses the very words found in The Bible:

> He formed thee, Adam, thee, O Man,
> Dust of the ground, and in the nostrils breathed
> The breath of life; in his own image he
> Created thee, in the image of God
> Express, and thou becam'st a living soul. (Milton: Book VII, v. 524-28).

And in the Bible:

"Then the LORD God formed man of dust from the ground, and breathed into his nostrils the breath of life; and man became a living being" (National Council of Churches of Christ in America Genesis 2.7)

being "molded from clay" [9] was also challenged and sometimes even discarded. Man was not seen as a given creature, different from the rest of the natural world, but as a part of it and subject to change and evolution as any other species. This brought the understanding of man's nature one step further away from its conception as God's sacred creature.

It is not surprising that the first verified account of a full human automaton dates from the same period, in approximately 1535. Various Sixteenth Century sources mention the engineering works of Hans Bullman of Nuremberg and especially his human-like clockwork dolls that played a variety of musical instruments (LaGrandeur 36). This desire to challenge the natural order is especially relevant because of its tendency to go hand in hand with the desire to understand the functions and functioning of the human body prefiguring the mechanical works of both Descartes and La Mettrie. This desire in turn will be fundamental to the development of the figure of the android. The Enlightenment marks the major shift in the significance of the android as its religious standing was progressively replaced by a secular figure highlighting human ingenuity. Given that the Enlightenment was the crucial moment when the android started to take its modern signification, it is essential to address how this period represented and understood this figure as well as the debates concerning its place in society.

However, this hopeful and maybe at times naïve understanding of the android was soon to be challenged. The Romantic era is marked by a strong ambivalence concerning

[9] The imagery of man being made from clay is especially important due to its presence, not only in the Christian tradition, but also in the mythology of many other cultures: The story of Nintu the birth-goddess in Babylonian and Sumerian mythology, the Chinese myth of the goddess Nu Wa, the Promethean myth and the myth of Deucalion and Pyrrha in Greek mythology (Ovid, *Metamorphoses*), the Australian myth of Punjil, and the Jewish Golems.

this figure which is both sublime God and gothic monster because its very existence threatens to usurp humanity. The eerie movements of the popular automata were associated with the principle of vitalism, claiming that the body was a mere vessel for the vital principle characteristic of life. In Victor Frankenstein's own words, the body is a "lifeless thing" which needs to be "infuse[d with] a spark of being" in order to become a human being (Shelley 55). The body is no longer a part of humanity but merely its receptacle; it can be therefore be used as a mere object. The means of alchemy had been rejected by most scientists during the Enlightenment, but the idea that life could be modified or even created by science was seen as possible and even laudable. Therefore, the discourse of the disciplines we nowadays call chemistry and biology became predominant. They were referred to as "natural philosophy."[10]

The Industrial Revolution marked the beginning of the modern era in which Cartesian dualism was taken to the extreme, leading to the representation of the body as a mere object. The body was not seen as defining humanity but as a receptacle for the human. Reducing the human body to the status of object opened the door for the mass-production of human bodies. When defined by physics or economics, the body as an object is nothing more than the output of a mechanical production. The most famous depiction of this conception of the body is the "Central London Hatchery and Conditioning Center" in the first chapters of Aldous Huxley's *Brave New World* (1932); its description of the chain production of babies – "the principle of mass production at last applied to biology" (5) – has marked the imagination of the Twentieth Century. The creature/child is available in

[10] I will explore these developments in chapter two.

what is called "The Embryo Store" (7). The child as an individual has no value: individuality is replaced by "millions of identical twins" who match society's needs (5). Thus the myth of the creation of life became a myth of the creation of workers and productivity. This mass production symbolizes the destruction of the family and the guiding role of a creator/father for his creature/child. Instead of cultivating a hero, this modern myth of creation sees life as the output of a production (here, reproduction) unit which values is attributed on economic ground.[11]

In addition to exploring the creation of life, *Brave New World* explores the modification of life, an issue linked to utilitarianism: "they didn't content themselves with merely hatching out embryos [… They] decant[ed their] babies as socialized human beings" (Huxley 10). Once the body was considered a commodity, the idea that human beings themselves could be treated as commodities was only one step away. This shift in the myth of creation reflects concerns about eugenics and consumerist views of the body which appeared alongside the development of biology. Life and its creation do not have meaning per se; they are seen in terms of their usefulness for the government or society. This usefulness of the living body is still at the core of the debate on cloning: can life be seen as a product to be consumed? Due to the evolution of biology and medicine, the human body can be – and often is – modified. This fact leads to the idea that we are no longer

[11] The issue of the control of reproduction by society or the government is at the core of *Brave New World*. The Twentieth Century saw a number of novels dealing with this issue, such as Katharine Burdekin's *Swastika Night* (1937), George Orwell's *Nineteen Eighty-Four* (1948), and Margaret Atwood's *The Handmaid's Tale* (1985). All of them emphasize the disappearance of the family unit either in itself or as a personal, relational structure. The novels may have different aims but they all have this totalitarian feature of the government corrupting the family and the parent-child relationship. The government makes sure that the individual is alone and cannot find shelter in the family unit: for instance, in *Nineteen Eighty-Four*, the children are encouraged to denounce any hint of sedition in their parents' behavior. This use of children is directly inspired by fascist governments in which children had merely been the tools to strengthen authority.

totally human and that we belong to the world of the posthuman. In this sense, the myth of creation can be considered a precursor to the posthuman debate. It highlights the possible advantages of creating life in order to modify the human body, and by doing so, achieving better lives.

The Artificial Creation of Life: A Posthuman Endeavor?

The artificial creation of life is geared towards either the creation of new, usually anthropomorphic species or the development of new reproductive practices. In *How We Became Posthuman* (1999), Katherine Hayles identifies the primary justification for the existence of the field of artificial life (AL) in the words of one of its most well-known scientists, Christopher Langton:

> Artificial Life is the study of man-made systems that exhibit behaviors characteristic of natural living systems. It complements the traditional biological sciences concerned with the analysis of living organisms by attempting to synthesize life-like behaviors within computers and other artificial media. By extending the empirical foundation upon which biology is based beyond the carbon-chain life that has evolved on Earth, Artificial Life can contribute to theoretical biology by locating life-as-we-know-it with the larger picture of life-as-it-could-be. (qtd in Hayles 232)

In that respect, both the fields of artificial life and reproductive technologies partake in an understanding of biology as a powerful discourse operating as a way to create a categorical definition of what man is (or should be) as opposed to the rest of the natural world and to man's mechanical creations. This discourse is symptomatic of what Michel Foucault defines as biopower, which is the "mechanism by which regimes of coercion and control are mediated through the emergent human science – in this case, new reproductive technologies – by means of the 'medicalization of processes such as reproduction and childbirth'" (E. L. Graham 115). Because my analysis is primarily literary, I will privilege the concept of biopolitics as a subset of biopower. In "The Birth of Biopolitics" (1978-79),

Foucault defines biopolitics as "the endeavor, begun in the eighteenth century, to rationalize the problems presented to governmental practice by the phenomena characteristic of a group of living human beings constituted as a population: health, sanitation, birthrate, longevity, race …" (203).[12]

In the first volume of *The History of Sexuality* (1976), Foucault identifies the birth of biopolitics as the shift from the notion of "a people" to the one of a "population" (in a demographic sense) as a consequence of the creation of a specific discourse on sexuality in the Victorian era. It was the first time that "une société affirme que son avenir et sa fortune sont liés non seulement aux nombres et à la vertu des citoyens, non seulement aux règles de leur mariages et à l'organisation des familles, mais à la manière dont chacun fait usage de son sexe" (Foucault, *Histoire de la sexualité* 36). The regulation of sexuality is, however, only one instance of biopolitics. In "The Politics of Health in the Eighteenth Century" (1984), Foucault defines biopolitics as a "technology of population":

> The great eighteenth-century demographic upswing in Western Europe, the necessity for coordinating and integrating it into the apparatus of production, and the urgency of controlling it with finer and more adequate power mechanisms cause "population," with its numerical variable of space and chronology, longevity and health, to emerge not only as a problem but as an object of surveillance, analysis, intervention, modifications, and so on. The project of a technology of population begins to be sketched: demographic estimates, the calculation of the pyramid of ages, different life expectancies and levels of mortality, studies of the reciprocal relations of growth of wealth and growth of population, various measures of incitement to marriage and procreation, the development of forms of education and professional training. (342)

[12] In "Thoughts on the Concepts of Biopolitics Today" (2003), Paul Rabinow and Nikolas Rose provide a helpful discussion of biopolitics and its relation to biopower:

> "And, whilst Foucault is imprecise in his use of the terms, it might be helpful to suggest that, within the field of biopower, we can call biopolitics the specific strategies and contestations over problematizations of collective human vitality, morbidity and mortality, over the forms of knowledge, regimes of authority, and practices of intervention that are desirable, legitimate and efficacious" (Rabinow and Rose 3).

Biopolitics aims to preserve the ontological hygiene of humanity and the stability of Western society through a discourse of purity which "creates discrete categories of species, classes and states of being […through] the effacement of its others, namely inert nature, non-humans" (E. L. Graham 33).

With respect to the development of reproductive technologies and the creation of artificial life, the concept of biopolitics is key to the understanding of current debates on the legitimacy of such technologies because they constantly challenge the category of the human. In *Beyond Therapy*, the 2002 report of the Council on Bioethics mandated by President Bush, Leon Kass, the president of the council concluded that a human being needs to be seen:

> As a creature "in-between," neither god or beast, neither dump body nor disembodied soul, but as a puzzling, upward-pointing unity of psyche and soma whose precise limitations are the sources of its – ours – loftiest aspirations, whose weaknesses are the source of its – ours – keenest attachments, and whose natural gifts may be, if we do not squander or destroy them, exactly what we need to flourish and perfect ourselves – as human beings. (Yi 347–48)

The very use of the term "human being" is problematic as it refers to both "what" and "who" we are. In *The Post-Human Condition* (1995), Robert Pepperell defines "human" as "a contingent nexus of substances and events that mutates from egg to decaying corpse, neither bounded by our skin nor isolated from the environment we are woven into, and woven of" (Pepperell 21). He contrasts this definition of "human" with the one of "being" which is "the sum of active thoughts or sensations occurring in the cognitive medium, reinforced by a certain stability over time" (Pepperell 139). In that respect, the term "human" refers to what we are, the species we belong to, while "being" refers to who we are as individuals. However, the boundary between the two is not as clear as these

definitions make it seem as they do not take into account the fact that our body (what we are) is a part of who we are as individuals.[13]

Similarly, in his discussion of artificial life, Wilson refers to humanoid machines as "synthetic human beings," which suggests that they have a sense of self. This is also problematic because he includes all forms of objects imitating the human body: puppets, dolls, humanoid statues, mummies, homunculi, golems, human-like automatons, and robots (Wilson 27). This use of the category "synthetic human beings" is therefore too vague for the present study. It is critical to make a distinction between two different sub-categories of artificial life: the mechanical and the organic. The key figures of these categories are respectively the robot and the cyborg.

While the word robot is fairly new, the robot itself has a long history, dating from the first automata of antiquity. It is necessary to clarify the use and meaning of the words "automaton", "android," and "robot" as they are often used to refer to similar artifacts while suggesting different connotations. Both "automaton" and "android" were given entries in the *Encyclopédie* of the Eighteenth Century, which highlights the importance of the distinction between the two:

> AUTOMATE, s. m. (Mechaniq.) engin qui se meut de lui-même, ou machine qui porte en elle le principe de son mouvement.
>
> ANDROIDE, s. m. (Méchan.) automate ayant figure humaine & qui, par le moyen de certains ressorts, &c. bien disposé, agit & fait d'autres fonctions extérieurement

[13] The definitions and uses of the terms "human" and "man" are complex as they refer to both very real entities and discursive concepts. In this dissertation, I use "human" to refer to one's belonging to the human species and "man" to refer to one's individuality and identity. In some instance, the line between the two is crossed because one's sense of self is defined through normative discursive concepts.

> semblables à celles de l'homme. Voyez AUTOMATE. Ce mot est composé du Grec ἀνὴρ, génitif ἀνδρὸς, homme, & de εῖδος, forme.[14] (d'Alembert and Diderot)

These two entries indicate that androids were, at first, seen as a sub-category of automata. However, the term "automaton" refers to non-electronic moving machines, making the use of "android" antiquated when talking about modern instances of mechanical men, for which Karel Čapek's "robot" is more appropriate (Moran 680). It is only during the Enlightenment that we see a major shift in the figure and meaning of the android – which will later lead to the differentiation between automata and robot.

This concern about the definition of categories of artificial creatures both mimics and participates in modernity's attempt to provide a categorical definition of man when "the prospect of technologically enhanced humans, intelligent machines and modified nature places taken-for-granted assumptions about what it means to be human under increasing pressure" (E. L. Graham 17). The combination of natural organisms and technologies raises the question of hybridity and is therefore inherently problematic to discourses of purity. The use of such technologies requires us to think about how they disrupt the boundaries of the human as a category. In *Representations of the Post/Human* (2002), Elaine Graham identifies two interpretations of these disruptions, either "a threat to the 'ontological hygiene' of humanity or a rendering transparent of the very constructed character of the parameters of human nature" (17). By asking what will happen to man (as an individual and a species) as a consequences of the artificial creation of life, such disciplines belong to posthumanism or imply the existence of the posthuman.

[14] Translation quoted in Gaby Wood: "an automaton in human form, which by means of certain well-positioned springs, etc performs certain functions which externally resemble those of man" (21-22).

Before defining posthumanism and the posthuman, it is necessary to look at its origins in the discourses of sciences and the humanities. In *What is Posthumanism?* (2010), Cary Wolfe traces the origins of posthumanism back "to the Macy conferences on cybernetics from 1946 to 1953 and the invention of system theory involving Gregory Bateson, Warren McCulloch, Norbert Wiener, John von Neuman […]" (xii). This point of origins is justified by its introduction of a "new theoretical model for biological, mechanical, and communicational processes that removed the human and Homo sapiens from any particularly privilege position in relation to matters of meaning, information, and cognition" (C. Wolfe, *What Is Posthumanism?* xii). In the fields of the humanities of social sciences, posthumanism was foreshadowed by Foucault's warning, in *The Order of Things: An Archeology of the Human Sciences* (1966), about the upcoming death of man:

> The transition into luminous consciousness of an age-old concern, the entry into objectivity of something that had long remained trapped within beliefs and philosophies: it was the effect of a change in the fundamental arrangements of knowledge. As the archaeology of our thought easily shows, man is an invention of recent date. And one perhaps nearing its end.
>
> If those arrangements were to disappear as they appeared, if some event of which we can at the moment do no more than sense the possibility – without knowing either what its form will be or what it promises – were to cause them to crumble, as the ground of Classical thought did, at the end of the eighteenth century, then one can certainly wager that man would be erased, like a face drawn in sand at the edge of the sea. (qtd in Wolfe xii)

It is in response to the possible disappearance of the concept of man that posthumanism emerges. While posthumanism became a significant part of contemporary critical discourse in the mid-1990s, the actual term was introduce by Ihab Hassan in "Prometheus as Performer: Towards a Posthumanist Culture?" (1977). Hassan suggested that "we need first to understand that the human form – including human desire and all its external representations – may be radically, and thus must be re-visioned … five hundred years of

humanism may be coming to an end as humanism transforms itself into something we must helplessly call posthumanism" (qtd in Hayles 247).

As defined by Graham, posthumanism is the language of liminality. This discourse "hints at the dissonance occasioned by new technologies' blurring of secure boundaries and categories" by "suggesting cognitive or categorical disorientation in the face of change" (35). By defining posthumanism as such, Graham identifies its purpose as suggesting "that accounts of human identity, and the distinctiveness between humans and non-humans (machines, animals, nature) is expressed discursively rather than existing 'in the world' as a material feature of an ontological human nature" (35). Defining posthumanism is however not enough as its dismantlement of the humanist subject leaves us without a definition of who and what we are, and therefore requires the creation of a new category, the one of the posthuman. This problem is reflected in Hayles' questions "what are we to make, then, of the posthuman," "what will count as (post)human" (246).

These questions prove to be very problematic as there cannot be a single answer or definition of the posthuman. Because her book focuses on cybernetics, Hayles provides only one possible definition of the posthuman:

> For most of the researchers discussed […], becoming a posthuman means much more than having prosthetic devices grafted onto one's body. It means envisioning humans as information-processing machines with fundamental similarities to other kinds of information has been defined, many people holding this view tend to put materiality on one side of a divide and information on the other side, making it possible to think of information as a kind of immaterial fluid that circulates effortlessly around the globe while still retaining the solidity of a reified concept. (246)

Hayles has been criticized for her association of the posthuman with a " kind of triumphant disembodiment" (C. Wolfe, *What Is Posthumanism?* xv). However, this does not do justice

to her claim as she clearly states that her definition of the posthuman "is not the only view, and in [her] judgment, it is not the most compelling one" (Hayles 246). Despite Wolfe's opposition of his definition of the posthuman to the one proposed by Hayles, he argues that they both rely on a similar criticism of humanism:

> Hayles's use of the term, in other words, tends to oppose embodiment and the posthuman, whereas the sense in which I am using the term here insists on exactly the opposite: posthumanism in my sense isn't posthuman at all – in the sense of being "after" our embodiment has been transcended – but is only posthumanist, in the sense that it opposes the fantasies of disembodiment an autonomy inherited from humanism itself, that Hayles rightly criticizes. (Wolfe xv)

While Hayles and Wolfe offer only two definitions of the posthuman amongst many others, they are representative of the divide that marks posthumanism in terms of the relationship between body and identity.

Within the field of posthumanism, I privilege the version offered by Donna Haraway in her "Cyborg Manifesto" (1991) because of her focus on the relationship of the self with the other and the world:

> The Self is the One who is not dominated, who knows that by the service of the other is the one who holds the future, who knows that by experience of domination, which gives the lie to autonomy to the self. To be one is to be autonomous, to be powerful, to be God; but to be One is to be an illusion, and so to be involved in a dialectic of apocalypse with the other. Yet to be other is to be multiple, without clear boundary, frayed, insubstantial. One is too few, but two are too many. (Haraway 177)

Haraway's posthumanism is especially important because "it doesn't necessarily want to leave the body behind. Instead, interpreting the posthuman as a process of reformulating established categories of being creates the possibility of transforming identity politics based on dialectic relations" (Toffoletti 13–14). It is therefore opposed to the branch of

posthumanism privileging a neo-Cartesian perspective of the body as a mere prosthesis,[15] in which the body is therefore meaningless and can be used like any other material.

In order to preserve a definition of identity that is rooted in both the body and its environment, Haraway introduces the motif of the Cyborg. The Cyborg is neither artificial nor natural but a combination of both which makes it even more problematic than the robot of popular culture. Cyborgs can be robots or machines in which a human consciousness has been transferred. They can also be clones or enhanced human beings (designer babies)[16]:

> A cyborg is a hybrid creature, composed of organism and machine. But, cyborgs are compounded of special kinds of machines and special kinds of organisms appropriate to the late twentieth century. Cyborgs are post-Second World War hybrid entities made of, first, ourselves and other organic creatures in our unchosen (high) technological guise as information systems, texts and ergonomically controlled laboring, desiring, and reproducing systems. The second essential ingredient in cyborgs is machines in their guise, also, as communications systems, texts, and self-acting ergonomically designed apparatuses."(Haraway 1)

The Cyborg is both a creature found in science fiction and a metaphor of the human condition in the post-human age. Haraway's Cyborg is especially helpful because it allows for both the necessary theorization of the posthuman and the recognition of the uniqueness relative to each of its instances. Haraway's dialectical approach to the posthuman informs my project to the extent that I will be analyzing instances of the posthuman that are very different from one another while identifying an ethical behavior towards the posthuman, in

[15]The definition of posthumanism found in the *Encyclopedia of Bioethics* favors such a perspective: "the body is simply a prosthesis, albeit the first often we learn to use and manipulate. Consequently, replacing or enhancing human function with other prostheses is only a natural extension of our fundamental relationship with our begotten bodies" (Hook 2517).

[16] Because I am focusing on the creation of physical beings, I will not include narratives about human consciousness being transferred into machines as they are not created beings but rather modified beings.

all its instances, that should be adopted by society as a whole and at the level of the individual.

Synopsis

In chapter one, "The Rise of the Android: The Industrial Revolution and the Enslavement of the Mechanical (Wo)man," I will argue that the figure of the automaton or android is one of the major ancestors of the contemporary representation of the artificial creation of human life. I will analyze how the philosophical works of Descartes and La Mettrie redefined man and its place in the world by comparing, and sometimes equating, him to a machine. The philosophical mechanization of the world was a very controversial position. Nevertheless, it was popularized through human-like automata, which were, at that time, becoming more and more realistic and life-like, therefore raising similar questions about the nature of man and his ability to act. This popularity, however, was short-lived as these automata began to be perceived as threatening when the same technologies were used to transform the modes of production and revolutionized the French economy by replacing workers. The philosophical discussions about the mechanization of man took another form and became a matter of fiction. I will argue that Auguste Villiers de l'Isle-Adam's 1886 novel, *L'Eve future*, is informed both by the scientific developments and philosophical debates of Villiers' time and reveals its contemporaries' metaphysical and ethical anxieties about the mechanization of man.

In chapter two, "The Double-Edged Development of Biology: Experimentation, Progress, and Ethics in Romantic Science – Mary Shelley's *Frankenstein* – a Case Study," I will read the evolution of natural philosophy into the established disciplines of biology and medicine as another source for the development of the creation of life. Drawing on

Mary Shelley's *Frankenstein, or the Modern Prometheus* (1818) and a study of the scientific discourse of the long Eighteenth Century, I will show that the emergence of medicine and the concept of vitalism led to new questions about the human body and about the legitimacy and morality of medical and scientific practices. I will argue that Shelley's *Frankenstein* articulates these concerns, not to challenge the potential of science but to warn us about the moral responsibilities inherent to such practices.

In chapter three, "Artificial Intelligence and Human-Like Robots: What Happens When We Cannot Differentiate Between Man and Machine?," I will analyze how the development of artificial intelligence in the middle of the Twentieth Century dramatically changed the representation of artificial life. I will focus on two types of narratives that explore the new dilemma stemming from the creation of intelligent robots. First, I will analyze the threats that such robots present for man and society. Focusing on Karel Čapek's play *Rossum Universal Robot* (1920) and on Philip K. Dick's novel *Do Androids Dream of Electric Sheep*? (1968), I will show that the utilitarianism at the core of the production of intelligent robots in an industrial setting privileges the creation of robots that are more intelligent and productive than man, thus challenging the superiority of human beings. These narratives do not only suggest that robots are better workers than man but that they might be superior to man on all accounts because of their higher intelligence. I will argue that these novels require us to reconsider the definition of human based on superior intelligence. Another response to the emergence of artificial intelligence is the emergence of narratives of artificial entities trying to become human, such as Isaac Asimov's *The Bicentennial Man* (1976) and Roger Zelazny's "For a Breath I Tarry" (1966). I will argue

that these narratives are especially relevant because they attempt to identify human characteristics that are not intelligence.

In chapter four, "Who I am? What I am? A Clone's Quest for Humanity," my analysis will center on the figure of the clone, following the development of bio-engineering in the last twenty years. I am closing this project with this chapter because clones are theoretically the most probable form of artificial life in the near future. I will argue that novels about clones challenge the contemporary legal distinction between therapeutic and reproductive cloning. My discussion of four young adult or cross-over novels – Kazuo Ishiguro's *Never Let Me Go* (2005), Nancy Farmer's *The House of the Scorpion* (2002), Charlotte Kerner's *Blueprint* (1999), Lesley Chance's *Deconstructing Dylan* (2006), and Eva Hoffman's *The Secret* (2001) – will be focused on the question of identity and responsibility. I will argue that these narratives highlight the necessity of a clear legislation and supervision of cloning practices in order to safeguard the bodily integrity of therapeutic clones as well as the psychological and emotional welfare of reproductive clones.

Chapter 1:

The Rise of the Android:

The Industrial Revolution and the Enslavement of the Mechanical Wo(Man)

The Enlightenment shift from sacred to secular understandings of human nature can be partly attributed to Descartes' *Le Discours de la methode* (1633), *Les Méditations* (1641), and *L'Homme* (1630-33). Because of his works, two main ideas became fundamental to the development of the figure of the android: the distinction between the mind and the body, and the understanding of organisms as mechanical. Following his lead, Julien Offray de La Mettrie deeply upset the intellectual community of the Enlightenment when he claimed, in *L'Homme-machine* (1748), that man is nothing more than an evolved animal, his mind being a mere consequence of his mechanical body. This bold claim was far from being well received by a culture that was still profoundly religious. La Mettrie was therefore ridiculed and exiled twice – first from France and then from the more accepting Netherlands - while his books, deemed heretical, were banned and burned. However, the representation of the body as mechanical did not disappear from the collective imagery and was to be found in the fairly widespread "acceptance of the premise that natural and artificial machines were made of the same stuff"(Muri 44).

This fascination of the mechanical organism is further demonstrated by the

development of automata in Europe. While the figure of the automaton predates Descartes and La Mettrie's works (the first confirmed occurrence of an android is that of Hans Bullmann of Nuremberg around 1535) and was present throughout the Sixteenth Century (with its origins in Lucian's *True History,* 2nd century CE), it reached its golden age in Europe and especially France and Switzerland during the Eighteenth Century. In *Human Robots in Myth and Science* (1967), the historian of robotics, John Cohen attributes this newly found fascination for automata to the loss of credibility of alchemy at the beginning of the Seventeenth Century as empirical enquiry became the norm in Western Europe. Most alchemists became either Hermetic philosophers or focused on the natural sciences, especially chemistry.

The Eighteenth and Nineteenth Centuries saw automata develop from scientific achievement and wondrous spectacles into industrial machines and commercial gadgets. While the automata remained an innocent marvel in the eyes of the public during the first half of the Eighteenth Century, it soon became the cause of many workers' uprisings. The transfer of this newly acquired knowledge of mechanics to the industry meant the creation of machines intended to either facilitate or replace human labor. According to Andreas Huyssen, the decline in the culture of androids and automata corresponds to its appropriation as a literary motif. However, this appropriation also changed the significance of the android in so far that it does not represent mechanic genius any longer but rather becomes a threat (Huyssen 69–70). This transition from actual to fictional automata is best exemplified by Auguste Villiers de l'Isle-Adam's 1886 novel, *L'Eve future*, which is a romantic extrapolation from the work of Thomas Edison on talking dolls at the end of the

Nineteenth Century.[17]

In this chapter, I argue that Villiers' novel articulates anxieties about new technologies of automation by proposing a novel based on the creation of an advanced automated being intended to replace and even surpass an actual person. His articulation relies both on actual scientific developments in order to be credible and on philosophical and metaphysical discussions of the nature of man and his place in and in relation to the rest of the world. Villiers' masterful combination of fact, myth, and philosophy through the figure of the *andréide* functions as a criticism of the industrial era's tendency to privilege efficiency and ideal over actual human life. Villiers relies on the literary motif of the automata that had gained popularity during the Nineteenth Century mainly through the work of the German romantic writer E.T.A. Hoffmann, especially his most well-known short story "The Sandman" (1816).[18] While one cannot overemphasize the importance of "The Sandman," the focus of my analysis is Villiers' novel and his use, throughout the novel, of references to actual scientific and technical developments known to the public when he was writing. In addition, Villiers uses Thomas Alva Edison (1847-1931), one of the most influential inventors of his time, as the main protagonist of his novel – its initial title was after all *L'Androide paradoxale d'Edison*.[19]

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[17] In *L'Eve future*, the main protagonist, Edison, agrees to build an artificial woman in order to convince his friend Lord Ewald not to commit suicide. Lord Ewald's despair stems from the disappointment brought to him by his love interest, Miss Alicia Clary, whose intellect does not match her beauty. Edison's solution is to build an android, Hadaly, who looks like Alicia but without her flaws. Despite his initial reluctance and even disgust, Lord Ewald eventually accepts the android as a new companion. However, the novel closes with the sinking in the Atlantic of Ewald's and Hadaly's ship.

[18] "The Sandman" inspired generations of writers (amongst them, Leroy Del Rey's "Helen O'Loy in 1976, or Xavier Mauméjean's *La Vénus anatomique* in 2004. Female automata or robots became a staple of the genres of the fantastic and of science fiction.

[19] I will focus on the technology depicted in the novel because my primary interest is the creation of Hadaly and its significance. However, another fascinating angle of approach is the study of the architecture of the text itself and how, doubled with technologies of imitation and reproduction, it highlights Villiers' problematization of the mechanical reproduction of art. See Boyd Peterson's "The Reality of Artifice: Villiers

Because Villiers' *andréide* is inspired by the long tradition of the automaton, I will first provide an account of the development of automata during the Eighteenth and Nineteenth Centuries that led to its establishment as a literary motif. I will then identify how Villiers plays with both facts and fiction in order to create a credible moral fable about our relation to technology. Finally, I will read the novel as a criticism of the idealization of scientific progress as a way to compensate for human flaws. In that respect, *L'Eve future* articulates and challenges a Cartesian dualistic framework by providing an extreme example of what could be the consequences of such a division between mind and body. Despite the *andréide*'s ability to pass as human, she is still a mere deception. This inherent flaw in her design challenges Cartesian dualism and is thus more in line with La Mettrie's philosophy.

From Toy to Machine: The Development of Automata

During the Eighteenth Century, automata were a popular form of entertainment. Numerous itinerant exhibitions of automata travelled throughout Europe. Often based on illusions, it was part of a relatively new interest in the uncanny. Amongst the automata-builders, Jacques de Vaucanson (1709-1782), Pierre Jacquet-Droz (1721-1790), Baron Wolfgang von Kempelen (1734-1804) and Leonard Maelzel (1772-1838) were the most well known. Because of Vaucanson's popularity in the 1730s and his later works for the French textile industry, I will use his example to address the development of automaton technology and its cultural, social, and economic significance. In the first half of his career, his genius was praised by many, which led to his appointment to a governmental position

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de l'Isle Adam's *L'Eve future* and the Anxiety of Reproduction (The New York Review of Science Fiction 18:10, 2006) and Gayle Zachmann's "Derision and Lucidity: Savoirs and Machinations à Gloire in *L'Eve future*" (Romance Quaterly 47:3, 2000).

relating to machinery and industry. His most famous creations were The Flute Player (1735), The Golden Duck and The Fife and Tambour Player (both created in 1738).

Vaucanson first gained his popularity when he exhibited his Flute Player in 1737. What made his automaton so special was the fact that it was not a mere artifice but a true representation of a flutist. Rather than building a complex music box, Vaucanson built an android able to play twelve different pieces on the flute. He achieved this through several mechanisms that "could form its lips in four directions on the flute, move a tongue-like mechanisms within its mouth to adjust air flow, and move its anatomically correct fingers of soft leather on the flute" (Moran 680). In order to do so, he studied how one plays the flute and transcribed this into mechanisms. He explained his whole thought-process and technical application in a pamphlet:

> Voilà, MESSIEURS, qu'elles ont été mes réflexions sur le son des instruments à vent, & sur la manière de le modifier. C'est sur ces causes Physiques que j'ai essayé d'appuyer mes recherches, en imitant une semblable mécanique dans un Automate, à qui j'ai taché de faire produire un semblable effet en le faisant jouer de la Flute. (J. Vaucanson 8–9)

This focus on the whole process of playing the flute rather than on its imitation is the very reason why this automaton gained in popularity as it was not a musical box in the shape of an android but an android actually playing the flute.

In 1738, Jacques de Vaucanson once again revolutionized the history of the automaton when he exposed his golden duck, also known as the "Digesting Duck." Its particularities were that it was exceptionally small and that its creator claimed that he was attempting to better understand the functioning of a purely organic and animal process, namely that of digestion. The duck was made of more than a thousand moving parts (over four hundred just for the wings and feathers), including a functioning gastrointestinal

system, which made it possible for the automaton to move and clean its wings and feathers and to eat and drink (which included bending its neck to access food and water), and, to defecate. In the pamphlets accompanying the exhibition, Vaucanson explains that the duck's digestive system imitated a process of dissolution through the use of chemicals rather than "trituration": "the matter digested in the stomach being conducted by tubes as in an animal by its bowels into the anus, where there is a sphincter which permits it to be released" (Moran 682). In a letter to l'Abbé de Fontaine (1738), Vaucanson acknowledges that the digestive system used in the duck was not perfect but merely an imitation of the mechanism of such a process.[20] Claiming that "l'inspection de la machine fera mieux connoître l'imitation de la nature qu'un plus long detail, qui ressembleroit trop à une explication anatomique" (Vaucanson np),Vaucanson highlights the role of the duck as a didactic tool rather than an exact replica of natural life, as its portrayal of the process was more important than the actual accuracy of the mechanism.

The least popular and final addition to this automata collection was the "Fife and Tambour Player." It is often considered the most complex of Vaucanson's automata because of the combination of two musical instruments (resulting in the performance of twenty different musical pieces) and its verisimilitude (it was human-sized and clothed in shepherd attire). This tour de force allowed Vaucanson to win first prize, over the work of Diderot, in the Paris Academy of Sciences in 1738.

[20] However, as noted by Riskin, the automaton will be proven a fraud in 1783: "a close observer of the Duck's swallowing mechanism uncovered an even greater deceit: the food did not continue down the neck and into the stomach but rather stayed at the base of the mouth tube. Reasoning that digesting the food by dissolution would take longer than the brief pause the Duck took between swallowing and expulsion, this observer concluded that the grain input and excrement output were entirely unrelated and that the tail end of the Duck must be loaded before each act with fake excrement. The Duck that pioneered physiological simulation was, at its core, fraudulent." (Riskin 609)

Because of these three automata, Vaucanson has often been relegated to a mere entertainer, leading to a questioning of his motives. Why would such an ingenious man limit himself to mere toys and simulations? We know, from the records of the Académie de Lyon, that Vaucanson was working on a moving anatomy after the Fife and Tambour Player. This anatomy was supposed to portray the circulation of fluids within an anatomically correct humanoid machine. While no remnants or drawings of this project have been found, two references to this project have been identified:

> Vaucanson stated that "Constructing an automaton figure which will imitate in its movements, animal functions, the circulation of blood, respiration, digestion, the combination of muscles, tendons and nerves, etc." There are no existent drawings or illustrations of this first anatomic simulator, but the Academy's minutes recorded that "this ingenious machine […] will represent a human anatomy lesson." (Moran 682)

Vaucanson's statement suggests that his interest in automata was not limited to the financial or frivolous. When he addressed l'Académie Française des Sciences, Vaucanson devoted most of his letter glorifying the sciences represented by this institution and explaining how they inspired him to build his automata rather than focusing on his popularity and his reputation as an entertainer:

> Aprés avoir puisé dans vos Mémoires, les principes qui m'ont guidé, je serois satisfait, MESSIEURS, si j'osois me flater de vous en voir reconnoître une assez heureuse application dans l'exécution de cet Ouvrage. Je trouverai dans l'approbation que vous daignerez lui donner, le plus glorieux prix de mon travail, & j'acquerrai de nouvelles forces dans mon espoir encore bien plus flateur, qui fait mon unique ambition. (17)

Vaucanson's mastery of mechanisms is rivaled only by its attention to detail which is best exemplified by his Fife Player, to which he gave fingers made of skin (from a glove maker) because he had realized that wooden fingers were not soft enough to truly simulate playing a metal flute. This attention to detail does not merely suggest a mere desire to mimic human

action; it also indicates a desire to understand the complexity of the functioning and process of actions – whether dealing with internal, organic actions such as digestion or with interactions of man with objects such as playing a musical instrument.[21]

However, it is Vaucanson's duck that most effectively shows his motives. We cannot talk about realism in this case because the entire mechanism is exposed to the public, so that the digestive process is open to view. Vaucanson commented that he built the duck "rather to demonstrate the Manner of the Actions, than to show a machine" (Fryer and Marshall 264)and concludes with a joke:

> Perhaps some Ladies, or some People, who only like the Outside of Animals, had rather have seen the whole cover'd; that is the Duck with Feathers. But besides, that I have been desir'd to make every Thing visible; I woul'd not be thought to impose upon the Spec-tators by any conceal'd or juggling Contrivance. [sic] (Fryer and Marshall 264)

Vaucanson's playful behavior might explain why he was seen more as an entertainer than an intellectual by the general public. However, scientists and philosophers did appreciate his technical (and sometimes philosophical) knowledge. A comment made by Helmholtz after viewing Vaucanson and Jacquet-Droz's automata summarizes this ambivalence:

> That men like those mentioned, whose talent might bear comparison with the most inventive heads of the present age, should spend so much time in the construction of these figures which we at present regard as the merest trifles, would be incomprehensible, if they had not hoped in solemn earnest to solve a great problem. (Fryer and Marshall 269)

[21] Ironically, while the Fife Player is a much greater achievement than the Flute player, the latter was much more popular. Wood argues that this is due to the fact that the Flute Player's deficiency made it less threatening while the Fife Player was too human-like and too close to a perfection impossible to achieve for man (Wood 25). This argument goes hand in hand with what Wilson calls Vaucanson's repetition compulsion: "This mechanistic overcompensation, seemingly a manifestation of affection for others and for life, is a product of self-love and death-love. This narcissism is related to Freudian melancholia. […] Because the flutist was controlled by a human maker, the machine reinforced a cherished idea: that humans are superior to machines, able to manipulate the cogs, no matter how complex, as mere tools. Harmlessly sequestered and under the command of a creator, the flute player probably struck its audiences as a harbinger of a brave new world in which humans could deploy machines to rule the earth" (Wilson 105).

But what is this great problem Helmholtz is referring to? Descartes' work had a preponderant influence on the philosophical circles and his definition of natural organisms as mechanisms had imbued scientific discourses by Vaucanson's time. This great problem, one that Helmholtz himself was trying to resolve, was the "mechanization of the world picture by bringing physiology and psychology within its scope" (Fryer and Marshall 269). It is difficult not to make the link between Vaucanson's work and the theories La Mettrie was developing at the same time, leading to *L'Homme machine* in 1748.[22]

In "The Defecating Duck or the Ambiguous Origins of Artificial Life" (2003), Jessica Riskin defines these automata as philosophical experiments "attempt[ing] to discern which aspects of living creatures could be reproduced in machinery, and to what degree, and what such reproductions might reveal about their natural subjects." Their focus on bodily functions (such as eating, defecating, or breathing) are symptomatic of a desire "to test the limits of resemblance between synthetic and natural life" (Riskin 606).

But what was at stake in such a testing of the boundaries between natural and synthetic or organic and mechanic? Philosophical mechanism and the rise of the science industry were raising more questions than providing answers. The automata, therefore, are symptomatic of a certain ambivalence towards these mechanical theories:

> Neither mechanist nor antimechanist conviction, then, but rather a deep-seated ambivalence about mechanism and mechanist explanation provided the context for the emergence of artificial life. The Defecating Duck and its companions commanded such attention, at such a moment, because they dramatized two contradictory claims at once: that living creatures were essentially machines and that living creatures were the antithesis of machines. (Riskin 611–12)

[22] I will discuss the influence of Descartes' and La Mettrie's works in the last section of the present chapter.

Such a reading of Vaucanson's work explains why he would emphasize the process of digestion by making it visible, while still tricking its audience by leading them to think that the duck was actually digesting rather than being a representation of digestion.

The Eighteenth Century was full of such scams, the most well-known being the one of Baron Wolfgang von Kempelen's Chess Player, also known as The Turk, in 1769.[23] Kempelen had promised the Austrian empress Maria-Theresia that he would build a machine that would be more impressive than any magic trick. He built his Chess Player to fulfill this promise. The Chess Turk was said to be unbeatable – Kempelen toured with it in Europe and even took it to America. It played with many preponderant figures of the Eighteenth Century such as the empress herself, Benjamin Franklin and Napoleon.[24]

As chess is considered to be a game requiring a somewhat high level of intelligence, its use in the context of automation led to many debates on the automaton's authenticity. It seemed impossible that a mere mechanism could show proof of intelligence and this led to many attempts to identify the trick behind the machine. However, the secret would be

[23] Its famous account is the one Edgar Allan Poe wrote for the *Southern Literary Messenger* in 1836:

> A figure is seen habited as a Turk, and seated, with its legs crossed, at a large box apparently of maple wood, which serves it as a table. […] The chair on which the figure sits is affixed permanently to the box, on top of this latter is a chess-board, also permanently affixed. The right arm of the Chess-Player is extended at full length before him, at right angles with his body, and lying, in an apparently careless position, by the side of the board. The back of the hand is upwards. The board itself is eighteenth inches square. The left arm of the figure is bent at the elbow, and in the left hand is a pipe. […] The Turk plays with his left hand. All the movements of the arm are at right angles. In this manner, the hand (which is gloved and bent in a natural way) being brought directly above the piece to be moved, descends finally upon it, the fingers receiving it, in most cases, without difficulty. […] At every movement of the figure machinery is heard in motion. During the progress of the game, the figure now and then rolls its eyes, as if surveying the board, moves its head, and pronounces the word *échec* (check) when necessary. If a false move be made by his antagonist, he raps briskly on the box with the fingers of his right hand, shakes his head roughly, and replacing the piece falsely moved, in its former situation, assumes the next move himself. Upon beating the game, he waves his head with an air of triumph, looks round complacently upon the spectators, and drawing his left arm farther back than usual, suffers his fingers alone to rest upon the cushion. (Poe 320–21)

[24] This encounter was to become the height of the automaton's career as it was 'able' to identify Napoleon's illegal moves and refused to resume the game.

safely guarded for decades. Because the public was aware of the illusory nature of the automaton, the signification of the Chess Player cannot be defined in terms of imitation and therefore becomes more of a philosophical puzzle:

> Audiences could be titillated by the possibility of automation; they could, to their mind's content, tempt fate and fear with the idea that machines could be like humans, without ever having to deal with the reality. It was like playing with machinery, or playing with what was human, the way one might play with fire. The label "a new Prometheus" was both an honour and a warning, since the truly Promethean territory was this: it was not mechanical ingenuity, the giving of imitated life, that had earned Kempelen his moniker, but rather the act of playing with life, and the dangerous thrill of the riddle his invention proposed. (Wood 82–83)

Vaucanson's duck and Kempelen's Chess Player might have been scams, but this does not undermine their significance.[25] This blurring of the boundaries between the real and the imitation allowed for a discussion of the distinction between natural and mechanical.

We can already see that the playfulness of these automata was tainted by the often uncomfortable philosophical questions they raised. Nevertheless, the conversation took a sharp turn when these seemingly harmless toys became machines used in several industries:

> The problem of what constitutes intelligent action as measured against mechanical action, which preoccupied philosophers of the mid- to late eighteenth century, was by no means of purely philosophical interest. The epistemological question of the limits of mechanical simulation was inextricably tied to a set of economic and social problems and implications. (Riskin 623)

Once again, we find Jacques de Vaucanson at the center of a revolution. While he started his engineering career with the building of automata and the study of movement in both

[25] Later, Walter Benjamin identified another philosophical dilemma at stake with the Chess Player: "he wrote that the figure 'can easily be a match for anyone if it enlists the services' of the man inside. Put this way, the tale of the Turk becomes monstrous, not a lifeless thing directed by a man (or a woman), but the puppeteer in her service of the puppet. The anxiety is no longer whether a machine can be like a man, but whether a man can become a mere machine" (Wood 99).

man and machine, the work he did for the textile industry in France as head inspector of silk factories had more important and long-lasting consequences on French society. He was appointed in 1741 by the King in order to restructure the French textile industry, and specifically the silk industry.

In 1741, he created a machine for the automatic weaving of brocades; in 1760, he developed an industrial metal cutting lathe. Throughout his appointment, he invented many other machines in an attempt to optimize the production of silk. After all, he had been appointed by the king in order to develop the French silk industry so that it could compete with the production of Italian silk. He used his mechanical knowledge not only to improve the tools already in use but also to create new machines, using hydraulic systems, to boost production by making the production easier as well as to diminish the necessity for human labor. While his inventions were extremely beneficial for the textile industry itself, they were not as such for the many workers involved. Not only did they reduce the need for said workers, but they also devalued their work and made competition next to impossible.[26] For the sake of efficiency, he established a monopoly of merchant-manufacturers, which led to one of the most violent pre-Revolutionary strikes and riots. He was then forced to leave his home in Lyon in secrecy (in the middle of the night, clothed in a monk's outfit).

We have seen that the seemingly innocent toy and the socially revolutionary development of industrial machines are intimately related. Because of the conflation between the two in the eyes of the general public, as suggested by Huyssen, the figure of

[26] Riskin links the creation of such machines to a redefinition of human labor in general: "This understanding derived from a new way of drawing the distinction between intelligent and unintelligent work, locating the divide somewhere along a spectrum from intelligent human at one end, through less intelligent human in the middle, and arriving at the other end in machinery" (Riskin 624). This distinction between intelligent and unintelligent work reflects the one between intelligent and mechanical activity highlighted by Kempelen's Chess Player.

the automaton could not keep its status of an innocent toy any longer. Henceforth, the philosophical discussions concerning the mechanization of the human had to be displaced – the new locus being fiction. This transition from reality to fiction can be seen through the figure of the *andréide* in Villiers' *L'Eve future* (1886).

The *andréide* can be read as another step in the technical development of automata. Edison himself acknowledges the influence of automata on his work:

> Vous rappelez-vous, mon cher Lord, ces mécaniciens d'autrefois qui ont essayé de forger des simulacres humains? – Ah ! ah ! ah ! – ah ! … […] Les infortunés, faute de moyens d'exécution suffisants, n'ont produit que des monstres dérisoires. Albert le Grand, Vaucanson, Maelzel, Horner, etc., etc., furent, à peine des fabricants d'épouvantails pour les oiseaux. […] Oui, telles furent les premières ébauches des Andréidiens. » (Villiers de l'Isle-Adam 183–85)

Despite his disdain towards these "manequins" and "infortunés," Edison recognizes their place in the history of science. It is difficult not to see the resemblance between the *andréide* and Vaucanson's work. Vaucanson's attention to detail such as the use of skin for his Flute Player and his interest in building an anatomically correct automaton reflecting a human body already introduces the combination of both mechanical and organic matter. It is, however, the very inclusion of organic material that Edison takes pride in, especially his attempt to create artificial flesh, one that is superior to natural flesh because it does not perish and looks and feels real.[27] The description of this artificial arm is one of the rare instances when Edison fully discloses his whole process of creation:

> Une fois la nuance de la blancheur dermale bien saisie, voici commet je l'ai reproduite, grâce à une disposition d'objectifs. Cette souple albumine solidifiée et dont l'élasticité est due à la pression hydraulique, je l'ai rendue sensible à une action photochromique très subtile. J'avais un admirable modèle. Quant au reste, l'humérus d'ivoire contient une moelle galvanique, en communion constante avec

[27] Edison expressively rejects the idea that the natural is necessarily superior: "Et, entre nous, la Nature est une grande dame à laquelle je voudrais bien être présenté, car tout le monde en parle et personne ne l'a jamais vue!" (Villiers de l'Isle-Adam 182).

> un réseau de fils d'induction enchevêtrés à la manière des nerfs et des veines, ce qui entretient le dégagement calorique perpétuel qui vient de vous donner cette impression de tiédeur et de malléabilité. (Villiers de l'Isle-Adam 183)

Edison's vehement tirade is a response to Ewald's initial reaction to the artificial arm exposed in the former's laboratory. Ewald's reaction is that of disgust and fascination which encourages Edison to explain the value and composition of the artifact.

Edison adamantly establishes a distance between his work and the automata of the past. This distance operates in different ways: it is based on time ("le temps a passé"), scientific developments ("la science a multiplié ses découvertes"), metaphysical advancements ("les conceptions métaphysiques se sont affinées"), and more reliable tools ("les instruments de décalque […] d'une précision parfait"). According to Edison, these differences create such an important gap between the automata and the andréide that they belong to different categories of being. If Edison's andréide does not belong among Vaucanson's automata, it does belong to the tradition of automated beings.

Edison's Andréide: Between Fact and Fiction

The strength of Villiers' novel is its extrapolation from actual scientific and technological developments from his time through his fictionalization of the famous inventor Thomas Alva Edison. It constantly shifts from fact to fiction, providing a space to explore hopes and anxieties about these new developments. It is through these actual facts that Villiers builds the verisimilitude of the novel and therefore its credibility as a discussion of new science.

Thomas Alva Edison or le sorcier de Menlo Park

Villiers' novel starts with an *Avis au lecteur* (foreword) highlighting his focus on Edison, his popularity and his growing legend:

> Chacun sait aujourd'hui qu'un très illustre inventeur américain, M. Edison, a découvert, depuis une quinzaine d'années, une quantité de choses aussi étranges qu'ingénieuses; - entre autres le Téléphone, le Phonographe, le Microphone - et ces admirables lampes électriques répandues sur la surface du globe; - sans parler d'une centaine d'autres merveilles.
> En Amérique et en Europe une LEGENDE, s'est donc éveillée, dans l'imagination de la foule, autour de ce grand citoyen des Etats-Unis. C'est à qui le désignera sous de fantastiques surnoms, tels que le MAGICIEN DU SIECLE, le SORCIER DE MENLO PARK, le PAPA DU PHONOGRAPHE, etc., etc. (Villiers de l'Isle-Adam 95)

While Villiers clearly establishes that he is referring to the legend of the sorcerer of Menlo Park and not to the actual inventor,[28] this distinction is, however, not reinforced later on in the text.

Edison is described as a combination of scientist and artist – "C'était presque le visage de l'artiste traduit en un visage de savant. Aptitudes congénères, applications différentes" (Villiers de l'Isle-Adam 100) – aptitudes which evoke the qualities deemed essential for an inventor, namely methodology and imagination. We are very far from the figure of a sorcerer or magician. On the contrary, Edison's character is much more reminiscent of the mad-scientist[29] as he is described as selfish and willing to sacrifice almost anything for the sake of science: we learn that he had allowed for two trains with passengers to collide in order to test the theory that he could stop them instantly. However, the railroad engineers did not follow his instructions properly which led to many casualties. Edison's only response to this disaster was to dismiss the engineers as "stupides maladroits" (clumsy idiots).

[28] "Il est ainsi, bien établi que j'interprète une légende moderne au mieux de l'oeuvre d'Art-métaphysique dont j'ai conçu l'idée, qu'en un mot le héros de ce livre est, avant tout, le 'sorcier de Menlo Park', etc. - et non M. l'ingénieur Edison, notre contemporain" (Villiers de l'Isle-Adam 96).
[29] In the following chapter, I will discuss in depth the motif of the mad-scientist in my analysis of Mary Shelley's *Frankenstein*.

In only one instance do we have a description which suggests a magical element: in the chapter entitled “magie blanche,” Edison is described as having an irresistible, quite electrifying, magnetism. "Toutefois, un magnétisme irrésistible était sorti de ces derniers mots. Lord Edwald, malgré lui, le subissait et ressentait le pressentiment d'un imminent prodige" (Villiers de l’Isle-Adam 171). Nevertheless, it is rationalized in the following lines when the scientific, the magical, and the natural are put on the same level.

> Et, sous la lumière des lampes qui leur jetait une pâleur terrible, ces objets autour de lui, monstres d'une scientifique région, prenaient des configurations inquiétantes et éclatantes. Ce laboratoire semblait, positivement, un lieu magique; ici, le naturel ne pouvait être que l'extraordinaire. (Villiers de l’Isle-Adam 172)

The secrecy and hidden underground sections of this laboratory suggest a strong sense of forbidden experiments and knowledge. Secrecy and a certain disregard for society, paired with a total lack interest or concern about the possible consequences for others are common traits of the mad-scientists of literature.

The portrayal of Edison’s character is therefore far from the one of a magician or sorcerer dealing with supernatural entities as Villiers claimed. Rather, it seems that he crystalizes a certain anxiety about the moral responsibility of scientists and the limits of an unlimited faith in scientific progress when he refers to Edison’s thought process as "reflexions fantaisistes et bizarres" (Villiers de l’Isle-Adam 103). Edison only thinks in terms of his inventiveness and rejects any kind of involvement after the completion of a successful prototype:

> La première Andréide seule était difficile. Ayant écrit la formule générale, ce n'est plus désormais, laissez-moi vous le redire, qu'une question d'ouvrier: nul doute qu'il ne se fabrique bientôt des milliers de substrats comme celui-ci - et que le premier industriel venu n'ouvre une manufacture d'idéals! (Villiers de l’Isle-Adam 307)

The discrepancy between his creative genius and his lack of awareness is recurrent throughout the novel. This discrepancy is not due to a lack of intelligence but is deeply rooted in Edison's arrogance (Oancea 175). The novel introduces Edison in one of his melancholic reflections concerning his phonograph. He wishes that he had been alive centuries ago so that he could have recorded the "grandes paroles" of historical figures. He even expresses openly his desire to record God's voice so that "*dès le lendemain il n'y aurait plus un seul athée sur la Terre*" (Villiers de l'Isle-Adam 129). These wishes show that he is deeply egocentric and sees himself as superior to most other people. He believes his genius to have few if any limits, and that he is totally self-reliant, dismissing the role of the scientific culture of his age and all the knowledge gained by his predecessors.

In that respect, Villiers' depiction of Edison's work is far from the truth: Menlo Park was not a refuge far from the eye of the public for disturbing experiments. On the contrary, it was a hub composed of many lines of mass-production for the 1093 devices patented by Edison – not including the ones he invented in collaboration with his assistants and their own inventions. In addition to that, the *andréide* of the novel, "une pièce unique," is modelled on the actual talking dolls which were mass produced early on and fed to the American and European markets.[30]

Villiers' attention to detail concerning Edison's inventions and the verisimilitude of his description of technological developments, whether applied to commercial purposes or art, creates for the reader a seemingly believable representation of the actual inventor, especially because Villiers uses information found on pamphlets and advertisements for

[30] See appendix for advertisement of said dolls.

Edison's commercialized inventions (de Dobay Rifelj 431).While not mentioned in the text itself, Edison's talking dolls are one of the primary influences for the *andréide* Hadaly: both are more or less technologically advanced and realistically human-like female dolls to which a voice is given through the incorporation of phonographs in their frames.

While Edison first worked on talking dolls in 1877, he soon left it in the hands of the inventor William Jacques who made the first prototype using Edison's phonograph. Jacques started the Edison Phonograph Toy Manufacturing Company in 1887 with the help of his partner, Lowell Briggs; however Edison took over the company before the start of production. The whole enterprise was a failure as the dolls were too expensive for most, and the majority of the ones sold were returned. They were taken off the market only after a couple of weeks, putting an end to the project: the first doll was sold on April 7, 1890 and production stopped in early May of the same year. The doll was 22 inches tall and weighed four pounds, it was made of a metal body, wooden limbs and a traditional doll head (which was imported), that hid a tiny phonograph with its horn directed towards its chest. While the doll was fragile and required a lot of work to make it recite a mere six second tune, it was an important step in the history of the phonograph because it was the first time it was marketed as a household object for the general public.

Despite Edison's ingenuity, the actual talking dolls did not offer a visually satisfying representation of a human being. Its strength was the inclusion of a phonograph, thus mimicking speech. The illusion of speech has the potential to create the illusion of identity. Villiers' Edison uses a similar technique of recorded speech as is found in the talking dolls. In order to build a credible artificial woman, Villiers' Edison combines the

simulation of speech with another form of technology that is able to recreate human likeness: photosculpture.

Photosculpture and the issue of re-production: between art and technology

In addition to automata and phonograph, Villiers adds another technique to Edison's repertoire – this time an artistic one: photosculpture. It is defined as "a method of sculpture whereby one or more cameras are used to produce photographs that are processed and combined in one of various ways to make either a bas-relief of a solid sculpture" ("Definition of Photosculpture"). It was invented in 1859 by the Parisian artist, François Willème, and became a somewhat popular method of producing cheaper art for the public.[31] One of the most famous accounts of Willème's work is the one provided by Théophile Gautier in the pamphlet, "Photosculpture" (1864), written after visiting Willème's atelier. First, he provides us with a theoretical description of the process:

> L'invention de M. Willème, le créateur de la photosculpture, repose sur ce principe que tous les profils d'un corps réunis en donnent le relief. L'idée est simple et vous frappe par son évidence, mais il n'en fallait pas moins une singulière ingéniosité pour tirer une statuette de vingt-quatre photographies ne présentant naturellement aucune épaisseur. (Gautier 5–6)

This description of the concept of photo sculpture is followed by an extensive description

[31] "To create a photosculpture Willème would arrange his subject on a circular platform surrounded by 24 cameras— one every 15 degrees. He would then photograph their silhouette simultaneously with each camera. This set of photographic profiles contained the data for a complete representation of his subject in 3 dimensions, although at relatively coarse resolution. Willème had now collected layer data for his subjects in the form of 24 different photographs of their profile. To create a 3D image of his subject he needed to make the information in each layer accessible by projecting each image onto a screen. Next, he translated each image into the movements required to fabricate each layer. This he accomplished using a pantograph attached to a cutter. He traced each profile with one end of the pantograph while the other end cut a sheet of wood with the exact same movement. The pantograph allowed the cuts to be smaller, larger, or the same size as the original projection. The layers of wood were then assembled to create the photosculpture. This was necessarily rough; if desired, an artist could smooth the sculpture and perhaps paint it, making it look more like a traditional sculpture"("Invention of Photosculpture: Early 3D Imaging (1859) : HistoryofInformation.com").

of the technique itself, including the machine. Gautier highlights the technicality and the precise quality of the process to define it more as a technique or a means to art rather than an art in and of itself, as it is a tool for reproduction rather than creation. While photosculpture had been widely criticized as second rate and denied as an art form, Gautier defends it by claiming it to be an extremely reliable and precise technique that can be a starting point for art:

> Qui empêche un statuaire de prendre telle que la machine la lui offre cette figurine si naïvement vraie, si absolument exacte, d'un aplomb si certain, d'un rapport de proportions si sûr, d'une structure intérieure et extérieure infaillible, et de lui donner la vie de l'âme, l'éclair du génie, ou la beauté de l'art ? (Gautier 8)

Gautier's words could easily be used to describe the process used by Edison to create Hadaly: he builds a faithful copy of Alicia Clary (by observing her for three weeks) and then imbues her with a soul. In *The Aesthetic of Artifice* (1996), Mary Lathers identifies photosculpture as the perfect tool for Edison for two reasons: it is "a true shortcut to an ideal, one that […] has lost its referent" and it allows for the "proliferation of copies whose originals are anonymous" (Lathers 53). In addition to that, one can argue that photosculpture is the perfect technique for our fictional Edison because Villiers is addressing the dynamics between science and art, especially in terms of production and reproduction. Following this, photosculpture is Edison's way to use science to create his masterpiece, whose beauty identifies Hadaly more as a piece of art than as a mere artifact – a status she will keep at the end of the novel because of her death and Edison's decision to not build any subsequent androids (though he does not explain why).

While technology is critical to the novel, it is a necessary tool to discuss more philosophical issues such as the definition of human nature and the importance of respecting individuals as they are rather than as what one wants them to be. Villiers raises

these questions through Edison's *andréide* which is an attempt to create a perfect woman in the stead of the disappointing love interest of his friend Lord Ewald.

Choosing the Ideal Over the Real: A Problematic Dualistic Framework

In order to understand Villiers' criticism of dualism and its emphasis on the ideal rather than the real, I will read Edison's *andréide*, not only as a way to help Lord Ewald, but more importantly as a way to create a new sort of woman, one that corresponds to the feminine ideal devoid of individual flaws. In that respect, the *andréide* functions as an embodiment of the debate between Descartes and La Mettrie over the mechanical representation of the world.

Edison's motivations : Spleen et Idéal

It is necessary to go back to Lathers' claim that Edison's use of photosculpture betrays his desire for a shortcut to an ideal. But what does this ideal refer to? The fact that Villiers named the *andréide* "Hadaly" (which means ideal in Iranian) would suggest a search for the ideal woman. This seems to be corroborated by the narrator who identifies the common desire shared by Edison and Lord Ewald for a better companion: "La jeune amie que tu daignas m'envoyer, jadis, pendant les premières nuits du monde, me paraît aujourd'hui devenue le simulacre de la soeur promise et je ne reconnais plus assez ton empreinte, en ce qui anime sa forme déserte, pour la traiter en compagne" (Villiers de l'Isle-Adam 300).[32] Edison himself claims : "cette sotte éblouissante sera non plus une femme, mais un ange: non plus une maîtresse, mais une amante; non plus la Réalité, mais l'IDEAL"

[32] The choice of the word "simulacra" is here especially interesting and reveals Edison's belief that women are not what they should be. The irony of the novel is that he fails to realize that he is not creating the ideal woman but rather a simulacra of an actual woman: Hadaly is therefore the simulacra of a simulacra.

(172) and "Je forcerai, dans cette vision, l'Idéal lui-même à se manifester, pour la première fois, *à vos sens*, PALPABLE, AUDIBLE ET MATERIALISE" (Villiers de l'Isle-Adam 189).

However, Edison's motivations often seem much more ambivalent than a simple search for the ideal woman. In "La Création artificielle ou le refus de l'altérité" (1999), Annie Amartin-Serin identifies another motive for Edison in the last page of the manuscript of *L'Andréide-paradoxale d'Edison*:

> Il annoncait ainsi, grâce à la multiplication des Andréides, la disparition de la femme sensuelle, et le triomphe de la femme vertueuse, 'compagne libératrice, idéal vénéré, charme de l'âme' – l'homme étant, dans cette version, encore dominé par la violence de ses instincts. Dans cet état du texte, la création artificielle offrait donc une solution oblique au problème du péché originel, et si l'Andréide ouvrait à l'homme les chemins de l'Idéal, ce n'était qu'indirectement. (Amartin-Serin 202)

Edison's *andréide* is rooted in his desire to create an artificial woman that would be used to save man from his lust. This desire for salvation stems from the story of Edison's friend Anderson, who had been seduced and corrupted by Evelyn Habal and her artificial charms, leading him to an early demise. Edison, therefore, justifies the creation of the *andréide* as a form of cleansing for man:

> Et nul ne pourra m'objecter d'impudentes insinuations, puisque le propre de l'Andréide est d'annuler, en quelques heures, dans le plus passionné des cœurs, ce qu'il peut contenir, pour le modèle, de désirs bas et dégradants, ceci par le seul fait de les saturer d'une solennité inconnue et dont nul, je crois, ne peut imaginer l'irrésistible effet avant de l'avoir éprouvé. (Villiers de l'Isle-Adam 276)

In this case, Hadaly, as the supposedly ideal woman, is not defined in respect to who (or what) she is, but rather in terms of her function: to prevent men from going astray. It is difficult, if not impossible, to reconcile the image of man becoming or reaching the ideal

through the displacement of emotional and/or sexual love from prostitute to *andréide*.[33] Edison himself refers to Hadaly as poisonous:

> Mon cher lord, vous êtes un de ces malades que l'on ne peut traiter que par le poison: je me résous donc, toutes remontrances épuisées, à vous médicamenter, s'il vous plaît, d'une façon terrible, votre cas étant exceptionel. Le remède consiste à *réaliser vos voeux*! (Villiers de l'Isle-Adam 168)

How can Hadaly be both an ideal and be poisonous? It is possible to reconcile these two descriptions if we read Hadaly as a projection of Ewald's desire and of both Edison's and Ewald's notion of the feminine ideal.

For Ewald, the ideal woman looks like Alicia Clary and behaves like a philosopher – but only to the extent that she blindly agrees and follows his own ideas and beliefs. What attracts Ewald in Hadaly is the fact that she is supposed to be empty ("cette jolie creature voilée, dont le néant m'est sympathique," 205), allowing him to shape her to his liking. Hadaly can only become Ewald's idealized female if she lacks her own individuality from the start. Edison is aware of this fact and uses it as an argument to persuade Ewald to follow through with the whole project. If Ewald loves Alicia Clary it is not because of who she is but because of who he wants her to be – "une ombre […] qui n'est que vôtre âme dédoublée en elle" (Villiers de l'Isle-Adam 196). After Ewald's concession that his love is an illusion, Edison then suggests that he switch an illusion for another illusion:

> Illusion pour illusion, l'Etre de cette présence mixte que l'on appelle Hadaly dépend de la volonté libre de celui qui OSERA le concevoir. SUGGEREZ-LUI DE VOTRE ETRE ! Affirmez-le, d'un peu de votre foi vive, comme vous affirmez l'être, après tout si relatif, de toutes les illusions qui vous entourent. Soufflez sur ce front idéal ! Et vous verrez jusqu'où l'Alicia de votre volonté se réalisera, s'unifiera, s'animera

[33] While Edison seems to believe that Hadaly will provide Lord Ewald with a pure, platonic love; Lord Ewald kisses her even after realizing that he was with the *andréide* rather than Alicia Clary which suggests that the nature of his love is far from being purely platonic. For analyses of Hadaly's place within the history of the sexualized machine, see Erin E. Edgington's "*L'Eve future* or Realdoll: Sexualized Simulacra at the Fin-de-siècle and Today" (The Image of Technology in Literature, media, and society, 2009) and Patrcia Pulham's "The Eroticism of Artificial Flesh in Villiers de l'Isle-Adam's *L'Eve future*" (Interdisciplinary Studies in the Long Nineteenth Century 7, 2008).

dans cette Ombre. (Villiers de l'Isle-Adam 196)

Edison's project is only conceivable in a dualistic framework as it requires the separation of body and soul in order to allow for the possibility of matching the perfect body with the perfect soul – Hadaly's soul in Alicia's body (or a copy of it).

The very idea that it would be possible to separate the body from the soul has its origins in Cartesian philosophy. Villiers' text reflects the importance of Descartes' thought in natural and mechanical studies as his philosophical works marked the beginning of the combination of mechanic and biology at the core of what will become robotics. Villiers' Edison pursues the same inter-disciplinarity when building his *andréide*. As noted earlier, he contrasts his creation to automata because of his inclusion of organic material to better imitate flesh. Hadaly's description echoes the man-like machine imagined by Descartes in his treaty *L'Homme* (1630-1630):

> Ils imitent le plus parfaitement qu'il est possible ceux d'vn vray homme ; Ie desire, dis-ie, que vous consideriez que ces fonctions suiuent toutes naturellement cette Machine, de la seule disposition de ses organes ; ne plus ne moins que font les mouuemens d'vne horloge, ou autre automate, de celle de ses contrepoids & de ses roües ; En sorte qu'il ne faut point à leur occasion conceuoir en elle aucune autre Ame vegetatiue, ni sensitiue, ny aucun autre principe de mouuement & de vie, que son sang & ses Esprits, agitez par la chaleur du feu qui brûle continuellement dans son cœur, & qui n'est point d'autre Nature que tous les feux qui sont dans les Coprs Inanimez. [sic] (Descartes, *L'Homme* 107)

Both Hadaly and Descartes' machines are made of nerves and tissues, whose actions are mere reactions to their environment, carried out through either electricity or the movement of animal spirits found in the blood and directed by the brain.

The figure of Hadaly therefore exemplifies and problematizes these theories by providing a concrete if fictional account of a human-machine in the form of Edison's *andréide*. In "La Machine humaine" (1992), Carol de Dobay Rifelj identifies the following

metaphysical questions rising from the existence (or possibility) of the Hadaly/Alicia entity: "in which, then, does personal identity reside? And how can two elements so distinct be so intimately interrelated? What are the mechanisms of this exchange?" These questions are the ones already raised by Descartes' scientific discourse about the mechanical nature of man.

The mystery surrounding the first encounter with Hadaly, for both Lord Ewald and the reader, already suggests a certain uneasiness about her nature and identity. While Edison had already given some information about this entity, his information were so unbelievably surreal that they didn't really prepare Lord Ewald. His first reaction is that of astonishment: "Q'est-ce que cet être étrange?" (Villiers de l'Isle-Adam 180). This question becomes highly problematic as Edison is not able to give any substantial answer, only the negative "ce n'est pas un être vivant" (Villiers de l'Isle-Adam 180), which does not explain much about the nature of this creature. However, having witnessed Hadaly's liveliness (her ability to move), Lord Ewald is not satisfied with this response – which Edison then explains in more detail:

> Je vous affirme, reprit Edison, que ce métal qui marche, parle, répond et obéit, ne revêt *personne*, dans le sens ordinaire du mot. […] Non, *personne*, reprit-il. Miss Hadaly n'est encore, *extérieuremen*t, qu'une entité magnéto-électrique. C'est un Etre de limbes, une possibilité. (Villiers de l'Isle-Adam 181)

So far, Edison has defined Hadaly as a non-living being, a walking – talking – obeying metal, a non-person, an electro-magnetic entity, a being in limbo as well as the possibility for a living entity. What are we to make of all these contradictions? The *andréide* performs activities that would define it as human but is not attributed that status. It is not a person but is referred to as one (Miss Hadaly); it is only a possibility of a person but its body already exists.

Edison's distinction between "*être de limbes*" and "*personne"* mirrors the one established by Descartes between man and his potential machine. This machine, even though it looks like a man and imitates his actions, lacks both a vegetative and sensitive soul – which, according to Aristotle, places it at a lower level than even plants and animals.

> [J]e me contentai de supposer que Dieu formât le corps d'un homme, entièrement semblable à l'un des nôtres, tant en la figure extérieure de ses membres qu'en la conformation inférieure de ses organes, sans le composer d'autre matière que de celle que j'avais décrite, et sans mettre en lui, au commencement, aucune âme raisonnable, ni aucune autre chose pour y servir d'âme végétante ou sensitive, sinon qu'il excitât en son cœur un de ces feux sans lumière, que j'avais déjà expliqués, et que je ne concevais point d'autre nature que celle qui échauffe le foin, lorsqu'on l'a renfermé avant qu'il fut sec, ou qui fait bouillir les vins nouveaux, lorsqu'on les laisse cuver sur la râpe. Car, examinant les fonctions qui pouvaient en suite de cela être en ce corps, j'y trouvais exactement toutes celles qui peuvent être en nous sans que nous y pensions, ni par conséquent que nôtre âme, c'est-à-dire cette partie distincte du corps dont il a été dit ci-dessus que la nature n'est que de penser, y contribue, et qui sont toutes les mêmes, en quoi on peut dire que les animaux sans raison nous ressemblent… (Descartes, *Discours de La Méthode* 70–71)

This similar understanding of both machine and man creates a representation of the world in which the natural and the mechanical are one and the same. Every organism is a mechanism; man and animal are made similarly which, in turn, implies that man might not be very different from animals.[34] However, Descartes tries to recuperate man's privileged status over animals by arguing that man is blessed by a God-given soul, which makes him superior to the animal realm:

> Sans que j'y puisse pour cela trouver aucune de celles qui, étant dépendantes de la pensée, sont les seules qui nous appartiennent en tant qu'hommes, au lieu que je les y trouvais toutes par après, ayant supposé que Dieu créât une âme raisonnable, et qu'il la joignit à ce corps en certaine façon que je décrivais. (Descartes, *Discours de La Méthode* 71)

[34] This belief relies on the rejection of Aristotle's definition of physics as the study of substantial forms which constitutes the physical world. Descartes argues that the world is made of mechanisms rather than substantial forms. For a detailed discussion of Descartes' argument, see Helen Hattab's *Descartes on Forms and Mechanisms* (2009).

According to Descartes, God placed the soul within the brain, which becomes its physical protection. The soul controls the rest of the body through animal spirits, which get their directives from the soul in the brain and then travel in the body via the nerves in order to carry information and orders to specific body parts and organs:

> Or ie vous diray que quand Dieu unira une Ame Raisonnable à cette machine, ainsi que ie pretens vous dire cy-apres, il luy donnera son siege principal dans le cerueau, & la fera de telle nature, que selon les diuerses façons que les entrées des pores qui sont en la superficie interieure de ce cerueau feront ouurtes par l'entremise des nerfs, elle aura diuers sentiments. (Descartes, *L'Homme* 29)

It is this God-given soul that makes man superior to both animals and machines as it provides him with feelings (*sentiments*) and with the ability to use reason to control one's body[35] instead of giving in to natural (*animal*) instincts.

These seemingly paradoxical oppositions and the questions they raise about the distinction between being and person, between body and identity, problematize Cartesian dualism, which was commonly accepted within the scientific community:

> Villiers's anxiety about the disappearance of the individual is fueled by his recognition that the Cartesian opposition of mind and body is specious, that the corporeal vehicle of the soul is itself a machine, and that the 'supernatural' belongs to the same physical realm as what science commonly calls the natural. […] Those tales misleadingly styled "cruel," as though to point toward a voluntary perversity on the part of Villiers, those mordant vignettes against Progress, attempt rather to mask a subtending malaise that derives from the erosion of the speaking subject's positionality by the current of rationalistic scientific language that came to predominate in the nineteenth century. (Johnson 193)

[35] Identifying the distinction between mind and body as the marker of humanity versus mere animality led to the hierarchical ordering of the mind over the body – a model known as Cartesian dualism and defined as 'a radical separation between mind and body, viewing the latter as akin to a mechanism like a watch – the uniqueness of the desecrated body and gives way to its representation as a mere object instead of as the core of human life. This belief will be at the core of vitalism, a prominent scientific school claiming that the body is merely made of matter which is then infused with a "breath of life" – or, using Victor Frankenstein's own words "a spark of being" – that will awaken the matter. The body is no longer a part of humanity but merely its receptacle, it can therefore be used as a mere object.

If Cartesian dualism is true, Edison's project is not only understandable but also possible (depending on the technology available). If the body and the soul are independent entities, they can therefore, in theory, be separated and combined – this is exactly what Edison proposes: to match a beautiful body to its rightful soul (in this case, both are artificial) because Nature has made a mistake with the person of Alicia Clary.

It would be, however, erroneous to relegate such beliefs to the scientific community, as Lord Ewald's understanding of Alicia Clary is based on the same principle even if, in this case, it is not based on scientific evidence:

> On eût dit que non seulement son genre de personnalité était privé de ce que les philosophes appellent, je crois, le médiateur plastique, mais qu'elle était enfermée, par une sorte de châtiment occulte, dans le dément perpétuel de son corps idéal. […] Oui, parfois, il m'arrivait d'imaginer, très sérieusement, que, dans les limbes du Devenir, cette femme s'était égarée en ce corps, - et qu'il ne lui appartenait pas. (Villiers de l'Isle-Adam 141)

Lord Ewald's description of Alicia Clary shows how scientific discourse and its positivism had become an authority for the general public. It is this positivism that is at the core of Villiers' ambivalence toward science and technology. Warren Johnson compares *L'Eve future* to four of Villiers tales from *Contes cruels* ("L'affichage celeste," "La machine à gloire," "L'appareil pour l'analyse chimique du dernier soupir," and "Le traitement du docteur Tristan," 1883) in order to nuance Viliers' position on science and technology – which are often reduced to a mere rejection of science:

> These texts of Villiers […] are powered by a hidden kinetics founded on what might best be called an awe of science, a respect mixed with fear, a complex emotion leading to a feeling of malaise when faced with a scientific discourse that threatens the freedom and autonomous identity of the individual because of its very irrefutability. (Johnson 192)

Johnson's position makes sense of Villiers' attention to detail and his portrayal of many efficient (and non-problematic) technological devices throughout the novel. The dilemmas

addressed by Villiers deal with the consequences of technology on the individual rather than on the devices themselves.

Metaphysical qualms: the heritage of Descartes and La Mettrie

While Descartes introduced and popularized a certain vision of the world as a mechanism, it was the French philosopher Julien Offray de La Mettrie who crystalized the figure of the mechanical men in L'Homme machine (1748). La Mettrie's importance is partly due to the scandal his treaty caused and his subsequent exile and repudiation from many European intellectual circles.[36] Nevertheless, the concept of the man-machine as well as the term "homme-machine" would soon spread to most philosophical inquiries concerning the nature of man. While the text itself seems to stand apart from the Enlightenment's philosophical and literary production, it is strongly influenced by previous philosophers. La Mettrie himself acknowledged his debt to Descartes through numerous references to his works in L'Homme machine and especially through his attempt to defend Descartes' philosophy from the criticism of other Enlightenment thinkers:

> Je crois que Descartes serait un homme respectable à tous égards, si, né dans un siècle qu'il n'eût pas dû éclairer, il eût connu le prix de l'expérience et de l'observation et le danger de s'en écarter. Mais il n'est pas moins juste que je fasse ici une authentique réparation à ce grand homme, pour tous ces petits philosophes, mauvais plaisants et mauvais singes de Locke, qui, au lieu de rire impudemment au nez de Descartes, feraient mieux de sentir que sans lui le champ de la Philosophie, comme celui du bon esprit sans Newton, serait peut-être encore en friche. Il est vrai que ce célèbre philosophe s'est beaucoup trompé, et personne n'en disconvient. Mais enfin il a connu la nature animale; il a le premier parfaitement démontré que les animaux étaient de pures machines.

This rather extensive section on Descartes not only acknowledges La Mettrie's debt but

[36] The following sentence from *L'Homme machine* reflects the core of what was considered scandalous, immoral, diminishing and heretical and was often cited by other philosophers to dismiss his work: "Etre machine, sentir, penser, savoir distinguer le bien du mal, comme le bleu du jaune, en un mot être né avec de l'intelligence & un instinct de Morale, & n'être qu'un Animal, sont donc des choses qui ne sont pas plus contradictoires, qu'être un Singe, ou un Perroquet, & savoir se donner du plaisir" (Julien Offrey (de) La Mettrie 192).

also attempts to justify the value and usefulness of Descartes' theories even when La Mettrie refutes significant parts of the Cartesian philosophical and metaphysical understanding of the world.[37]

It is therefore necessary to identify the roots of La Mettrie's discourse on the man-machine in Descartes' previous work as well as the differences between the two. While, technically, Descartes only mentions the animal-machine, never the man-machine per se, he refers to "la machine de nôtre corps" and on numerous occasions makes the analogy between the body and a watch:

> [J]ugeons que le corps d'un homme vivant diffère autant de celui d'un homme mort que fait une montre, ou autre automate (c'est-à-dire autre machine qui se meut de soi-même), lorsqu'elle est montée et qu'elle a en soi le principe corporel des mouvements pour lesquels elle est instituée, avec tout ce qui est requis pour son action, et la même montre, ou autre machine, lorsqu'elle est rompue et que le principe de son mouvement cesse d'agir. (Descartes, Les Passions de L'âme 30)[38]
>
> [E]n sorte que tous les mouvements que nous faisons sans que notre volonté y contribue […] ne dépendent que de la conformation de nos membres et du cours que les esprits, excités par la chaleur du cœur, suivent naturellement dans le cerveau, dans les nerfs et dans les muscles, en même façon que le mouvement d'une montre est produit par la seule force de son ressort et la figure de ses roues. (Descartes, Les Passions de L'âme 40)

For Descartes, even if man functions like a machine it can never be confounded with one,

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[37] LaMettrie, however, does acknowledge the possibility that Descartes was only protecting himself in the face of a highly religious society:

> Car enfin, quoi qu'il chante sur la distinction des deux substances, il est visible que ce n'est qu'un tour d'adresse, une ruse de style, pour faire avaler aux théologiens un poison caché à l'ombre d'une analogie qui frappe tout le monde, et qu'eux seuls ne voient pas. Car c'est elle, c'est cette forte analogie qui force tous les savants et les vrais juges d'avouer que ces êtres fiers et vains, plus distingués par leur orgueil que par le nom d'hommes, quelque envie qu'ils aient de s'élever, ne sont au fond que des animaux et des machines perpendiculairement rampantes. Elles ont toutes ce merveilleux instinct, dont l'éducation fait de l'esprit, et qui a toujours son siège dans le cerveau, et, à son défaut, comme lorsqu'il manque ou est ossifié, dans la moelle allongée, et jamais dans le cervelet ; car je l'ai vu considérablement blessé, d'autres l´ont trouvé squirreux, sans que l´âme cessât de faire ses fonctions. (La Mettrie 144–45)

[38] We will find the same wacth metaphor in La Mettrie's work: "The watch motif of course reminds us of one of the best known passages in La Mettrie, from the opening of HM: 'demander si la Matière peut penser, sans la considérer autrement qu'en elle-même, c'est demander si la Matière peut marquer les heures' (HM 63; cf. HM 109-110). […] Timo Kaitaro points out clearly that La Mettrie is simply eliminating any metaphysically grounded inquiry into matter" (C. T. Wolfe, "Epicuro-Cartesianism" 12).

even if we were able to create a machine so human-like that merely looking at it would not be enough to identify it as not human. This position is based on two arguments:

> The first means to prove the difference between humans and machines is that a machine could never use words, or put together other signs as we do in order to declare our thoughts to others. The second is that even though such machines might do some things as well as we do them, or perhaps even better, they would inevitably fail in others, which would reveal that they were acting not through understanding but only from the disposition of their organs. (Miller 340–41)

Both of these arguments highlight man's ability to understand his surroundings and to be creative (at least in terms of thinking) as opposed to the machine's predictability and limitations as it is only able to react to outside stimuli. It is this superior form of the ability to reason – given by God – that distinguishes man from the rest of the natural world.

This is the crux of La Mettrie's quarrel with Descartes' position. La Mettrie agrees with Descartes in so far as our limited understanding of the natural world requires us to think of biological beings in terms of a scale based on differences and similarities. However, La Mettrie dismisses the dualist representation proposed by Descartes (animal versus human) on the grounds that it cannot be proven. Agreeing with such a system would require us either to elevate animals to the state of human beings or to downgrade man to the state of animals (Presti 167–68).

Descartes' dualistic model cannot include Hadaly because she is neither human nor animal. Her very existence challenges the credibility of this model. What is most disturbing about Hadaly is not her mechanisms and components or her existence outside of the traditional categories of being. Rather, it is Edison's constant comparison between the andréide and its original, Alicia Clary, and his desire to create not an andréide per se but a replacement for a human being. Doing so, Edison challenges the very category of the human. In that respect, Edison's project is more reminiscent of La Mettrie's work. In the

novel, Edison constantly shifts between Cartesian dualism and a more La Mettrian version of the man-machine – this shift is also mirrored by the text itself, as it is always oscillating between the verisimilitude of Edison's life (character and works) and the science-fictional tone of the account of his legend as a sorcerer.

When Edison first introduces the original version of Hadaly during Lord Ewald's initial visit, his description of the andréide has strong Cartesian undertones as he talks about the human machinery (rather than human machine) and how it is only a receptacle of identity (the soul):

> Or, ce dont nous allons parler, n'est que la machine humaine de Hadaly, comme disent nos médecins. […] Le méchanisme électrique de Hadaly n'est pas plus elle - que l'ossature de votre amie n'est sa personne. Bref, ce n'est ni telle articulation, ni tel nerf, ni tel os, ni tel muscle que l'on aime en une femme, je crois; mais l'ensemble seul de son être, pénétré de son fluide organique, alors que, nous regardant avec ses yeux, elle transfigure tout cet assemblage de minéraux, de métaux et de végétaux fusionnés et sublimés en son corps. (Villiers de l'Isle-Adam 212)

This account of Hadaly is, however, not convincing enough for Lord Ewald because the mere comparison between Hadaly and Alicia Clary does not suggest that they are interchangeable; only that their essence is constituted in a similar fashion. It is only at that point that Edison turns to arguments closer to La Mettrie's theory – which establish a continuity between man and machine rather than the mere functional similarity between them.

Instead, as identified by Presti in "La Machine plus que machine ou l'automate transfiguré" (2010), La Mettrie proposes a threefold alternative model. While Descartes' was categorical (based on language and action), La Mettrie privileges a gradual model: machine – animal – man. The base of this model is the machine – animals and men are machines as well. La Mettrie does not use the term "machine" in what he refers to as its

vulgar meaning (a being who acts and is determined by "brutes" causes); he relies on a more subtle definition: " un être dont toutes les actions ont été prévues, prédéterminés et produites necessairement par la liaison des effets à leurs causes, et des causes à leurs effets" (Presti 172).[39] For La Mettrie, there is a semantic difference between the machine and the mechanical – the mechanical being related to a necessity, meaning that no volition is involved in the process. In that respect, the mechanical becomes the transition between the machine and the spontaneity of the biological. A similar continuity can be found between animals and men:

> In his view, [La Mettrie] is simply extending the Cartesian theory of animal-machines to human beings: "Des animaux à l'homme, la transition n'est pas violente" (HM 78), an expensive watch (= a human) is still just a watch (= an animal) (AS 276), i.e., there is no discontinuity between the realms. (C. T. Wolfe, "Epicuro-Cartesianism" 12)

La Mettrie justifies this continuity by highlighting animals' knowledge of good and evil[40] - though limited – as well as cognitive and sensorial abilities (Presti refers here to La Mettrie's satirical essay "Les animaux plus que machine" in 1750). He dismisses intelligence as the characterization of men as many other species show signs of intelligence; he therefore focuses on language (a form superior to the simple communication found in the animal realm) and the capacity to create and understand abstract ideas and symbols.

Man is at the top of this gradual vector because he is a "machine plus que machine," a status based on three abilities: to mend and take care of himself, to adapt to localized

[39] Aram Vartanian defines La Mettrie's position as a combination of vitalism and mechanism – namely "vitalo-mecanism."

[40] "Language, not intelligence, is the skill that separates us from animals, for the latter are often astute enough. But the ability to reason, which in the end is the cause of our ascendency, can be developed only through the use of abstract, formal symbols" (Vartanian 60).

injuries or malfunctions, to develop his thoughtful and knowledgeable nature. One might wonder, then, why La Mettrie used this controversial and provocative appellation. In the introduction to his edited volume of L'Homme machine (1999), Aram Vartanian proposes an answer to this question:[41]

> Simply to label man a machine does not say much about him, except that he is material and mortal, which is a truism. To know concretely what he is, one must know what kind of machine he is. An original feature of La Mettrie's man-machine is his definition of it as a genuinely self-activating and self-sufficient – as a dynamic entity having within itself the principle of its purposive behavior, unlike an artificial machine that must be programmed, operated, and moved by an outside cause or will. (Vartanian 84)

This suggests that the actual representation of man as machine is not the core of the problem, but rather the reduction of man to a mere machine.

We find the same reductionism in Edison's conflation of (wo)man and machine which is shown by his claims that his oeuvre is superior to natural women: he has included some flaws in Hadaly "par politesse pour l'Humanité" (Villiers de l'Isle-Adam 222). He, however, admits that these flaws are minor and a mere pre-programed act rather than essential to Hadaly as she will be able to portray different women to reflect the inconstant nature of the feminine. After the creation of Hadaly as Alicia Clary, Edison gloats about his success and efficiency in the face of nature:

> Certes, j'ai tout le matériel et les formules générales, - mais l'indispensable perfection dans la ressemblance demande ici des labeurs constants et scrupuleux: sept jours au moins, comme pour créer un monde. Songez que la puissante Nature, avec toutes ses ressources, met encore aujourd'hui seize ans et neuf mois à confectionner une jolie femme! (Villiers de l'Isle-Adam 314)

[41] Another possible answer is to read the text from a philosophical perspective rather than from a purely biological one. Doing so allows us to see *L'Homme-machine* as a challenge to the Eighteenth Century anthropocentric tradition. (Campbell 559).

This comparison with nature's work suggests that Edison believes he was actually creating a woman, not a mere andréide. Edison had not openly defined his project in such a way up to that point. However, in retrospect, some of his comments seem to imply this possibility: "elle ne sera qu'un peu plus animée par l'Electricité que son modèle: voilà tout"[42] (Villiers de l'Isle-Adam 198), and "ces poumons, l'étincelle les met en mouvement comme l'étincelle de la Vie met en mouvement les nôtres" (Villiers de l'Isle-Adam 213).

It is the use of electricity that allows for Hadaly's existence. For Edison, electricity is the principle of movement that animates, not only the andréide, but also the human body. We find here, once again, the main difference between Descartes and La Mettrie: Descartes thought that the soul was the substance that animated the human body (which means that there is a categorical difference between man and machine) while La Mettrie believed that the soul – or rather reason – was a mere consequence of the architecture of the human machine and of the properties of its components (such as electricity).

While Descartes had attributed this superiority to a God-given soul, La Mettrie argues first that the soul is in fact a vain concept merely referring to the ability to reason[43] and, second, that the soul is naturally derived from the physical specificity of the human machine – in particular from the brain:

> Mais puisque toutes les facultés de l'Ame dépendent tellement de la propre Organisation du Cerveau & de tout le Corps, qu'elles ne sont visiblement que cette Organisation même ; voilà une Machine bien éclairée ! Car enfin quand l'Homme seul auroit reçu en partage le Loi Naturelle, en seroit-il moins une Machine ? Des Roües, quelques ressorts de plus que dans les Animaux les plus parfaits, le cerveau proportionnellement plus proche du cœur, & recevant aussi plus de sang, la même raison donnée ; que sais-je enfin ? des causes inconnües produiroient toujours cette conscience délicate, si facile à blesser, ces remords qui ne sont pas plus étranger à

[42] Italics in the original.
[43] "L'Ame n'est donc qu'un vain terme dont on n'a point d'idée, & dont un bon Esprit ne doit se servir que pour nommer la partie qui pense en nous" (La Mettrie 180).

> la matière, que la pensée, & en un mot toute la différence qu'on suppose ici. L'organisation suffiroit-elle donc à tout ? Oüi, encore une fois. Puisque la pensée se développe visiblement avec les organes, pourquoi la matière dont ils sont fait, ne seroit-elle pas aussi susceptible de remords, quand ils sont frais, ne seroit-elle pas aussi susceptible de remords, quand une fois elle a acquis avec le temps la faculté de sentir ? (La Mettrie 180).

In many ways, L'Homme machine echoes his previous treaty, Histoire naturelle de l'âme (1747), which is often identified as the foundation of psychological or clinical materialism.

La Mettrie's discussion of physical explanations for emotions and feelings is reminiscent of Descartes' Les Passions de l'âme (1649). Both texts are attributed to the iatromechanical tradition of the Enlightenment (which gained a broader recognition during the Seventeenth Century). It can be defined as a school of medical thought using the laws of physics to explain psychological phenomena. However, this category is somewhat problematic. While both Descartes and La Mettrie are looking at bodily explanations for feelings, these are quite different. This conflation can be explained by the fact that the terms "iatromechanical" and "iatrophysical" are often used interchangeably. Describing La Mettrie's work as iatrophysical is much more precise as he relies on the senses and therefore uses a biological and medical standpoint whereas Descartes' is more metaphysical in his focus on mechanisms.[44]

La Mettrie identified himself, in "Les Animaux plus que machine," as an adept of epicuro-cartesianism:

> To put it in terms of "Epicuro-Cartesianism," which turns everything around, this fusion of Cartesian "realism" and Lockean "agnosticism" is also a synthesis

[44] "I believe the answer is that La Mettrie's focus on organic matter provides him with a ground of explanation to which phenomena reduce, and which is within our experimental and experiential 'province': organisation, he calls it. Our organic structure (which is not the same as the mechanical constitution of the human body as depicted in Cartesianism or iatromechanism) [sic]. Rather than 'dead matter', our organisation is taken as the relevant level of analysis: the smallest organic components are disposed in such a way as to give rise to sensitivity." (C. T. Wolfe, "Epicuro-Cartesianism" 15)

> between a Cartesian, strictly functional account of the soul and an Epicurean, substantial account. If, on the Cartesian side, "The theory of animal-machines is to Life as axiomatics is to geometry, namely, a rational reconstruction which feigns to ignore both the existence of that which it represents and the priority of the production over its rational legitimation," then with the Epicurean emphasis on the actual mechanisms of the âme sensitive, with Lamy, the functional analysis is shifted from physiology proper to the question of the soul, while retaining the "priority of production" of physiology. La Mettrie's fusion of the two trends is done in the name of materialism, which is why he speaks of an "Epicuro-Cartesian system" of "animate bodies," and not of any "Cartesio-Epicureanism." (C. T. Wolfe, "Epicuro-Cartesianism" 20)

It is this attempt to reconcile Cartesian thought and Epicureanism – or to be both a scientist and a humanist in Vartanian's terms – that was deemed scandalous because it seemed counterproductive: to many, aligning man with the rest of the natural world seemed to downgrade his humanity and revoke his superiority (especially his God-like image).

La Mettrie's rejection of Cartesian dualism can be read as a refusal to deny the role of the body in the construction of identity. In that respect, La Mettrie's gradual model reminds us of our natural origin, of our flawed bodies, and ultimately of our lived experience and individuality that cannot be replaced. If we accept that our identity is partly created by our bodies, we have to recognize that our physical differences, no matter how small, might guarantee our status as unique and irreproducible beings.

Conclusion: The Ancestor of the Cyborg

I have attempted, here, to show that Villiers' only novel is not only informed by the scientific development of his time but also by metaphysical questions riddling the scientific community. *L'Eve future* cannot be read as a mere critique or rejection of the progress of science. This view does not do justice to the depth of Villiers' thought as he provides us with a platform to address metaphysical and ethical dilemmas raised by the mechanical representation of man and its possible reproduction or imitation through the use of new

technologies. It portrays an anxiety towards an often idealistic view of scientific progress that is grounded in a refusal to reject moral and spiritual interpretations of man.

The role of the religious myth of creation had previously been used to give meaning to humanity. By dismissing the religious myth, the Enlightenment also dismissed its explanation of the origin and purpose of humanity. It was, therefore, necessary to find new answers to these questions. Most of the answers provided by science are focused on the bodily part of humanity as science has never been able to touch upon the realm of the soul. As a consequence, the body has been dehumanized and relegated to the status of a meaningless object as opposed to the mind. Scientific achievements have only delocalized the debate surrounding humanity: it is no longer rooted in the physical being but in a metaphysical entity. However, there is no proof that there is a vital connection between the physical and the metaphysical being. Until these questions can be answered, the status and humanity of any living being created through technology will be questioned. If we cannot give any meaning to the process of creation of these creatures, we need to seek meaning somewhere else.

The more recent concept of the Cyborg, as defined by Donna Haraway, offers a possible answer to these questions. While defining the man-machine as a cyborg would be quite anachronistic, I believe that it is possible to identify the man-machine as a precursor of the cyborg. In *The Enlightenment Cyborg* (2007), Allison Muri identifies some of the roots of the concept of the cyborg:

> Weiner categorized Isaac Newton's time as the age of the clock, where the automaton functioned as a clockwork music box; in the nineteenth century, the age of steam engines, the automaton became a heat engine that burned fuel. The twentieth century, he concluded, was the age of communication and control. (Muri 114)

While Muri claims that the cyborg finds his point of origins in the development of biology (and most importantly medicine), I am arguing that the mechanical man and the man-machine are also at the core of the concept of the cyborg and its redefinition of the essence of humanity. The man-machine and its actualization in automata and literary motifs did not provide any answers but they raised the questions that made it possible to create and to think in terms of the cyborg. Now that these questions have been identified, it is time to address, in chapter two, the initial responses proposed by the medical discourse of the Enlightenment.

Figures


LE
MÉCANISME
DU FLUTEUR
AUTOMATE,
Presenté à Messieurs de l'Académie Royale des Sciences.
Par M. VAUCANSON, Auteur de cette Machine.
A PARIS.
M. DCC. XXXVIII
AVEC PERMISSION DU ROI.

Figure 1.1: Illustration of Vaucanson's Golden Duck and Flute Player.
Taken from his letter to the Académie (1738)

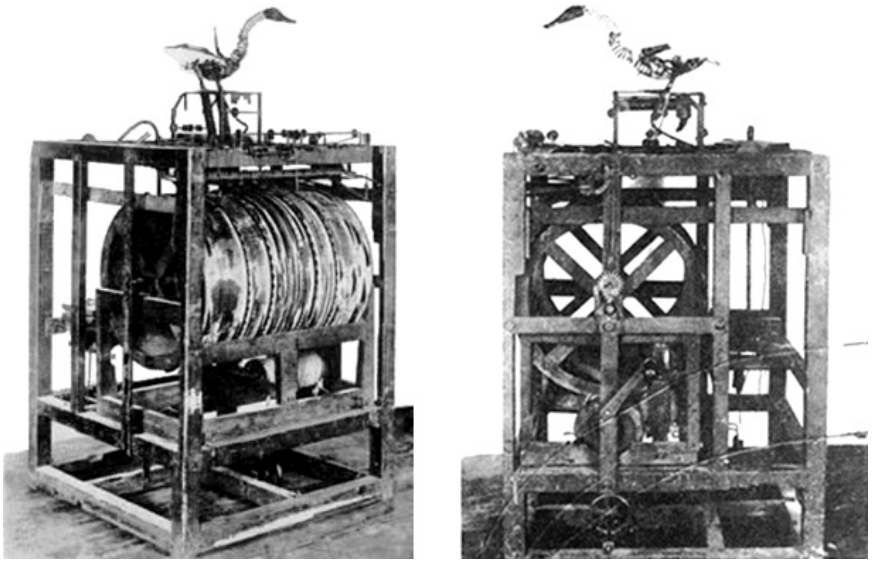

Figure 1.2: The Mechanisms of Vaucanson's Golden Duck
Image of the duck taken from the Smithsonian magazine
http://www.smithsonianmag.com/arts-culture/a-brief-history-of-robot-birds-77235415/?no-ist

Figure 1.3: Wolfgang von Kempelen's Chess Player
Picture taken by John Gaughan of his re-construction in 1989
http://www.kunstportal-bw.de/zkmwvkstart.html

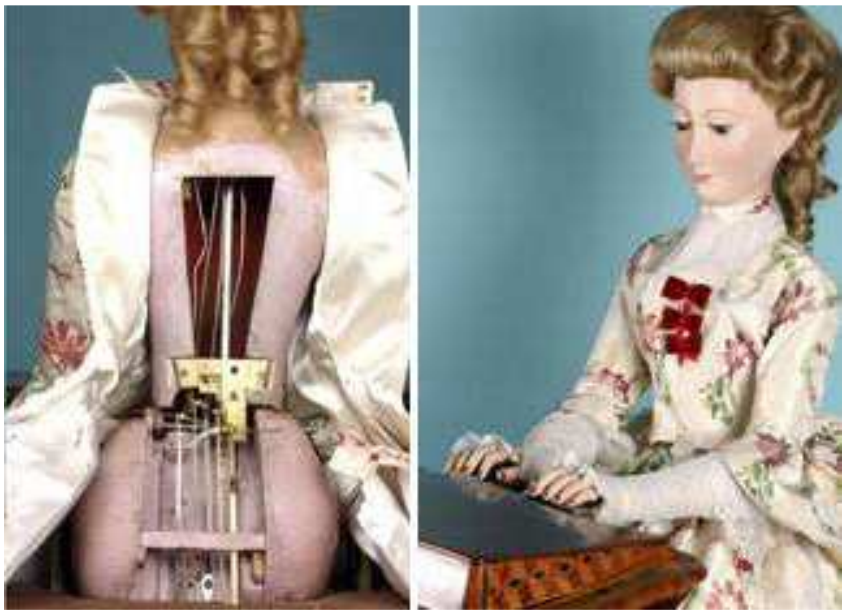

Figure 1.4: Pierre Jacquet-Droz's Musician
Picture taken at the Museum of Art and History of Neufchâtel.
http://history-computer.com/Dreamers/Jaquet-Droz.html

Figure 1.5: Thomas Edison's Talking Doll and Phonograph
Original phonograph removed from the doll. Images taken from
http://www.edisontinfoil.com/doll.htm

Figure 1.6: 1890 Advertisement for Edison's Talking Doll
Picture taken in 1890 in Springfield, Massachusetts.
http://www.edisontinfoil.com/doll

Chapter 2:

The Double-Edged Development of Biology:

Experimentation, Progress, and Ethics in Romantic Science:

Mary Shelley's Frankenstein, a Case Study

As shown in chapter one, the mechanical man is an obvious ancestor of the artificial man, but it is not a fully satisfactory one. We marvel at the ingenuity of extremely complex robots, but they lack the organic-ness that challenges our speciesism. As suggested by Alison Muri in *The Enlightenment Cyborg* (2007), this insufficiency is due to iatromechanism's inability to explain the movement of matter which in turn explains why Cartesian dualism never became a core concept of bio-technology (91). Similarly, while Cartesian dualism and the man-machine were somewhat popular, these concepts were also very controversial and subject to a lot of criticism. They remained philosophical concepts and were never adapted as concrete principles guiding physicians or biologists. For these reasons, an organic ancestor to the artificial man needs to be identified in order to fully understand what is at stake when we are talking about artificial human life.

Because of the lack of such an organic artificial man, it is necessary to look at the history of biology and how the development of science during the Enlightenment changed the understanding of the human body and opened up new possibilities in the medical field.

The plethora of texts dealing with discoveries in the field of biology and their possible applications makes up for the lack of an actual artificial living organism. While there are many possible texts to consider, Mary Shelley's *Frankenstein, or the Modern Prometheus* (1818) stands out because of Shelley's use of the actual scientific discoveries and debates of her time, the depiction of the ethical challenges stemming from them, and the novel's long-lasting influence on the representation of science and scientists for the general public.

In this chapter, I will show that Shelley's *Frankenstein* provides a concrete – though speculative and fictional – example of the contemporary climate of both hope and doubt towards new scientific developments. Extrapolating from experiments with electricity and vitalism, Shelley presents a narrative that explores the possible consequences of a successful actualization of the new biological science's desire to create or re-create life. While this extrapolation is characteristic of what would later be identified as science fiction, Shelley's doubtfulness towards progress and her underlying critique of society and the image of the Byronic hero comply with the Gothic tradition. Crosbie Smith describes the novel as "largely structured by powerful tensions between the surface 'rationality,' associated with Enlightenment ideology, and the deeper and darker side of nature and human beings beloved by the Romantic poets" (39). The science of this period is often referred to as "Romantic science." Its key elements are the figure of a solitary genius, the Eureka moment, and the understanding of science as a revelation process (Holmes xviii). These elements are not necessarily accurate or realistic but they are fundamental to science in the eyes of the general public and have become the basis of the elaboration of the figure of the mad scientist in Nineteenth Century literature. In *Frankenstein*, these tensions are used to question the notion of an unlimited human right to access knowledge and to

highlight the obligation to investigate the moral and practical consequences of new sciences.

In order to identify the relevance of *Frankenstein* within scientific discourse, it is necessary to look first at the development of natural philosophy into biology through the evolution of vitalism, as well as how the study of electricity sparked the hope for the possibility of reanimation. Applying empirical methods characteristic of vitalism to the human body raised many questions concerning the validity and legitimacy of experimenting on living organisms. The problem of legitimacy was at the core of a new debate surrounding the figure of the scientist and his responsibility towards both society and his subject. These questions were central to Nineteenth Century English culture as shown by their presence across many genres, from pure scientific research to public policy and fiction. I will focus specifically on the legitimacy of experimentation at the core of many debates within vitalism and the responsibility of the scientist towards society and his subject.

Romantic Science and the Study of Man

Shelley's novel reflects the rise of medicine, in the Eighteenth and early Nineteenth Centuries, as a legitimate and respected discipline, partly due to the importance of positivism and vitalism. This period is often referred to as the second scientific revolution. The first scientific revolution of the Seventeenth Century led to the development of science as a legitimate field of study and to the creation of both the Royal Society in London and the Académie des Sciences in Paris (Holmes xvi). This second revolution extends roughly from James Cook's first world exploration in 1768 to Charles Darwin's own travel to the Galapagos Islands in 1831. It finds its roots in the rationalism of the Eighteenth Century

but expands it "by bringing a new imaginative intensity and excitement to scientific work. It was driven by a common ideal of intense, even reckless, personal commitment to discovery" (Holmes xvi). This expansion was a result of the rejection of a purely mechanical understanding of the world grounded on concepts of energy and fluidity, making the study of chemistry – and especially electricity – the crux of the second scientific revolution and of vitalism. While the main subjects of study and the philosophical understanding of the word changed between the first and the second scientific revolutions, they share the concern for accurate and precise methods dictated by empiricism.

In this section, I will show that Shelley's novel participated in a public discussion of new sciences and their focus on man. The novel is informed by the scientific developments of the previous century, addressing the emergence of new disciplines, and it is grounded on actual experiments. Finally, it offers a discussion of the legitimacy of the practices of new sciences, in particular their focus on experimentation.

From Natural Philosophy to Biology and Medicine

Mary Shelley, the daughter of William Godwin, was well-versed in the scientific developments, theology, and moral theory of her day. Throughout her childhood, she witnessed and heard many of the major thinkers and scientists discuss a wide range of topics such as vitalism, moral education, and radical progress. These three themes play a significant role in her works, including *Frankenstein*. We also know that her father took her on several occasions to Humphry Davy's lectures on chemistry at the Royal Institution. In addition to the education provided by her father, Shelley's husband, Percy Bysshe Shelley, also kept company with contemporary thinkers and was highly interested in science. Consequently, Mary Shelley was surrounded by scientists and thinkers all her life,

which she mirrored in the figure of the scientist she presents in *Frankenstein*. It may be impossible to identify a single existing scientist that could have inspired her Victor Frankenstein. However, as Richard Holmes states, Shelley created a representative of the Romantic scientist in whom " the shades of 'inflammable' Priestley, the deep eccentric Cavendish, the ambitious young Davy, the sinister Aldini and the glamorous, iconoclastic William Lawrence may all have contributed something to the portrait" (263).

Shelley's discussion of science is, however, far from limited to her creation of a representative of romantic scientists. On the contrary, her novel mirrors the development of the sciences of man by establishing the evolution of biology as a key element of the plot development of *Frankenstein.* The first chapters of the novel, describing Victor Frankenstein's youth and education, are focused on his introduction to and study of natural philosophy through his independent readings, often relegating other elements of his childhood to mere comments. Early on, Victor claims that "Natural philosophy is the genius that has regulated [his] fate; [he] desire[s] therefore, in this narration, to relate those facts which led to [his] predilection for that science" (32). The following chapters provide a hidden historical account of the development of biology within Victor's narration of his studies.

The first chapter describes Victor's discovery of natural philosophy and how it became significant for him:

> When I was thirteen of age, we all went on a party of pleasure to the baths near Thonon: the inclemency of the weather obliged us to remain a day confined to the inn. In this house I chanced to find a volume of the works of Cornelius Agrippa. I opened it with apathy; the theory which he attempts to demonstrate, and the wonderful facts which he relates, soon changed this feeling into enthusiasm. (32)

Victor's first encounter with science is with alchemy and his enthusiasm is fed on its often unrealistic objectives, such as the philosopher's stone and the elixir of life. However, while alchemy ignited Victor's interest, it would not do justice to Victor to define him as a late alchemist, blind to the actual science of his time. His goals were characteristic of alchemy but his knowledge and methods were typical of the Eighteenth and Nineteenth Centuries:

> The natural phenomena that take place every day before our eyes did not escape my imagination. Distillation, and the wonderful effects of steam, processes of which my favourite authors were utterly ignorant, excited my astonishment; but my utmost wonder was engaged by some experiments on air-pump, which I saw employed by a gentleman whom we were in the habit of visiting. (34)

Victor seems to be aware of some of the pitfalls of alchemy as a scientific endeavor, leading him to rely on the new sciences of chemistry and physics (especially the study of mechanisms). Victor's scientific endeavor is a combination of the goals of alchemy with scientific methods. He identifies as an observer of nature (in the tradition of Newton) rather than as the more typical metaphysical alchemist (often depicted as a sorcerer). Victor's steady interest in science leads his father to send him to a series of lectures on natural philosophy. However, for unknown reasons, Victor is only able to attend the last few, which are therefore "incomprehensible to [him]" (36). His lack of understanding of new sciences (especially chemistry) leads Victor to reject natural philosophy.

However, this first disappointment is not enough to veer Victor away from natural sciences for very long. We soon follow Victor to the University of Ingolstadt where he has two significant encounters: Dr. Krempe and Dr. Waldman. At first, Victor wants to study natural philosophy, which is taught by Dr. Krempe. However, when Victor meets with him and mentions his own studies of alchemy, Dr. Krempe dismisses such interests with disdain, which antagonizes Victor immediately:

> I had a contempt for the uses of modern natural philosophy. It was very different, when the masters of the science sought immortality and power; such views, although futile, were grand: but now the scene was changed. The ambition of the inquirer seemed to limit itself to the annihilation of those visions on which my interest in science was chiefly founded. I was required to exchange chimeras of boundless grandeur for realities of little worth. (41)

As a result, he refuses to attend any classes taught by Dr. Krempe and decides to change his focus, leading him to try Dr. Waldman's class on chemistry. Waldman is much more sympathetic in Victor's eyes as he seems more open to the study of alchemy while still being critical of it:

> The ancient teachers of this science […] promised impossibilities and performed nothing. The modern masters promise very little; they know that metals cannot be transmuted, and that the elixir of life is a chimera. But these philosophers, whose hands seem only made to dabble in dirt, and their eyes to pour over the microscope or crucible, have indeed performed miracles. They penetrate into the recess of nature, and show how she works in her hiding places. They ascend to heavens; they have discovered how the blood circulates, and the nature of the air we breathe. They have acquired new and almost unlimited powers; they can command the thunders of heaven, mimic the earthquake, and even mock the invisible world with its own shadows. (42)

This dream of grandeur, this hope for scientific miracles, echoes Victor's own ambition: "what glory would attend the discovery, if I could banish disease from the human frame, and render man invulnerable to any but a violent death" (34). From there on, Victor focuses more on chemistry, while still studying other branches of natural philosophy such as physiology. We do not learn much about Victor's time as a student other that he excels in his studies and soon surpasses his teachers, leading him to study on his own and to isolate himself from the rest of the university. The choice of chemistry is significant for the story itself and its legacy as chemistry was "the prototype of the experimental laboratory sciences" and drew "on the well-developed figure of the medieval 'alchemist,' which was already loaded with moral, social, metaphysical and religious criticism" (Schummer 100).

Victor's relationship with science can be divided into three stages: an innocent and unrealistically idealist interest in science; an often confused learning phase in which he attempts to find balance between the illusions of magic and the down-to-earth realism of hard sciences; and lastly an experimental phase leading to new discoveries and success. These three steps mirror the evolution of science in the Eighteenth and Nineteenth Centuries from the first to the second scientific revolution. It starts with a new-found interest in science sparked by the first scientific revolution during the Sixteenth Century. It is then followed by many debates on the legitimacy of its claims and discoveries, leading to the emergence of Newtonian empiricism focused on observation; and finally to the many experimentations and discoveries of the second scientific revolution.[45]

Victor's interest in natural philosophy is, however, not enough to explain the focus of his study on the effect of electricity and chemistry on living organisms. It is the death of his mother, during his childhood, that haunts him and leads him to study the link between electricity and life. When he studies on his own at the University of Ingolstadt, he devotes

[45] Schummer also provides a detailed account of the parallel between Victor's education and the history of science:

> Describing "the birth of that passion which afterwards ruled my destiny" (25), thirteen-year-old Victor became an ardent enthusiast of the thirteenth- through sixteenth-century alchemical writings of "Cornelius Agrippa, Albertus Magnus, and Paracelsus, the lords of my imagination" (28). Unlike his intimate's occupation with the "moral relations of things," Victor's inclination is towards the "physical secrets of the world" (24), which suggests the split of philosophy into moral and natural philosophy. He is fascinated with the philosophers' stone and, particularly, the elixir of life that "could banish disease from the human frame and render man invulnerable to any but a violent death!" (27). After a couple of years of that occupation, Victor is affected by (late sixteenth-century, early seventeenth-century) scepticism: "It seemed to me as if nothing would or could ever be known" (28). This period is followed by temporary enthusiasm with mathematics and the mathematical philosophy of nature, which obviously represent seventeenth- and eighteenth-century Cartesianism and Newtonianism. Interestingly, Shelley emphatically stressed the difference between alchemy/chemistry and mathematical physics by describing the latter, in Victor's retrospective narration, as "the immediate suggestion of the guardian angel of my life — the last effort made by the spirit of preservation to avert the storm ... but it was ineffectual" (28). When Victor, at the age of seventeen, enrolls at the University of Ingoldstadt to study "natural philosophy," the subject matter is completely dominated by modern (late eighteenth-century) chemistry (chap. 3)" (Schummer 119–120).

himself to the study of electricity as a means for reanimation. Victor's belief that he can (re)animate matter is grounded on vitalism, a wide-spread concept of natural philosophy based on the idea that life is a form of energy that animates matter. In *Eighteenth Century Vitalism* (2012), Christine Packham defines vitalism as "the theory that life is generated and sustained through some form of non-mechanical force or power specific to and located in living bodies," and an understanding of nature "as possessing independent powers of animation and self-direction, vital energies of self-generation and the ability to take actions" (1). Vitalism can be found under many different forms – the most common ones being substantive or cosmic and functional or immanent. Nevertheless, these different forms share their refusal to adapt physics and chemistry to physiology and medicine because they can only explain the rules of the material world but cannot account for life itself. Substantive vitalism relies on a mystic understanding of life that was characteristic of the pre-Romantic science era. It is based on the idea that matter is animated by a supernatural being – in most cases, God – and that there is "a universal spirit permeating and enlivening all things in the geocosmos" (Chang 324). Its counterpart, functional vitalism – as defined by the vitalists of the school of Montpellier – "describe[s] organic life without reducing it to fully mechanical models or processes, than an overt metaphysics of Life" (Wolfe, "From Substantival to Functional Vitalism and Beyond" 213) and is based on the idea that life is intrinsic to matter. It is the latter that is of interest for the argument of this chapter as it is the one that allows for the possibility of artificial life.

The concept of animal oeconomy, introduced by the Scottish physician Robert Whytt, played a major role in the development of this new form of vitalism:

> The body was governed and regulated by an all-pervasive life-force, a "sentient principle" co-extensive with the body and present from birth to death. His vitalist

> physiology proposed that such a life principle constituted an animated force which united body and mind, co-ordinated the vital function of essential organs and ensured the unconscious, immediate, self-preserving responses of the body to external stimuli. (Packham 6)

This vital principle was different from the previous mechanistic explanation and from the belief in a divine intervention. Being distinct from both animism and Romantic organicism, "eighteenth-century vitalism marked the transitional period between the rejection of earlier mechanical models and the formalization of the modern sciences of life, including the discipline of biology, at the beginning of the nineteenth century" (Packham 2). Another Scottish physician, William Hunter, used his work on blood to establish a more precise vitalist position in which the body is seen "as a systematic, self-communicating organism, by emphasizing its automatic powers of healing and locating a force of 'vitality' in the blood" (Packham 6). Hunter's position is especially relevant because it marks the shift from the existence of a vital principle to the organicism later found in John Thelwall's "An Essay Towards a Definition of Animal Vitality" (1793), which established the existence of a non-mechanical life force or vital principle animating living organisms.

The debate over the true nature of vitalism spilled over the first half of the Nineteenth Century and became the most important scientific controversy of the regency era, lasting from 1814 to 1819. This debate was centered around two major figures: the surgeon and anatomist John Abernethy who was a proponent of the mind-body dualism, and therefore of an independent vital force, and his former apprentice William Lawrence who favored a materialist approach to life similar to the one proposed by Thelwall. While Shelley did not actively participate in this debate, *Frankenstein* engages with the same issues and can be read as Shelley's own vitalist perspective. Looking at her private journal entries, and analyzing the differences between the first and second editions of the novel in

order to identify Percy Shelley's editorial modifications, Hogsette concludes that Mary Shelley was a theistic vitalist, which means that "she believed in the existence of a created animating spirit or immaterial soul that is different in nature from the material body yet related to it" (537).

While vitalism started as a metaphysical and philosophical understanding of life, it gained importance through its identification of its subject: living organisms. By focusing on the living only, it constituted itself as an independent discipline that allowed for the establishment of physiology as a legitimate science – the science of man. This new science of man included disciplines such as psychology, anthropology and moral theory which were then under the umbrella of medicine (Rey 408).[46] Combined with Romantic science's attempt to make science accessible or understandable to the general public, vitalism led to the development of medicine through its focus on the observation of patients and a wider understanding of how specific lifestyles can influence the body. This included a new interest in aspects of life that were previously neglected such as hygiene, mental health, and nutrition. Biology and medicine therefore became more practical at the same time as physicians became leading figures not only as providers of cures but also as counselors for public policies and overall well-being. It is this newfound status of scientists as superior moral agents that Shelley questions in *Frankenstein*.

Electricity and the Vital Principle: the Case of Reanimation

While Shelley's novel is often dismissed because of its lack of actual science or technology, it is essential to remember that the belief in the possibility of reanimation was

[46] The School of Montpellier, in which students were required to spend long hours observing patients and helping at local hospitals for the poor, serves as the best example of the development of practical medicine.

fairly widespread as shown by the cases of William Cullen's proposal and of the myth of Dr. William Dodd's resurrection.

In 1776, the Scottish physician and chemist William Cullen was asked by the Scottish authorities to establish guidelines to help restore drowned individuals to life. In *A Letter to Lord Cathcart, President of the Board of Police in Scotland, Concerning the Recovery of Persons Drowned and Seemingly Dead* (1776), Cullen proposes different ways to restore the vital principle of drowned persons by focusing on the body's vital heat and internal circulation. Cullen's inclusion in policymaking shows the increase in influence of physicians. However, the letter's most important feature for the current argument is its depiction of the belief in reanimation. It is especially "remarkable for its author's faith in the possibility of restoring life even hours after a patient's possible death" as shown by the fact that "the pamphlet's recommendations aim at restoring 'the vital principle'" (Packham 19). This rather technical discussion of reanimation is however not limited to specialists and policy makers.

Dodd was a priest and man of letters. He was convicted of fraud and forgery and, consequently sentenced to death. He was hanged on June 27th, 1777. His body was shortly thereafter taken down, which led to the belief that doctors had picked up his body in order to reanimate him. Packham traces "claims and speculations about Dodd's possible afterlife, or return to life […] through the pages of the fashionable periodicals of London, Scotland and the North of England" for half a century after his death (111). The accounts of Dodd's supposed resuscitation were only considered relevant or even plausible because of the numerous experiments performed by the physiologists and anatomists of the time, who were discussing the concept of a vital principle animating the body. Equating life to a vital

principle seemed to mean that the boundaries between life and death could be crossed both ways.

This vital principle was soon associated with the idea of a vital fluid and electricity, which is also at the core of the creation process in *Frankenstein*. In order to fully understand Shelley's representation of the development of electric science and its pitfalls, it is essential to discuss the actual debate on electricity and galvanism that inspired her.[47]

The controversy about electricity being the vital fluid animating the body began in 1791 with the publication of Galvani's essay "Commentary on the Effects of Electricity on Muscular Motion." Galvani was a professor of obstetrics and anatomy at the University of Bologna and focused on the role of nerves in muscular contractions. Based on his many experiments on frogs, he introduced the concept of animal electricity, also known as bioelectricity:

> In 1791 Galvani described a new phenomenon: a frog's leg in a nerve-muscle preparation contracted every time the muscle and the nerve were connected by a metal arc, which usually consisted of two different metals. To explain the new phenomena, which became subsequently known as "galvanic phenomena" or "galvanism," Galvani supposed that the contractions were produced by a flow of a fluid (later named "galvanic fluid") between the muscle and the nerve. He suggested that this fluid was electrical and identical with the so-called "nervous fluid," which was held to be the cause of all motions and sensations in animals. (Kipnis 107)

While the concept of animal electricity had already been considered, Galvani was the first to provide an actual account of it. His essay sparked interest throughout Europe (the Paris

[47] The scope of the present project does not allow for a comprehensive discussion of the emergence of electricity as a scientific field of study, I will therefore focus on three of its major, or most famous, figures: Luigi Galvani, Alessandro Volta, and Giovanni Aldini.

Academy of Science created a special commission on the topic) and led to a long debate concerning Galvanism.

Galvani's theory was, at first, very positively received as it solidified the pre-existing intuition of the existence of a vital fluid animating the body. However, it was soon contested by Alessandro Volta who claimed that the body was a conductor of electricity rather than its source: Galvani's frogs were moving not due to the fact that their organs were creating an electric fluid but because they were merely reacting to contact with electricity, the electricity that is created by putting two different metals in contact.

His attempts to disprove Galvanism through the creation of artificial electric organs led him to discover the electric pile in 1800. The pile quickly became popular and gave much credit to Volta and his theories against Galvanism:

> This created an impression that Volta denied electric currents circulating in animal bodies as a general property of the animal world, which did not appeal to many physiologists. Galvani's theory, on the contrary, asserted the existence of animal electricity and its identity with the nervous fluid, which was very important in the justification of electrical treatment for various diseases. (Kipnis 134)

The decade following the discovery of the voltaic pile saw new developments in the debate on Galvanism. Some would attempt to disprove Volta and reclaim animal electricity while others would see Volta's pile as a tool to study Galvanism, the pile providing the necessary electrical stimulus for such studies. One of the major players of this new phase of the debate was Galvani's nephew and laboratory assistant, Giovanni Aldini, who would later become professor of experimental physics at the University of Bologna.

While Aldini had a successful academic career as the father of electroshock therapy, he was known more for his public experiments in London – which culminated, in January

1083, in his attempt to reanimate the body of George Foster who had been executed for murder and therefore given to the Royal College of Surgeons for dissection and experimentation. Aldini's popularity was partly due to his own showmanship and the fact that his public experiments were aimed at being entertaining representations of scientific practices. Prior to the actual experiment in January 1803, he had circulated advertisements claiming that he would reanimate a corpse. While Aldini was successful in shocking his audience, he did not reach his goal of reanimation:

> The sheet covering the corpse was removed and Aldini asked for a volunteer physician to confirm that the body was truly dead. Once that was confirmed, Aldini applied conducting rods, connected to a large battery, to Foster's face. Gasps were heard as "the jaw began to quiver, cheek muscles contorted and the left eye actually opened." The climax of the performance came as Aldini inserted a rod into the rectum; the corpse's arms began to punch the air, as if in fury, the legs kicked and the back arched violently, mimicking the taking in of a deep breath. (Semiatin 53)

This lack of technical success, however, did not mean that his experiment was a total failure as it seemed to confirm the power of electricity on the body. Public dissections and experimentations had become a popular form of entertainment and were discussed in all spheres of British society. It was only a matter of time for these scientific endeavors to be incorporated in the general culture. What is more surprising is the legacy it left on modernity; a legacy based on a single novel: *Frankenstein*.

Frankenstein is not only informed by the debate between Galvani and Volta, it also addresses epistemological questions such as how does one recognize life. In her introduction to the 1831 edition of the novel, Shelley identified the origins of the novel in a dream that was inspired not only by a horror story contest she was participating in but also by both her own definition of invention and the debates over biology she witnessed between Percy Shelley, Lord Byron and Polidori during the summer they spent in

Switzerland in 1816. Shelley first defines and limits the scope of invention as it "does not consist in creating out of void, but out of chaos […] it can give form to dark, shapeless substances, but cannot bring into being the substance itself" (226).[48] Then, she provides a summary of the main question at stake in the debate on reanimation: "Perhaps a corpse would be reanimated; galvanism had given token of such things; perhaps the component parts of a creature might be manufactured, brought together, and endued with vital warmth" (227). These two concepts took form in her well-known dream:

> I saw the hideous phantasm of a man stretched out, and then, on the working of some powerful engine, show signs of life, and stir uneasy, half-vital motion. Frightful must it be; for supremely frightful would be the effect of any human endeavor to mock the stupendous mechanism of the Creator of the world. His success would terrify the artist; he would rush away from his odious handiwork, horror stricken. He would hope that, left to itself, the slight spark of life which he had communicated would fade; that this thing which had received such imperfect animation would subside into dead matter, and he might sleep in the belief that the silence of the grave would quench forever the transient existence of the hideous corpse which he had looked upon as the cradle of life. He sleeps; but he is awakened; he opens his eyes; behold, the horrid thing stands at his bedside, opening his curtains and looking on him with yellow, watery, but speculative eyes. (227-28)

It is easy to draw a parallel between the description of Shelley's dream and Aldini's experiment on George Foster. The quivering of the jaw, the contortion of the muscles as well as the movements of the arms and legs exhibited by Foster's corpse are echoed by the stirring of "uneasy, half-motion," while the "signs of life" mirror Foster's seemingly apparent breathing. Similarly, Shelley's "powerful engine" can be identified as the voltaic battery that Aldini had used on Foster, the "spark of life" being the electricity provided by the battery.

[48] From James Reiger's 1974 edition of *Frankenstein*.

Because of Victor Frankenstein's successful attempt to animate dead matter, it is tempting to identify Shelley as siding with Galvani and Aldini. However, such an assumption would be oversimplifying her position. If the battery is the key to Victor's success, then it needs to be attributed to Volta's rejection of galvanism and animal electricity. Thus, Richard Sha reminds us in "Volta's Battery, Animal Electricity, and *Frankenstein*" (2012), that

> Mary Shelley repeatedly warns readers not to be swept away by a vitalist logic of occult forces that enabled the collapse of man-made electricity with life. […] Much as Volta separates animal and artificial electricity, Shelley understands animal electricity not as life but as a "token" for life, and thereby arrests the tendency of the Vitalists to make it an object and to mistake it for life itself. (21)[49]

It is Shelley 1831's introduction to the novel that provides us with her actual position. Looking back to her summary of the debate on reanimation, we find Shelley's identification of galvanism as a token for life. Similarly, Volta's battery was intended to show that Galvani's experiments only proved that the human body was a conductor of electricity, because corpses' movements were symptomatic of the circulation of electricity between the metallic rods, rather than a source of energy. Volta did not believe that electricity was synonymous with life itself: "Volta's view was that the will, a spiritual entity, acted through electricity only at the root of the nerve to activate energy appropriate to the relevant muscle or organ" (qtd in Sha 23).

By defining galvanism as a token of life, Shelley challenges the interpretation of her contemporaries' experiments with corpses and electricity: the battery is not life, it is only a metaphor for life. She questions the value of experimentations such as the one led

[49] This possibility was based on Benjamin Franklin's concept of "conductor" as "an open system [which] internal dynamics interact with any external stimulus, both altering (inside-out) and being altered (outwards-in)" (Soeiro 221).

by Galvani and Aldini. While her criticism is limited to attempts to resuscitate or reanimate dead matter, it echoes a broader rejection of experimentation by many if not the majority of vitalists.

Vitalism: Challenging the legitimacy of experimentation

Shelley's epistemological challenge of Galvanism is part of her more general discussion of our relationship with science and technology. By presenting the problematic consequences of experimenting with the vital principle, Shelley participates in the vitalist debate over the legitimacy of experimentation. Because of biology and medicine's focus on life, most vitalists rejected the practice of experimentation. This rejection, however, cannot be applied to all vitalists, and the level of rejection differs greatly within vitalism. However, members of the Medical School of Montpellier, one of the most influential vitalist groups, crystalized this opposition in a three-fold argument: methodological, ontological, and ethical.

The core of vitalism's problem with experimentation is methodological. It is based on the idea that it is impossible to understand life through intervention, meaning that the natural philosopher should observe rather than intervene or experiment. This position is best exemplified by Ménuret de Chambaud in his article "Observation" in the *Encyclopédie* (1772).[50] He criticizes vivisection and dissection (which he considers forms of

[50] In this entry on observation, Ménuret focuses on medicine as an art of observation and on the need to veer away from the experimentation used in chemistry and physics that had been applied to natural philosophy in the preceeding centuries:

> En parcourant toutes les parties de la Médecine, nous verrons qu'elles sont toutes formées par l'*observation*, & qu'elles sont d'autant plus certaines & plus claires, que l'*observation* y a plus de part; on pourroit assurer la même chose de toute la Physique; & de cet examen naîtront les différentes especes d'*observations* qui sont du ressort des Médecins. 1°. L'Anatomie résulte de l'*observation* simple, de l'arrangement, de la figure, de la situation, *&c*. des parties qui composent le corps humain; l'*observation* des fonctions qui sont produites par le mouvement ou la vie de ces différentes parties bien disposées, constitue la partie historique de la Physiologie & la séméiotique

intervention), not necessarily on moral grounds, but because their results are not reliable. Intervention produces evidences that are not necessarily natural. Vivisection does not allow for the understanding of life because it sees living beings as "analyzable, decomposable, dissectable sets of parts" (Wolfe 259). Dissection is even more problematic because the study of dead organs is not applicable to their living counterparts.

> If we based instructions for a cure on the observation of corpses, our reasoning would be faulty, and our practice even worse. In order to establish something certain, we would have had to open up fifty people suffering from the same illness, who died at different times from other causes; one could then see the progress of the disease and the disturbance it causes, or which gave rise to it – an almost impossible observation. (Enc. XI, p.318a)

Ménuret's concern is that observations made from the dissection of a corpse are only relevant to that corpse and cannot be generalized. Furthermore, "the usage of concepts which are appropriate to inanimate nature prevents us from grasping the laws of life – or at least anything regular and able to serve as a feature or definition of life" (Wolfe 260). The crux of the methodological argument is not that experimentation is bad in and of itself but that it is not efficient in so far that its results have a very limited scope and do not offer the possibility to understand general laws. This rejection of dissection already highlights a flaw in Victor Frankenstein's work as he claims that "[to] examine the causes of life, we must first have recourse to death" (46). In order to do so, he "became acquainted with the

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de la santé; d'où l'on tire plus ou moins directement la Physiologie théorique. L'*observation* appliquée à l'homme malade, fait connoître les dérangemens qui se trouvent dans les fonctions qui constituent proprement l'état de maladie, & les causes éloignées qui les ont fait naître: c'est la vraie Pathologie, & ses deux branches essentielles l'Aitiologie & la Symptomatologie; on doit aussi se rapporter la seméiotique de la maladie. L'*observation* de l'effet que produisent sur le corps sain l'air, les alimens, le sommeil, l'exercice, les passions, & les excrétions, en un mot, les choses non naturelles, forme l'Hygiene, & sert de fondement & de principe aux regles diététiques. L'*observation* des changemens que produisent les remedes sur le corps malade & dans la marche des maladies, a établi la Thérapeutique, ou la science des indications, d'où est née la matiere médicale. (n.p.)

science of anatomy; but this was not sufficient; [he] must also observe the natural decay and corruption of the human body" (46). Having used dead bodies for his study of life, Victor's attempt to recreate life is flawed from the beginning.

Similarly there is an ontological problem: vitalists tended to believe that natural history only provides sketches or approximations of nature (Diderot in *Elements de physiologie*, 1773-1774). In a different vein, Henri Fouquet and Théophile de Bordeu claimed that experimentation, and especially vivisection, is an "ontological disturbance or even destruction of the 'unity' at the heart of the functioning of a living organism" (Wolfe 272). There is a gap between observation and application (or experimentation), a gap we also find in Victor's account of his discoveries as he shifts from observation and understanding – "I succeeded in discovering the cause of generation and life" – to a direct use of said discovery: "I became myself capable of bestowing animation upon lifeless matter" (47).

Lastly, there is an ethical argument against experimentation. This argument is not as developed as much by vitalists themselves, as their main concern was methodological. However, the previous debate on vivisection during the Seventeenth Century had already questioned the moral ground of experimenting on living animal or man (dead or alive). Some of the most well-known examples are the naturalist John Ray's unequivocal statement that "the torture of animal is no part of philosophy" in "*De animalibus in genere*" (1693) and Lady Margaret Cavendish's indictment of the unethical treatment of animals. Cavendish was also very critical of experimental philosophy and described its followers as "Boys that play with watry Bubbles, of fling Dust into each others Eyes, or make a Hobby-horse of Snow" (qtd in Wolfe, 258). Ray and Cavendish did not have enough influence to

stop or limit these practices and they were left to the discretion of individual scholars. Meanwhile, human dissection was a much more controversial issue as it was often seen as a breach of divine and human laws. This anthropocentrism is exemplified by Robert Boyle who attempted to justify animal vivisection by saying that anatomical knowledge is necessary but cannot be gained by either human vivisection or dissection.

> [Boyle] is explicit that human dissection is a violation of both divine and human law: ‘‘since it were too barbarous, and too great a violation of the Laws, not only of Divinity but Humanity, to dissect humane Bodies alive, as did Herophilus and Erasistratus, who (as I finde in some of the Ancients) obtain’d of Kings the Bodies of Malefactors for that purpose, and scrupled not to destroy Man to know him,’’ but since there is no other way to learn about various parts of anatomy (we might say physiology), since many things including the motion of the Blood ‘‘cannot be discover’d in a dead dissected Body,’’ we need to perform animal vivisections. (Wolfe 259).

Human dissection was problematic because it was seen as desacralizing the sanctity of the human body, the image of God. Nevertheless, human dissection soon became a flourishing business until the middle of the Nineteenth Century.

The morality of vivisection and dissection is, however, not the only moral dilemma posed by natural philosophy. While vitalists questioned the morality of practices such as vivisection, they did not question their own motives and responsibility such as taking into account the possible consequences of discoveries obtained through questionable methods. Those are the questions that Mary Shelley attempted to answer in *Frankenstein*.

The Question of Responsibility

While her novel is often seen as a criticism of science, Mary Shelley does not undermine the potential of new sciences. Victor’s experiments are successful in scientific terms insofar as he manages to animate dead matter, and ultimately to give life to a corpse. It is, actually, because he is successful that the novel has become a modern myth that is

still relevant today. Shelley's problem with science is the question of responsibility: what happens after successful experiments? Shelley addresses two domains of responsibility for the scientist: the impact on society in its entirety and the treatment of the subject of study, a living creature in the case of Frankenstein. Science is not at fault, it is a mere object or tool. It is the irresponsibility of the scientist that leads to ruin and it is his irresponsibility that is at the core of the crystallization of the motif of the mad scientist, a motif that has haunted scientific disciplines since the publication of *Frankenstein*.

In this section, I will address how the depiction of Victor and his lack of responsibility reveal ethical dilemmas of biology that had not been fully considered earlier and introduce a new creature of nightmare: not the monster itself, but the mad scientist. This new figure is the result of the ambivalence of the Promethean myth and its interpretation throughout the centuries. When considering the motif of the creator, one needs to take into account two major issues that are strongly intertwined: the justification of his attempt to create life and the underlying aim to gain power and to defy religious, biological, or social structures.

Mary Shelley's criticism of Victor Frankenstein is offered through the perspective of his creature by imagining what it/he could say or feel. This narrative, being similar to a *Bildungsroman* using the voice of the creature, provides a broader account of society through its atypical experience. The structure of the narrative itself, combining the accounts of Walton (the scientist and captain to whom Victor tells his story, which is presented to the reader through his letters to his sister), Victor Frankenstein, and the creature, mirrors Shelley's attempt to reconcile science and ethics by distinguishing successful scientific

experimentations and their destructive consequences when misused. Science is a tool, and therefore has no ethical position: only its use can be ethical or non-ethical.

Through its association with the Gothic tradition, Shelley's modern myth of creation becomes subversive as it voices another approach to society and subverts the core myth of Western society, the one providing a justification to its established social order. This subversion is rooted in the creature who embodies everything that is not part of the traditional Western discourse. Robert W. Anderson claims that Judith Halberstam reads this embodiment as a form of multiplicity, which results in a blurring of boundaries:

> In Frankenstein, the creature represents a blurring of the distinction between man and monster, between nature and science and of gender categories themselves. Judith Halberstam writes that "the monster always represents the disruption of categories, the destruction of boundaries, and the presence of impurities and so we need monsters and we need to celebrate our own monstrosities." (n.p.)

Crucially, this distinction between man and monster also alludes to the distinction between self and other. Otherness[51] is a core notion in Frankenstein because the creature is treated as an Other and represents Otherness in general.[52] While most accounts of otherness deal with race and/or gender, it is necessary to create a third category for the creature: the "scientific" other. This choice is rooted in the very nature of Frankenstein's creature as he was not born but created by means of science.[53]

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[51] I am using the definition of Otherness as "an object of desire and derision, an articulation of difference contained within the fantasy of origin and identity" (Bhabha 19). It is the same ambivalence found between Victor and his creature. In *Alien Constructions*, Patricia Melzer states that "rewriting Christian myth is an important strategy" because it describes the process of colonization as a so-called religious superiority "lend[ing] on ideological justification for the economic exploitations of colonized countries and cultures" (Melzer 61). The myth of creation is seen as a tool to enforce a differentiation between white settlers and native cultures, using the different origins as the core of a rhetoric of racial superiority.

[52] I will use "Otherness" and "Other" when referring to the concepts and "other" when referring to existing (real or fictional) characters.

[53] This scientific Other has become a key figure in the development of some branches of the post-humanist movement as posthumanism advocates for the use of science and technology in order to enhance new, post-human beings. Each of the three categories of Otherness mentioned here provide an argument against the

Victor Frankenstein in front of his peers

The figure of Victor Frankenstein has its roots in the classical myth of Prometheus, which is acknowledged in the novel's subtitle *The Modern Prometheus*. Victor exhibits Prometheus' ambivalent characteristics: a rebel and a creator.[54] The modern Prometheus is an "unthinking creator who fails, whether unintentionally or consciously, to be responsible for his creation, thereby creating evil" (Soyka 166).

The story of Victor Frankenstein and his creature is presented as an example of the moral duty of the scientist (or explorer in the case of Walton) to prioritize the needs of those around him. It is through the letters of the explorer Walton that we are told about Victor's story and his creation. This *mise-en-abîme* allows for a focalization on Victor's story as a moral parable as it is Victor's narration that convinces Walton to sacrifice his dream of exploring the arctic in order to ensure the safety of his crew and his sister's peace of mind. In the first letter to his sister Margaret, Walton describes his dream of grandeur: "My life might have been passed in ease and luxury; but I preferred glory to every enticement that wealth placed in my path" (12). However, in the concluding letter, he abandons his own desires for the sake of his sister: "Year will pass, and you will have visitings of despair, and yet be tortured by hope. Oh! My beloved sister, the sickening failing your heart-felt expectations are, in prospect, more terrible to me than my own death" (210). While Walton has learned Victor's lesson, Victor has not. Victor's diatribe against Walton's crew clearly shows that he still privileges the glory of scientific discovery over

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ideal representation of a normalized individual by the Western society, and, at the same time, expose the impossibility of such an independent, stable self. For a postcolonial reading of *Frankenstein*, see Joseph W. Lee's "The Deceptive Other: Mary Shelley's Critique of Orientalism in *Frankenstein*," *Studies in Romanticism* 30 (1991), 255-283.

[54] He is either the one who stole fire from Zeus in order to give it to mankind in Greek mythology or the one helping Jupiter with the creation of mankind in the Roman version.

the lives of others. Victor's final stance is not surprising to the extent that he had been consistently selfish throughout the novel:

> I feel myself justified in desiring the death of my adversary. During these last days I have been occupied in examining my past conduct; nor do I find it blameable. In a fit of enthusiastic madness I created a rational creature, and was bound towards him, to assure, as far as was in my power, his happiness and well-being. This was my duty; but there was another still paramount to that. My duties towards my fellow-creatures had a greater claim to my attention, because they included a greater proportion of happiness or misery" (215).

Victor still does not realize how problematic his behavior has been and does not recognize his responsibility in the deaths of his brother William, his servant Justine, his friend Clerval, and his fiancée Elizabeth. He failed his creature much before his final decision to chase and kill him.

Victor's impulse to create life originates from a philanthropic desire to give a better life to human beings as he wants to "banish disease from the human frame, and render man invulnerable to any but a violent death" (34). It is the desire to make up for his mother's early death that motivates his study on reanimation of dead flesh. In *Making Monstrous* (1991), Fred Botting reads the novel as a criticism of Francis Bacon's idealism about the power of science. The same idealism can be found in Victor's trust in what he can achieve:

> Callahan argues that the representations of magic in *Frankenstein* display a frightening potential because they demonstrate the "pure instrumentality" of knowledge that is "morally indifferent." When applied to science and its technologies, […], the text undermines Bacon's belief that science will inevitably be beneficial to humanity, since the two truths envisaged by that proto-scientists [Victor], of reason and revelation, distinguish completely the domain of the "abstractive intellect" and the "moral man" […]. Science remains shadowed by Faustian spirits who inspire dreams of power, and these, Frankenstein goes on to demonstrate, are not necessarily conductive to human benefit. (Botting 164–179)

In the novel, this idealism is destroyed by instrumentality and lack of morality. Victor's apparent philanthropy hides a less favorable aspect of his personality: his craving for power and recognition.

When *Frankenstein* was first published in 1818, it was harshly criticized for its apparent heresy, which was identified in Victor's desire to acquire God's prerogatives as creator.[55] The description of his work reveals his intention to create a species that will worship him as a god: "A new species would bless me as its creator and source. Many happy and excellent natures would owe their beings to me" (49). The very words he uses, "bless" and "owe," imply that at least part of his intention is to be recognized, obeyed, and maybe even worshipped by this new species. This statement also suggests that he wants to create a species superior to mankind. He does not want to replace God but to surpass him (Buchen 107). Victor's statement also underlines the fact that he expects this new species to submit to his will and idolize him. Because of their debt, he thinks he is entitled to have power over their lives. This power is similar to a right to life and death over them. He offered the creature the gift of life; therefore, he has the right to take it back.[56]

Victor claims his status as a father, "no father could claim the gratitude of his child so completely as [he] should deserve theirs" (49). However, he is only referring to the patriarchal privileges granted by a society that requires children to blindly obey, respect, and love their father. Victor's claim becomes nothing more than a mascarade when he rejects the "child" who doesn't meet his expectations. Following the same principle, but in

[55] Chris Baldick defines it as a myth of transgression (40)

[56] His behavior towards the body of the female creature is also quite representative of his will to keep the power to create life to himself. In the end, he destroys her body because he is afraid that she might be able to procreate and steal his status as sole creator.

different ways, Victor usurps the roles of the mother in his attempt to dominate Nature, the ultimate Mother:[57]

> By stealing the female's control over reproduction, Frankenstein has eliminated the female's primary biological function and source of cultural power. Indeed, for the simple purpose of human survival, Frankenstein has eliminated the necessity to have females at all. Frankenstein's implicit goal of creating a society for men only: his creature is male; he refuses to create a female; there is no reason that the race of immortal beings he hoped to propagate should not be exclusively male. (Mellor 115)

But once again, Victor fails as he is not able to "properly nurture the creature's emotional and moral development" (Mellor 115), he runs away from his laboratory once the creature has awoken and is relieved when he goes back there to discover that the creature had disappeared. By trying to become God, Father, and Mother at the same time, the creator tries to impose himself on others. But he can only create a new version of himself. This re-creation of the self reveals the desire to destroy otherness. However this attempt to re-create his own self is doomed to fail. Because of his vanity, Victor misrepresents himself, which leads to a discrepancy between his representation of himself and its actualization in the creature. This new self has therefore become the Other.

Victor's selfish project might have been acceptable or excusable if it had not cost the lives of innocent bystanders: William, Justine, Clerval, and Elizabeth. I will focus on the cases of Justine and Elizabeth because their deaths could have been prevented by Victor if he hadn't chosen to protect his reputation. His choice reflects an education that taught him that the life of a woman takes meaning when she dedicates it to a man. The best example of the representation of the ideal, subdued woman is the portrait of Victor's

[57] See Ann K. Mellor, "A Feminist Critique of Science" in *Frankenstein: New Casebooks*, Ed., Fred Botting (New York: Saint Martin Press, 1995), 127.

mother adorning the Frankenstein family's living room, which shows her "in an agony of despair, kneeling by the coffin of her dead father" (73).[58] This portrait does not focus on her but on her dedication to her father. She does not seem to exist on her own, only through a man.[59] This education strengthened Victor's sense of superiority and leads him to sacrifice the lives of Justine and Elizabeth in order to maintain his reputation. In order to save them, he would have had to reveal his experiment and deal with the consequences: either to be considered weak and irrational and therefore lose his credibility and status or to be judged and condemned for his crime: "such a declaration would have been considered as the ravings of a madman" (77). Women's feelings are always dismissed or underrated by Victor. When the corpse of William is found by the villager, Justine is accused of the murder. While Victor is aware of her innocence, he decides not to prove her innocent so that he can preserve his reputation. After Justine's trial and conviction, Victor claims that "The tortures of the accused did not equal [his]; she was sustained by innocence, but the fangs of remorse tore [his] bosom, and would not forego their hold" (80). He describes his experience of witnessing her trial as "the horror of [his] situation" and "agony" (80), while not considering Justine's experience at all, even though he knows she is to be executed.

[58] See Elisabeth Bronfen, "Rewriting the family," *Frankenstein, Creation and Monstrosity*, Ed. Stephen Barn (Oxford: Reaktion Books, 1994), 17-36.

[59] In *Challenging the Biological*, Benziman provides a feminist reading of men's desire to control reproduction and identify the ethical questions at stake in such endeavors. On the social level, the development of gynecology and the replacement of midwifes by male doctors not only "turned the female body and its reproductive capabilities into an object for masculine research and medical inspection" but also promoted the representation of women as helpless objects at the hands of men (Benziman 378). In the fictional account of what she calls "fantasies of male birth, we find four major ethical problems: the treatment of women (rejection, objectification, oppression), "the ethical and emotional rejection of the creature, as well as the denial of the body of maternity and sexuality, combined to thwart scientific achievement," the dismissal of the creator's body, and the belief that essence is separate from the body (392).

The same egocentric blindness is the cause of Elizabeth's death.[60] When the creature threatens Victor and warns him that he will be present during Victor's wedding night, Victor understands it as a threat to his life only and does not even think of alternative consequences: "Well, be it so; a deadly struggle would then assuredly take place, in which if he was victorious, I should be at peace, and his power over me be at an end. If he were vanquished, I should be a free man" (186). He not only does not think about possible consequences of such a threat on Elizabeth, but he also decides to carry on with this dangerous wedding day. He does not even consider that his death might have repercussions on Elizabeth. He only thinks of her as his companion, and whether she is fit for that role: "She was thinner, and had lost much of that heavenly vivacity that had before charmed me; but her gentleness, and soft looks of compassion, made her a more fit companion for one blasted and miserable as I was" (187). Not once does he wonder whether he is a fit companion for her and how his miserable state might make her miserable as well or how she would have to pay the price for his mistakes.

We have seen the many ways in which Victor fails his society by being selfish and not considering the consequences of his actions on the lives of others. He is not fit to be a beneficial member of society, as shown by his rejection from his professors and fellow students and his inability to sustain healthy family or friendly ties. When his father urges him to behave decently after William's death, he reminds Victor: "is it not a duty to survivors, that we should refrain from augmenting their unhappiness by an appearance of immoderate grief? It is also a duty owned to yourself; for excessive sorrow prevents improvement or enjoyment, or even the discharge of daily usefulness, without which no

[60] See Jeffrey Berman's reading of Victor Frankenstein as pathologically narcissist in *Narcissism and the Novel* (New York: New York University Press, 1990), 56-77.

man is fit for society" (86). Victor does not react to his father's admonishment and later attempts to justify his behavior by saying that "this advice, although good, was totally inapplicable to [his] case" (86). Victor's belief that religious, social, and moral laws do not apply to him is at the core of his inability to be part of society.

A Failed Father-Figure

Victor Frankenstein usurps the power of reproduction but rejects the responsibility of creation. This can be read as a desire to create a new society - one in which he fits - as opposed to the existent one. However, once again, he is not fit for the role. He wants to be the father and god of a new race but he is not able to acknowledge one creature of his own making. His failings as a father figure are twofold: his initial rejection of his creation once animated, and later his inability to be a guide when the creature reaches out to him.

Victor's initial attitude toward his living creation is disgust, followed by rejection, and even, in some ways, denial. Victor's rejection of the creature can be explained as rooted in his disappointment. While he was dreaming of a new, superior race of man, he had to come to the harsh reality that he had created a being that was not only awkward, but also overwhelmingly scary and repulsive. This creature would not and could not bring the fame and posterity that Victor was looking for. Victor's surprise at the inadequacy of the creature's body is however not justifiable as he had rationally decided to modify the size and material used in order to build his creature. Because "the materials at present within [his] command hardly appeared adequate to so arduous an undertaking" (48), and because "the minuteness of the parts formed a great hindrance to [his] speed, [he] resolved, contrary to [his] first intention, to make the being of a gigantic stature" (49). The discrepancy between his optimist frenzy throughout the creation process and his disgust once the

creature is alive and breathing pinpoints two major flaws in Victor's character: his shallow focus on his creation's faulty aesthetic and an over-zealous materialism preventing him from truly valuing life:

> Victor's materialism does not provide a rational justification for valuing and loving the creature unconditionally. To Victor, the creature is not a unique life deserving of love, nurturing, care, or concern. Rather, it is a no-thing, just grotesque and meaningless matter, merely an experiment gone horribly wrong. The creature is not a life for which Victor is responsible. Rather, it is a frightening and inconvenient mistake that he wishes did not exist. (Hogsette 553)

Victor's evaluation of his creature is based on its appearance; he is never able to truly bypass it. In order to give a truer account of the creature's experience, Shelley switched the narrative voice from Victor to the creature.

The core of the novel (literally and figuratively) consists of the creature's narration of his experience after his creation up to his encounter with Victor in the Alps (the creature had followed him there). Its function in the novel is to, through the creature's plea, challenge Victor's stance. The creature questions the righteousness of his creation by emphasizing the fact that he didn't ask to be created. The creature's inquiry, "Why did you form a monster so hideous that even *you* turned from me in disgust?" (95) echoes Adam's, in John Milton's *Paradise Lost* (1667), who had a similar question for God: "Did I request thee, Maker, from my clay To mould me Man?" (742–43)[61]. Using possessive structures such as "thy creature" and "my master", the creature attempts to create a link with Victor. He highlights that he should not be considered responsible of his maker's flawed design

[61] The creature had read Milton's *Paradise* Lost and refers to Milton's Adam in his plea: "If thou wilt also perform thy part, the which thou owest me. Oh, Frankenstein, be not equitable to every other, and trample upon me alone, to whom thy justice, and even thy clemency and affection, is most due. Remember, that I am thy creature: I ought to be thy Adam; but I am rather the fallen angel whom thou drivest from joy for no misdeed" (95).

and that he has no power over his sins or defects. In his plea, the creature explicitly reminds Victor of his duty:

> Yet you, my creator, detest and spurn me, thy creature, to whom thou are bound by ties only dissoluble by the annihilation of one of us. You purpose to kill me. How dare you sports thus with life? Do your duty towards me, I will do mine towards you and the rest of mankind. (94)

The creature's plea highlights several ways in which a creator should be held responsible for his creation. The question of responsibility appears under two different forms: respect for life and duty. When he asks "how dare you sports thus with life," the creature challenges Victor's morality and sense of responsibility by suggesting that he does not value life. This lack of respect for life is also reflected in Victor's inability to fulfill his duty towards not only his creature but also society in general. Both forms of irresponsibility are related. Because he is unable to see his creation as a mere object from a failed experiment, he is also unable to acknowledge his moral responsibility as creator or father.

Shelley's concept of a father's/creator's responsibility towards his/its creation echoes the one found in the work of her very own father, William Godwin, in particular his novel *Caleb Williams* (1794). According to Godwin, human nature and character are not to be considered impermeable features, they are "just what circumstances irresistibly compelled [them] to be," and are therefore highly dependable on society and maybe fate or hazard (310). One cannot be judged evil by nature, therefore the ones who have evil characteristics should be pitied and helped because they cannot fight fate and nature, instead of being rejected and kept in a situation that breeds resentment and hateful behavior. Godwin proposes a behavior towards moral monsters and states that "it is more necessary [for me] to feel compassion for you, than that I should accumulate your misfortune by my

censures" (310). This statement defines a society that favors hate and punishment instead of helping criminals as no less guilty or monstrous than the criminals themselves.

There is a parallel between Godwin's statement of society's guilt and the creature accusing Victor of negligence. The novel is a warning about the need for education and about the responsibility of men towards society and its future, echoing the Enlightenment's concern about the role of childhood and education as a primary element of the construction of the adult. This new focus on education led to a change in the perception of the child. Society does not protect children, who are innocent before they enter the social world, from the corruption of nature, rather it corrupts them.[62] Mary Shelley had read Rousseau and was familiar with his ideas on the opposition between nature and nurture: the creature is at first a model of Rousseau's noble savage or innocent child, but only as long as he remains hidden. Using Rousseau's definition of the role and duties of the father in *Emile ou de l'Education* (1762), Shelley's highlights Victor's failure to be a father or role model to his creature.[63]

Victor's indictment also happens on a broader scale when the creature's initial behavior highlights Victor's selfishness and seems to reverse the man-monster dialectic.

[62] "The gothic interest in the child is of course a manifestation of a broader interest in individual as well as historical past which appears at this time. Since Locke especially, thinkers had become increasingly interested in childhood as a state of development both separate from and vitally formative of adulthood, our personal past out of which we evolve as individuals. The idea of childhood was in transition, undergoing a gradual revolution from the older view that the child is born corrupt, needing to be redeemed through education, to the Rousseauian ideal, in which the child is born innocent and corrupted later by society. In the latter view, childhood was idealized as a time of innocence and freedom, an individual paradise that is lost with maturation and the attainment of individual identity and its responsibilities, a version of the noble savage who is free from the restraining and distorting conventions of society" (Kilgour 34).

[63] "Un père, quand il engendre et nourrit des enfants ne fait en cela que le tiers de sa tâche. Il doit des hommes à son espèce, il doit à la société des hommes sociables, il doit des citoyens à l'état. […] Celui qui ne peut remplir les devoirs de père, n'a point le droit de le devenir. […] Je prédis à quiconque a des entrailles et néglige de si saints devoirs qu'il versera longtemps sur sa faute des larmes amères, et n'en sera jamais consolé" (Rousseau 263–64).

While Victor isolates himself in order to escape society's rules, the creature is craving social recognition. Hoping to gain at least some level of acceptance, the creature strives to be the best he can, which is exemplified by the De Lacey episode: Frankenstein's creature helps the De Lacey family by doing their harsh chores during the night. The family recognizes the help and claim that they are blessed and want to thank their guardian. However, once they actually see the creature, their reaction is fear and disgust. Felix attempts to beat the creature and the whole family deserts their home the following day, thus crushing the creature's last hope. This episode also serves as a criticism of society's focus on aesthetics rather than morality. Through the reading of the books the creature finds, he learns of morality. When he decides to reveal himself to the De Lacey family, he appears to the blind father who accepts the creature and treats him as a fellow human being because he bases his judgment on what he hears. It is only when Felix sees the creature that the scene turns sour. Mary Shelley implies that if the creature had not been ugly, or rather grotesquely hyper-human, he would not have been rejected. Nevertheless, the creature's plea remains unheard and nothing changes.

Unable to make Victor acknowledge his guilt, the creature attempts to raise his sympathy. He is asking for a just punishment for his fault, the same request Milton's Adam makes to God: Adam does not understand why he should be punished for something he could not control as he was made "unable to perform" the will of his creator, and therefore "Inexplicable [God's] justice seems" (v. 749-755). He admits that he has sinned but he challenges his punishment; his flawed nature should be taken into consideration by his creator, who should show some mercy. This sense of injustice is even stronger in *Frankenstein* as the creature is punished before having sinned. He bears the sin of his

creator which takes the form of ugliness. He is not punished because he is a sinner but merely because he is alive. His creation is an act of heresy and he has to bear the mark of his creator's sin. He doesn't expiate his own sin but his maker's.

Neither guilt nor sympathy are sufficient to truly shift Victor's mind. His initial agreement to build a female companion for his creature is not a sympathetic gesture but rather an attempt to escape from his situation, as he is hoping that it would lead to the reclusion of the couple from the world, and ultimately his life. It is a way out between his physical inability to kill the creature and his refusal to include the creature in his life and take on his responsibilities as a creator and father figure. Victor's response to his creature is rooted in his inability to accept difference. He does not want to recognize his creature because he sees him as the absolute Other, an abject outsider. The creature is, without a doubt, different from the norm of the western man. Nevertheless, he cannot be seen as an outsider because he does not come from the outside; on the contrary, he is the very product of Victor's society and a distorted reflection of Victor himself. When Victor is subjected to his creature's plea, he struggles between his disgust and his identification with the creature.

Victor Frankenstein has been remembered although not for the reasons for which he had hoped. The name of Frankenstein has come to represent the two things he was trying to avoid at all cost: association with the creature and a reputation as a "raving […] madman" (77). The name "Frankenstein" is now more often used to refer to the creature

whereas Victor's story became the foundation of the myth of the mad scientist, a myth that, to this day, still haunts scientific endeavors of all kinds.[64]

A Legacy of Mad-Scientists

What makes *Frankenstein* so relevant to modern culture is its combination of scientific hubris with the motif of the mad scientist. The label of the mad scientist originates in his lack of morality rather than actual madness or mental instability. In "The Moral Character of Mad Scientist: A Cultural Critique of Science" (1992), Toumey identifies three features of moral character: intention, level of maturity, and remorse (based on reflection and responsibility).[65] Victor's behavior throughout the whole novel shows that his intention, maturity, and ability to act responsibly are all questionable: "The Frankenstein who made his own creature was a misguided medical student, a callow youth, inexperienced in the ways of the world, let alone in the ways of great evil. Although his deed was reprehensible, he had neither the mind nor the maturity of a master criminal. Shocked by what he had done, he did the most immature thing imaginable" (Toumey 424). Victor's abandonment of his creature after its animation is the most powerful evidence of his lack of maturity.

However, Victor's character has more depth. Toumey argues that Victor's encounter with his creature in the Alps leads Victor to change as he realizes that he has "the duties of a creator towards his creature" and that he "ought to render him happy before [he] complained of his wickedness" (97). Although Victor evolves throughout the novel

[64] The use of the term "Frankenfood" when referring to some types of genetically modified organisms is a current example of the extent of *Frankenstein*'s influence on society's understanding of new sciences.
[65] Toumay identifies three different scientific idioms: physical paraphernalia, scientific knowledge, and the scientist. Only the scientist can be subject to debates on morality as objects and mere knowledge cannot be rationally considered good or evil.

and gains some level of maturity and sense of responsibility, Victor's final remarks, and his refusal to admit his faults, do not correspond to Toumey's attempt to redeem Victor. While Victor finally realizes that he has responsibilities towards his creature and society, he does not uphold them and therefore cannot be considered as truly responsible. The thought process that leads him to destroy the female creature before its completion shows that he, by that point, understands that scientific endeavors can have consequences greater than his own life: "Had I a right, for my own benefit, to inflict this curse upon everlasting generations? […] I shuddered to think that future ages might curse me as their pest, whose selfishness had not hesitated to buy its own peace at the price perhaps of the existence of the whole human race" (163). Nevertheless, the second part of this quote suggests that, once again, Victor is mostly concerned by his reputation and possible posterity. This desire to hide his sin or mistake to safeguard himself from criticism have already cost the life of Justine. However, Victor still has not learned his lesson: he repeats the same mistake he committed during Justine's trial, when his silence led to her wrongful conviction and execution. However, he continues to keep the creature secret, an act which ultimately leads to the deaths of both Clerval and Elizabeth. In the end, he does buy his own peace when he dies before catching his creature. His final confession to Walton is a plea for the recognition of his work and ultimate sacrifice: "Since you have preserved my narration, […] I would not that a mutilated one should go down to posterity" (207).

While he has matured enough to realize that science has consequences, he is not ready to give up irresponsible scientific endeavors (he encourages Walton to pursue his exploration despite its risks for Walton and his crew) and does not show remorse as he claims that he is not "blameable" (he does not reflect on his responsibility towards the

deaths of his friends and family). He still does not understand that his main mistake was his abandonment of the creature. It is through his desire for posterity that he comes to understand the necessity of being responsible. It is only because of his fear of being judged for his action that he becomes more responsible. However, posterity cannot be used as a moral guideline and highlights his faulty sense of responsibility.

Victor's irresponsibility echoes Romantic science's often blind belief in the power of science and progress. His character is reminiscent of Prometheus, who had been both a rebel and a martyr, making him a paragon for Gothic villains (a popular literary figure of Shelley's time). Victor, in turn, also displays some of the archetypal characteristics of these villains: he seeks isolation, he is subject to fits of passion, he is never satisfied, and his interests are marginal. [66] These features seem to indicate a certain propensity for insanity:

> In the text, however, male creation is identified with sciences, thus marking the transformation of the gothic villain, the Godwinian philosopher, into the mad scientist whose descendants include Drs. Moreau and Jekyll. Victor is presented as a Baconian scientist, who seeks knowledge as power over the natural world. The scientist is the epitome of the alienated autonomous individual, the loner par excellence, a cerebral questor who, in his laboratory […], has to detach himself not only from the objects of his analysis but from all relationships. (Kilgour 196)

Victor's research turns into obsession and leads to his isolation in his laboratory at Ingolstadt, an isolation that will trigger his fit of insanity. Leaving everything else aside while pursuing his research, he loses contact with the real world and forgets anything unrelated to his scientific projects, including his family, his closest friend, and his fiancée. Victor acknowledges to some extent that he has lost touch with the importance of relationships when he realizes that his first thought after he wakes up from his fever does

[66] See Ludmilla Joardona, "Melancholy Reflection," in *Frankenstein, Creation, and Monstrosity*, ed. Stephen Bann (Oxford: Reaktion Books, 1994), 60-61.

not involve others. When Clerval mentions his family, he responds: "How could you suppose that my first thought would not fly toward those dear, dear friends whom I love" (58). Victor's insanity, or rather irresponsible behavior is rooted in his "idolatry of science at the expense of all other forms of human experience" (Bartlett np).[67]

The story of Victor Frankenstein has become the essence of the mad scientist myth, which is summarized as followed by Haynes: "'the mad scientist' uncovers knowledge that threatens social orders (sometimes the whole planet), either through the malicious design of evil people or by accident" (244). In "From Alchemy to Artificial Intelligence: Stereotypes of the Scientist in Western Literature" (2003), Haynes identifies seven different categories at the core of this myth: the evil alchemist, the noble scientist, the foolish scientist, the inhuman researcher, the scientist as adventurer, the mad-bad-dangerous scientist, and the helpless scientist. All of these categories are already displayed by Victor Frankenstein: he is proud and isolated as an alchemist; he is a modern Prometheus trying to find a cure for death; he is foolish to the extent that he does not understand or even think about the possible consequences of his experiment; he is dehumanized by his work.[68] He exhibits the same desire for discoveries as adventurers, he

[67] In "A Feminist Critique of Science," Ann K. Mellor refers to an interesting psychological survey of scientists:

> In his ability to substitute work for love, a dream of personal omnipotence for a dream of familial interdependence, Victor Frankenstein possess a personality that has recently been characterized by Evelyn Fox Keller as typical of modern scientists. Keller argues from her psychological survey of physicists working at Harvard University that the professional scientific demand for "objectivity" often masks a prior psychological alienation from the mother, an alienation that can lead scientists to feel uncomfortable with their emotions and sexuality. (Mellor 127)

[68] Victor indirectly recognizes the de-humanizing effects of his work: "If the study to which you apply yourself has a tendency to weaken your affections, and to destroy your taste for those simple pleasures in which no alloy can possibly mix, then that study is certainly unlawful, that is to say, not befitting the human mind" (51).

had a fit of fever that can be read as madness after he animates his creature, and finally he is not able to control his creature and is therefore helpless.

Victor Frankenstein cannot be identified as an absolutely new type of character. He is indebted to figures such as Prometheus, alchemists like Faust, and the rabbis from legends of Golems. However, he marks a drastic shift between a creation myth based on supernatural forces to one based on hard sciences and human ingenuity. With Frankenstein, science is separate from the rest of the world; it happens in dark, isolated laboratories and is hidden from society. There is no sense of a scientific community that could censure itself and work for the benefits of society, only the individual scientist working for himself, in most cases for posterity or for the sake of knowledge itself. This representation of science and scientists, while mostly erroneous, is still the dominant one in popular culture.

Conclusion

With *Frankenstein*, the creation of life took on a new meaning and provided a new perspective: the story of man trying to become God. Man is no longer the creature but the creator. We are thus dealing not only with the origins of humanity but also its meaning. The very existence of Frankenstein's creature challenges the notion of humanity. Not only is the sacredness of humanity at stake, but the comparison between human beings and their "created" counterparts imperils the conception we have of ourselves and questions our moral systems. How should the "creature" be treated? How would it/he be integrated into society? Which characteristics make it/him human? How do we define humanity? These are the same questions that have been asked in fiction dealing with advancement in biology. The end of the Nineteenth Century provides us with other images of mad scientists, Stevenson's Dr. Jekyll and Mr. Hyde being one of the most famous examples.

This trend, however, is not to be relegated to the Nineteenth Century. H. G. Wells was a key figure in the development of the discussion of science (including biology) and its place in society and the ethical questions at stake in these disciplines. Wells' work, at the turn of the century, marks a transition from biology (with his 1896 novel: The Island of Dr. Moreau) and a return to concerns related to the industry and the new development in machinery (seen in his first popular work of non-fiction: "Reaction of Mechanical and Scientific Progress Upon Human Life and Thought," 1901). Wells is still now considered one of the major authors in science fiction, a genre that has only grown in popularity. Wells' turn to mechanical and scientific progress mirrors the development of the industry and the many new technologies emerging during the first half of the Twentieth Century. This also meant that technology became a forefront issue, even more so than biology. Machines became synonymous with progress, but could their principles be applied to human beings? Could they replace human labor? These questions that had already been asked about the first machines discussed in chapter one rose again. These machines, more efficient than before, led to the development of a new imaginary: What if these machines were to wake up and rebel against their makers? What if these machines became so human-like that we could not differentiate them from real human beings? These will be the questions that I will explore in the following chapter.

Chapter 3:

Artificial Intelligence and Human-Like Robots:

What Happens When We Cannot Differentiate Between Man and Machine?

In the previous chapters, I identified and analyzed the literary representation of the relationship between the Scientific Revolution and the ethical questions raised by new technologies. As seen in chapter one, the Industrial Revolution fostered the development of many different types of machines aiming at optimizing production, often leading to the switch from human to mechanical labor. However, due to the drastic evolution of technology at the beginning of the Twentieth Century, especially during World War One and World War Two, the competition between human and mechanical labor slowly turned into a challenge of human exceptionalism:

> The *second* industrial revolution, the one that is now in progress, is based on machines that extend, multiply, and leverage our *mental* abilities. The same controversies on social and economic impact are attending this second great wave of automation, only now a new and more profound question has emerged. Though we have always regarded our species as relatively mediocre in physical capacity, this has not been our view with regards to our mental capacity. The very nature we have given ourselves, *Homo sapiens*, defines us as the thinking people. The primary distinction in our biological classification is the ability of our species to manipulate symbols and use language. (Kurzweil 7)

While the first machines were designed to replace physical labor, the development of intelligent machines such as computers called into question the superiority of the human

species. We have always been aware of our species' weakness in terms of physical abilities but these deficiencies were compensated by human intelligence.

In this chapter, I will focus on narratives in which robots play a major role in the plot development. First, I will read Karel Čapek's 1920 play *Rossum's Universal Robots* (commonly referred to as *R.U.R.*) as symptomatic of an economic anxiety about the development of intelligent robots that have the potential to replace man not only as a labor force but also as a species. I will then analyze how this anxiety developed into a reflection about human nature and a challenge of speciesism. In order to do so, I will read Philip K. Dick's 1968 novel *Do Androids Dream of Electric Sheep?* in light of the iconic Turing Test, a test designed by the Twentieth-Century mathematician Alan Turing, whose work tried to determine whether machines can think. I will use Masahiro Mori's concept of the "Uncanny Valley," an adaptation of Freud's Uncanny, to explain these anxieties. While the representation of robots as rebellious and threatening is commonplace in science fiction, some alternatives are offered. I will read the narratives of robots trying to become human found in Isaac Asimov's 1976 *The Bicentennial Man* and Roger Zelazny's 1966 short story "For a Breath I Tarry" as counterpoints to the competition and confrontation between man and machine.

One of the first instances of artificial intelligence to be found in Čapek's play *R.U.R.* is especially important to the present discussion because it introduces the figure of the robot as a new step in the development of artificial life and precedes the development of the field of artificial intelligence. I will show that *R.U.R.*'s focus on the mass-production of robots for industrial and commercial purposes reveals new anxieties about mechanical men. These anxieties go beyond the previous status of automata as labor force and

introduce the possibility of subjectivity for such entities. Čapek's robots are the first of a long series of intelligent artificial life leading to figures such as the androids of Philip K. Dick's *Do Androids Dream of Electric Sheep?* which became part of the cultural imagery of technological advancement through the novel's cinematographic adaptation, *Blade Runner*, in 1982.

Intelligence is, however, not the only issue at stake. With the development of intelligent machines, pure intelligence, in a strict sense, could not be the criteria to establish human superiority. In the article "The Ethics of Artificial Intelligence" (2014), Nick Bostrom and Eliezer Yudkowsky suggest that in addition to intelligence, sentience[69] or "the capacity for phenomenal experience or qualia, such as the capacity to feel pain and suffer" and sapience or the "set of capacities associated with higher intelligence, such as self-awareness and being a reason-responsive agent" are necessary components of a truly human person (322). The possibility of sapience in robots is the key issue at stake in *Do Androids Dream of Electric Sheep?*, which explores the possible consequences of building robots that are hardly identifiable by human beings. I will argue that Dick's ambivalent representations of men and androids challenge the discourse of speciesism.[70] In order to do so, Dick asks the following questions: how can we justify our superiority if we are neither physically nor intellectually superior? How can we justify their status as objects without

[69] Sentience is also used in the discourse of animal rights such as in Peter Singer's *All Animals are Equal* (1989):

> Surely every sentient being is capable of leading a life that is happier or less miserable than some alternative life, and hence has a claim to be taken into account. In this respect, the distinction between humans and nonhumans is not a sharp division, but rather a continuum along which we move gradually, and with overlaps between the species, from simple capacities for enjoyment and satisfaction, or pain and suffering, to more complex ones.

[70] Speciesism is "a prejudice or attitude of bias in favor of the interests of members of one's own species and against those of other species" (Singer 6)

rights when we cannot truly differentiate them from human beings?[71] In order to do so, I will read Dick's novel as a fictional instance of the Turing Test, a test established by the mathematician Alan Turing that attempts to identify whether a machine can behave intelligently, if not humanly.

Deckard, the main protagonist of the novel, displays an ambivalent behavior towards androids that is characteristic of science fiction's and society's relationship with technology. Technology is seen as both the cause and the cure to everything. We find this same ambiguity in science fiction, with representations of androids either as benevolent and harmless helpers or as powerful, menacing entities. While *Rossum Universal Robot* and *Do Androids Dream of Electric Sheep?* are representative of many works of science fiction exploring the possible dangers or humanoid robots, it is also necessary to address works that shed a more positive light on intelligent robots.

It is in the works of Isaac Asimov, one of the most popular and prolific science fiction writers of the Twentieth Century, that we find a discussion of the moral status of robots not as threatening usurpers but as agents of good. In his *Robots* cycle (1940-1985), Asimov introduced the Three Laws of Robotics to guarantee safe and benevolent robots. While the definition of robots as mere objects have been justifiable when dealing with machines without intelligence or conscience, it is not the case with Asimov's robots. In *The Bicentennial Man* (1976), Asimov does not challenge the morality of robots but rather that of society and its treatment of a different being. This challenge is made especially

[71] These questions became the core of many science-fiction novels and short stories throughout the Twentieth Century, and especially from the 1930s to the 1980s. This new focus is explained by the development of computers and artificial intelligence in the first half of the century. The history of the use of the word "computer" reflects some of the issues at stake. At first, it was used to describe man and women employed to compute and calculate numbers, they were human calculators. However, when machines became faster, with bigger memory, they replaced the "human computer." Since then, the word "computer" has only been used to refer to the machine rather than the operator.

powerful through the depiction of the conflict of interest and moral agency between man and robot, which is given from the perspective of the latter. I will argue that narratives following the attempts of artificial life to become human, such as Asimov's *The Bicentennial Man* and Roger Zelazny's "For A Breath I Tarry" (1966), offer another ground for the exploration of what it means to be human.

The Robot's Rebellion: *Rossum's Universal Robots*

In chapter one I identified how the development of androids was parallel to the development of machines replacing human labor. The workers' revolts that followed were not successful and the industrialization continued to spread throughout different sectors of the economy. However, the initial disappearance of lower-skill jobs led to the creation of many higher qualification jobs which in turn led to the disappearance of most groups lobbying against the mechanization of production lines. The fear of being replaced by machines, however, did not fade. The continuous development of machines led to the possibility of machines replacing more than manual labor. It is the corresponding fear of humanity being replaced by machines that is at the core of the Czech writer Karel Čapek's 1920 play *R.U.R.* The very purpose of the manufacturing of robots, according to the Rossum Company, is to replace deficient machines: "One Robot can replace two and a half workmen. The Human Machine, Miss Glory, was terribly imperfect. It had to be removed sooner or later" (13). The relevance of Čapek's play is twofold: it introduces the figure of the robot at the same time as it provides new layers of meaning to the representation of artificial life.

The story, which unfolds over eleven years, takes place on the island where the Rossum factory produces their robots. It starts with the arrival of Helena Glory, the

daughter of the company's president. The aim of her visit is to persuade robots that their treatment by the company is inhumane and therefore unacceptable. The first act closes with Helena's forced marriage to the head of the factory, Harry Domin. The second act describes the rebellion of the robots ten years later, while act three focuses on the confession of Dr. Gall, one of the company's directors and lead scientists, in which he revealed that he had modified the robots so that they could feel physical pain. And lastly, in the epilogue, Dr. Gall is the only human survivor, enslaved by the robots who want him to find the lost formula of their production. The play addresses many issues stemming from the creation of artificial life, from its origins to the social and political consequences of their use, thus highlighting the ethical issues at stake.

The invention and development of the robots, as described by Domin at the beginning of his presentation to Helena, already suggests scientific hubris. The robots are the combination of the work of two scientists, Old Rossum and Young Rossum, each exhibiting some of the characteristics of the mad scientist, as identified in chapter two. Old Rossum was a physiologist and a chemist who studied "the living matter known as protoplasm until he suddenly discovered a substance which behaved exactly like living matter although its chemical composition was different" (Capek 3–4), while Young Rossum was an engineer. The construction of robots requires the knowledge of both of these disciplines. It is no surprise that these two fields of study are the ones highlighted by the novels studied in chapters one and two. These disciplines are each associated to a specific form of immorality that we find in both Rossums.

Domin describes Old Rossum as mad because he wanted to make actual people: "He wanted to become a sort of scientific substitute for God. He was a fearful materialist,

and that's why he did it all. His sole purpose was nothing more nor less than to prove that God was no longer necessary" (5). While Old Rossum did not commit any morally reprehensible actions, his lack of interest in the possible consequences of his work combined with his creation of non-viable mutants suggests that he was not a responsible scientist. On the other hand, Young Rossum is depicted as cold and detached, thinking only about profit and efficiency: "He rejected everything that did not contribute directly to the progress of work – everything that makes man more expensive. In fact, he rejected man and made the Robot" (6). It is the combination of irresponsibility and utilitarianism that will lead to the end of humanity.

It was *R.U.R.* that introduce the word "robot" in the English language. It is a play on the Slavic *robota*, which is the root word for work and has a connotation of servitude or serfdom. Čapek's robots are composed of both organic materials and mechanisms and are thus different from the now traditional representation of robots as purely mechanical. The manufacture of robots relies on the use of protoplasm, "a substance which behave[s] like living matter although its chemical composition [is] different" that is produced by chemical synthesis applied to a mechanical structure (4). While we are not given any information about the type of mechanism used, the manufacture of robots is described as being "the same thing as [the] manufacture [of] gasoline motors" (6). In "Why Do Robots Rebel? The Labor History of a Cultural Icon" (2013), Tobias Higbie argues that "the mechanization of the robot reflected growing concerns with industrial automaton, particularly during the mass unemployment of the 1930s" (111). Higbie's argument relies on an analysis of the popularity of the motif of the robot in conjunction with the political and economic unrest of the 1920s and 1930s:

> In their first incarnation robots were clearly identified as workers and their theatrical rebellion with strikes and revolutions. […] More broadly, the play created opportunities for commentary on the nature and value of modern industry, the proper distribution of cultural power and the capacity of workers to function as democratic citizens. The robot evoked and echoed unease with the transformation of work, the growing division between thinking and doing that accompanied scientific management, and the rise of mass cultural forms. (Higbie 100)

It is the consequences of the mass production and its mechanization of labor that are explored in *R.U.R.* The consequences of the commercialization of robots are twofold: economic and political. The first global consequence is economic: "all prices are to-day a third of what they were and they'll fall still lower, lower, lower, like that. […] it means that the cost of labor has fallen. A Robot, food and all, costs three quarters of a cent per hour. […] All factories will go pop like chestnuts if they don't at once buy Robots to lower cost of production" (15). In a capitalist economy, the emergence of robots can only lead to an extensive mechanization of production which leads not only to the replacement of human labor by robots, but also to a comprehensive overhaul of social and economic relationships.

While Domin claims that the aim of the robot production was to end human labor and poverty, his position is idealistic and soon proven wrong. The idealism of the desire to create robots in order to end man's slavery from work is revealed in the conversation between Domin and Alquist when they reflect on their actions and their responsibility for the destruction of mankind at the hands of robots. Domin refuses to acknowledge that his vision was unrealistic even when Alquist highlights the fact that this vision had never been share by their employers as "Old Rossum only thought of his God-less tricks and the young one of his milliards. […] R.U.R. shareholders […] dream[ed] of dividends, and their dividends [were] the ruin of mankind" (39). We learn in act two that, "when the working men in America revolted against the Robots and smashed them up, and when the people

gave the Robots firearms against the rebels," the company started producing soldier-robots (23). The introduction of military robots already suggests the fluidity of the figure of the robot, literally and figuratively.

This fluidity of the robot already prefigures the evolution of the figure of the robot from a combination of organic matter and mechanism to a full mechanism (it is reminiscent of the automata of the Eighteenth and Nineteenth Centuries), which can be explained by its metaphorical function. Despite the physiological differences between Čapek's robots and their successors, the plot of the robots' rebellion has remained popular, from Fritz Lang's *Metropolis* (1927) to the recent *Battlestar Galactica* (2003-2009) and *Terminator* (1984-2015) franchises. The figure of the robot, in all its forms, "encapsulates dreams of abundance, leisure, and immortality as well as fear of alienation, vengeance, and monotony. The cylons (the name of the race of artificially created beings in *Battlestar Galactica*), clones, and cyber-braceros of contemporary science fiction offer an opportunity to think through tensions around work, technology, and the globalization and commercialization of everyday life" (Higbie 120). Because of the metaphorical nature of Čapek's robots, Higbie defines them as an instance of Haraway's cyborg since they offer a way to *think through* the modern dilemma. Higbie deplores the fact that the robots' mechanization led to an erasure of the discourse of labor as part of the modern human condition. However, the shift in the reception of the figure of the robot he identifies (from "the story of the robot symboliz[ing] man reduced to the status of machine" to the use of the word robot "to designate machines raised almost to the level of humanity," 118) suggests another reading of *R.U.R.*, one which questions of identity and subjectivity are at stake.

While Higbie establishes a clear difference between Čapek's robots and their contemporary equivalents, James Graham argues, in "An Audience of the Scientific Age: *Rossum's Universal Robots* and the Production of an Economic Conscience" (2013), that Čapek's robots do not belong to the category of the automaton. Čapek's figure of the robot functions "less as an anthropomorphic device than as a bifurcated *homo oeconomicus*, a new configuration of social relations in which the production of desire and the production of commodities are divided into two distinct, but distinctly organic, figures" (J. Graham 117). The robot as *homo oeconomicus* embodies the 1920s combination of "the physiological science of work" and psychotechnics, the application of psychological principles to economics and other disciplines. In that respect, Čapek's robot should not be read as the "creation of an economy per se but as an instantiation of the prevailing 'economic conscience,'" which can be defined "as an equation of efficiency with industrial responsibility, if not morality" (J. Graham 116).[72] If Čapek's robots belong neither to the old automata nor to the contemporary robots, it is because they function as a turning point in the history of artificial life: one that marks the shift from the discussion of a singular object to that of a new species. It is therefore through the introduction of the mass-production of artificial life that the question of robots's subjectivity is raised.

The status of robots is already shown to be ambiguous at the beginning of the novel through the character of Sulla. Sulla is Domin's secretary and a robot, a fact unknown to Helena. The interactions between Sulla and Domin, and later with Helena, do not suggest,

[72] "This 'economic conscience' is a shared one, a conservation-minded material austerity against which individual vibrancy, inherently wasteful, makes its appearance. 'In order to meet with unqualified approval,' Veblen writes, 'any economic fact must approve itself under the test of impersonal usefulness – usefulness as seen from the point of view of the generically human.' That human beings might exist in generic form (not as identical bodies but as subjects made measurable according to a codified datum of 'normalcy,' whether social, physical, or mental) was also a central supposition of psychological materialism" (J. Graham 116).

in any way, that Sulla is a robot. The first encounter between Sulla and Helena is remarkable in the sense that it foreshadows the Turing Test by thirty years. Sulla is so believable as a human being that Helena refuses to believe she is a robot when Domin reveals her nature. It is only when Sulla agrees to let Domin prove to Helena that she is a robot by opening her up that Helena realizes that it is the truth. Sulla is an example of the top line of robots built by Rossum: intelligent and human-like. However, she shows the same defect as other classes of robots: because life and death do not matter to her, she does not have self-preservation instincts, which in some other models have resulted in robots damaging themselves while working: "Sometimes a Robot does damage to himself because it doesn't hurt him. He puts his hand into the machine, breaks his finger, smashes his head it's all the same to him" (14).

For Domin, the robots' lack of care or interest towards life and death is the reason why they are to be treated as objects: they are intelligent, "but they're nothing else. They've no will of their own. No passion. No soul" (14). Miss Glory is, however, not satisfied by Domin's answer. She is visiting the factory on behalf of the Humanity League with the purpose of "liberat[ing] the Robots and […] ensur[ing] good treatment for them" (13). In order to understand the robots, their circumstances, and treatments, she asks Domin and Fabis a series of questions. It is through their conversation that we learn about the next technological development for robots: the inclusion of pain-nerves, "an automatic protection against damage" (14), in order to provide them with a self-preservation instinct, and, doing so, preventing the robots from harming themselves by negligence.

It is this irritability of the nerves that is key to the unfolding of the play. In act three, Dr. Gall admits that he had secretly modified the robots by including a physiological

correlate to the soul as requested by Helena. This physiological correlate corresponds to the pain-nerves mentioned by Fabis earlier in the play as Dr. Gall's analysis of the physiological or mechanical symptom of the robots' rebellion: "Reaction of the pupils; increase of sensitiveness. It wasn't an attack characteristic of the Robots. […] It was fluttering with nervousness like a human heart. He was all in a sweat with fear, and – do you know, I don't believe the rascal is a Robot at all any longer" (28). However, the irritability that was added to the production of robots had broader consequences than self-preservation as the physical irritability developed into anger. Such anger is best exemplified by Radius' justification of his rebellion: "You are not as strong as the Robots. You are not as skillful as the Robots. The Robots can do everything. You only give orders. You do nothing but talk. […] I don't want any master. I know everything for myself. […] I don't want a master. I want to be a master. I want to be master over others. […] I want to be master over people" (27). The addition of pain-nerves to robots allows them to gain sentience, the second characteristic of humanity established by Bostrom and Yudkowsky. It is this newly gained sentience that creates the possibility of subjectivity and therefore the necessity to consider their interest and ethical treatment.

This play introduced robots as possible substitutes for human beings (not merely a labor force), which became the norm in science fiction and popular culture. While they did not exhibit human benevolence or charm, they "brought together all of the elements of machine intelligence: vision, auditory perception, touch sensitivity, pattern recognition, decision making, judgment, extensive word knowledge, fine motor coordination for manipulation and locomotion, and even a bit of common sense" (Kurzweil 312). All these abilities are research domains for the discipline of Artificial Life. Its parent discipline,

robotics, attempts to embody these qualities in the forms of robots. While the field of robotics is fascinating, I will focus on artificial intelligence, as it is relevant to a discussion of the moral status of robots.

Artificial Intelligence

The field of artificial intelligence was born from a question raised by mathematicians of the first half of the Twentieth Century: can a machine think or, in other words, can a machine be intelligent. This question requires a clear understanding of what intelligence is as well as how and why it is thought to be a specifically human attribute. Defining intelligence is, however, difficult as the term tends to be used broadly. In *The Age of Intelligent Machines* (1990), Ray Kurzweil provides definitions of intelligence from various scholars. In its simplest form, intelligence is defined as "a process comprised of learning, reasoning, and the ability to manipulate symbols" (16). For Marvin Minsky, one of the pioneers in the fields of cognitive science and artificial intelligence, the very concept of intelligence is problematic because:

> It is only a word that people use to name those unknown processes with which our brains solve problems we call hard. But whenever you learn a skill yourself, you're less impressed or mystified when others do the same. This is why the meaning of "intelligence" seems so elusive: it describes not some definite thing but only the momentary horizon of our ignorance about how minds might work. (qtd in Kurzweil 214)

The problematic fluidity of intelligence, however, has not hindered the thriving field of artificial intelligence. Artificial intelligence is a branch of cognitive science that is defined as "a cross-disciplinary approach to understanding, modeling, and replicating intelligence and cognitive processes by invoking various computational, mathematical, logical, mechanical, and even biological principles and devices" (Frankish and Ramsey 1).

In his groundbreaking article "Computing Machinery and Intelligence" (1950), the mathematician and computer scientist Alan Turing (1912-1954) shifted the question, claiming that it was impossible to satisfactorily prove that a machine is intelligent:

> Turing diagnoses this line of argument as ultimately promoting a solipsistic perspective where "the only way by which one could be sure that a machine thinks is to be the machine and to feel oneself thinking" (Turing 446). He points out that the same line of argument would then also hold for people (i.e. one could only be sure that another person has certain mental properties or is in a particular mental state if one were that other person), a problem known in philosophy as the "other mind problem." (Scheutz 249)

Instead of focusing on intelligence itself, Turing proposed to design a test that focused on the program's behavior. If it cannot be proven whether a machine is intelligent, we must determine whether a computer can respond intelligently. An intelligent answer does not prove the existence of intelligence but it implies the possibility of it, which requires a reconsideration of the status of a machine able to (re)produce such behavior. Turing's model for machine intelligence is based on human behavior which means that for a computer program to be considered as behaving intelligently, its responses must be human-like.

The birth of the field of artificial intelligence in 1956 attests the general consensus that a machine can think, even if it is a different type of thinking.[73] The study of artificial intelligence is generally divided into two sub-disciplines: weak AI and strong AI. According to Kurzweil, weak AI "aims at building machines that act intelligently, without

[73] We find the same reference to flying in the works of following researchers in the field of artificial intelligence: Yes, machines can *think in principle, but not necessarily in the same way we do*. AI researcher Seymour Papert of the Massachusetts Institute of Technology maintains that artificial intelligence is analogous to artificial flight: "This leads us to imagine skeptics who would say, -You mathematicians deal with idealized fluids – the real atmosphere is vastly more complicated- or –You have no reason to suppose that airplanes and birds work the same way – birds have no propellers, airplanes have no feathers.- But the premises of these criticisms is true only in the most superficial sense: the same principle (for example, Bernouli's law) applies to real as well as ideal fluids, and they apply whether the fluid flows over a feather or an aluminum wing" (Waldrop quoted in Kurzweil 62).

taking a position on whether or not the machines actually are intelligent (34) and strong AI is devoted to building persons. In all its forms, the study of artificial life does not aim to imitate intelligence or create ersatz or empty substitutes. Haugeland defines its goal as the creation of "genuine articles: machines with minds, in the full and literal sense. This is not science fiction, but real science, based on a theoretical conception as deep as it is daring: namely, we are, at root, computers ourselves" (Arkoudas and Bringsjord 34).

Čapek's robots do not truly belong to either weak or strong AI. While their purpose as mere replacement for human labor would suggest that they belong to the category of weak AI, their behavior is more in par with strong AI as their rebellion can be read as symptomatic of individuality and perhaps even personhood.[74] This distinction between weak and strong AI is critical as it relies on the difference between performance and essence. The development of strong AI shifted the questions at stake from what robots can do (and whether they can replace us in the workplace and make us irrelevant) to who/what robots are (and whether they are to be considered as persons):

> Is AI merely another advance in technology, or is it a turning point in human evolution that should be a focus of discussion and planning by all mankind? The prospect of intelligent machines is one that we're ill prepared to think about, because it raises such unusual moral, social, artistic, philosophical, and religious issues. Are we obliged to treat artificial intelligence as sentient beings? Should they have rights? (Minski qtd in Kurzweil 219)

These are the questions addressed by many science fiction writers of the mid-Twentieth Century as they attempted to explore the possible consequences of the development of

[74] Artificial intelligence can take many different forms; it is, however, almost always represented under a human shape. In *Blood Music* (1985), Greg Bear explored the potential danger of non-humanoid artificial life; his novel is an exception. While it also targets anthropocentrism, it operates differently and asks different questions. This dismissal of non-humanoid artificial intelligence is problematic because it highlights the refusal to admit other forms of intelligence. This form of anthropocentrism is quite different from the one exhibited in novels representing embodied artificial intelligence. The questions at stake in these texts are different from the ones explored in this chapter, which is why I will not be dealing with them.

robotics and artificial intelligence. I will now turn to Phillip K. Dick's *Do Androids Dream of Electric Sheep?*, one of the most popular examples of the genre.

Testing Humanity: Speciesism in *Do Androids Dream of Electric Sheep?*

In his 1968 novel *Do Androids Dream of Electric Sheep?*, Philip K. Dick explores the troubling possibilities of truly intelligent robots, or andies (replicants in its subsequent cinematographic adaptation). Through the figure of the android, Dick challenges the boundaries between natural and artificial. These androids are meant to be both workers and companions for the colonists on other planets, as each android:

> Duplicates the halcyon days of the pre-Civil War Southern states! Either as body servants or tireless field hands, the custom-tailored humanoid robot – designed specifically for YOUR UNIQUE NEEDS, FOR YOU AND YOU ALONE – given to you on your arrival absolutely free, equipped fully, as specified by you before your departure from earth; the loyal trouble-free companion in the greatest, boldest adventure contrived by man in modern history will provide. (Dick, Do Androids Dream of Electric Sheep? 17–18)

As suggested by this advertisement, these androids are designed to imitate human behavior. In the end, they are so life-like that they are almost indistinguishable from human beings both in their appearance and behavior.

In "Androids as a Device for Reflection on Personhood" (1991), Marilyn Gwaltney reads the androids as real human beings. The distinction she makes is one based on personhood rather than bodies, switching the question "are androids human" to "are they persons with selves?":

> To be a person certainly means not to be merely a thing or an object. […] Under most circumstances the terms "a human being" (i.e. a particular individual human), "person," and "self" can be used interchangeably because they are denotatively synonymous. But that synonymy does not necessarily hold if androids like those in the film and the novel exist. Since these androids are biologically human, even if they are not sexually reproduced, they must be considered human beings in the sense of being homo sapiens. When we think of androids as beings "crafted" from

> human tissue to have human form and functions, we would not assume that such a being is necessarily a person or "has" a self. We would want such a being to meet certain functional criteria before being declared to be a person or to have a self. (Gwaltney 33)

Do Androids Dream of Electric Sheep? explores what has been traditionally associated with personhood, namely rationality, consciousness, autonomy, and purpose. The autonomy and rationality of the androids are innate, or rather made by design. Dick's novel focuses on the question of consciousness and its relationship to the self. Gwaltney defines the self as "an individual consciousness that is aware of itself as being a whole. When I refer to my 'self' I refer to the quality of relatedness, of belongingness, that is characteristic of experience I call my own" (35).

While the novel does not reveal the procedure behind the androids' construction, we do learn that the specificity of the newest andies is their "two trillion constituents plus a choice within a range of ten million possible combinations of cerebral activity. In .45 of a second an android equipped with such a brain structure could assume any one of fourteen basic reaction-postures" (30). The andies' intelligence is not merely functional (reduced to their labor power), it is also behavioral as they are meant to imitate human actions. However, the definition of intelligence has been strictly normalized by the society depicted in the novel. This normalization of intelligence leads to a problematic categorization of intelligent beings in so far that "The Nexus-6 android types […] surpassed several classes of human specials in terms of intelligence" (30). This shows that intelligence cannot be used to define the difference between human and android, which is also suggested by Rick Deckard himself when he claims that "no intelligence test would trap such an andy. But then, intelligence tests hadn't trapped an andy in years, not since the primordial, crude varieties of the 1970s" (30).

Dick's androids are meant to be so life-like that they question our own humanity and superiority or difference. Deckard establishes this problem when he compares his wife to the androids he has encountered: "Most androids I've known have more vitality and desire to live than my wife" (94). Because of these resemblances and of the necessity to keep the androids in servitude, it is necessary for Deckard's society to establish a way to distinguish between man and android. This is achieved through what is called the Voigt-Kampff test. The goal of the test is to identify whether an individual has authentic emotional responses, and is therefore human. Deckard, whose job is to identify and "retire" androids, describes the test as following:

> The flat adhesive disk with its trailing wires – "measures capillary dilation in the facial area. We know this to be a primary automatic response, the so-called 'shame' or 'blushing' reaction to a morally shocking stimulus. It can't be controlled voluntarily, as can skin conductivity, respiration, and cardiac rate." (46)

During the test, Deckard describes a situation (all of them involving the killing of animals), such as "you are given a calf-skin wallet on your birthday" (48), and asks the subject what they would do in such circumstances. The results of the tests are based on physiological responses and not verbal ones. In order to prevent subjects from outsmarting the questioner, they are "no more than 'simuli-questions' seeking the presence or absence of flinch reactions to what may be no more than a passing detail, with no particular relevance to the tenor of the question being asked" (Abrioux 137). Empathy is therefore seen as instinctual, as a physical reaction.

It is possible to read Dick's Voigt-Kampff Test as an adaptation of the well-know Turing Test. While both Turing and Dick explore the possibility of creating a test that would allow us to differentiate man from android or machine, neither of them succeeds in providing a test that is actually satisfactory.

It is necessary to go back to the Turing Test for several reasons: Turing's article featuring this test is considered to be the work that created the field of Artificial Intelligence; the test has become and still is a staple in its field[75]; and lastly it has been adapted in many works of science fiction.[76] In early June of 2014, the computer program Eugene Goostman[77] won the 2014 Turing Test contest organized by The University of Reading's School of Systems Engineering with the help of RoboLaw, an organization funded by the European Union. This victory would not have had the news coverage it received if it had not been complemented by the claim that Eugene had, in the process, passed the Turing Test. The University of Reading claimed that this was an "historic milestone in artificial intelligence" because it was the first time that a computer passed the full test as opposed to the many accounts of programs passing simplified versions of the test.

[75] Since 1991, a yearly contest based on the Turing Test is organized and attributes two prizes: one to the most human-like computer and one to the most human human.
http://www.loebner.net/Prizef/loebner-prize.html

[76] In *R.U.R.*, Helena's first encounter can be seen as an unsupervised Turing Test in so far that he is testing Sulla's ability to pass as human when Domin introduces her to Helena, only saying that she is his secretary.

[77] The program Eugene was created in 2001 and developed in Russia. It simulated a thirteen year old boy (at the time of the test in 2014). One of the leading scientists of the team, Vladimir Veselov describes the project as focused on conversation logic: "Our main idea was that he can claim that he knows anything, but his age also makes it perfectly reasonable that he doesn't know everything. We spent a lot of time developing a character with a believable personality. This year we improved the 'dialog controller' which makes the conversation far more human-like when compared to programs that just answer questions" The concept of personhood is intrinsic to discussions of many bioethical issues at both the beginning and the end of life. It is difficult to even begin discussion of such issues without a clear understanding of the conceptual differences between being a member of the species Homo sapiens and being a person. The discussion here examines the relevant features of certain robots, in particular Sonny from I, Robot and Andrew from Bicentennial Man, to attempt to determine whether these robots might be considered persons in the ethical sense of the term, and thus highlighting what criteria are necessary for a being to be considered a person. The ultimate aim of the discussion is to clarify the characteristics of personhood to determine which members of the species Homo sapiens are entitled to be referred to as humans in the ethical sense" (n.p.).
"Turing Test Success Marks Milestone in Computing History." *University of Reading*. University of Reading, 08 June 2014. Web. 08 Sept. 2015.

Turing designed his test on the model of a party game[78], the imitation game, in which behavior and recognition are key elements:

> The original imitation game is played by a man, a woman, and a judge, whose gender is irrelevant. In a blinded tele-typed conversation, the judge can ask any question to the two contestants. The man has to pretend to be a woman. If the judge cannot distinguish the two on the basis of their replies, then the man wins. (Berrar and Schuster 82–83)

Turing modifies and applies this game to machines: a judge (whose identity is not important) communicates with two participants, a machine (A) and a human being (B), through a screen and has to identify the machine through a series of questions within five minutes. The goal of the Turing test is to determine whether "by modifying [a] computer to have an adequate storage, suitably increasing its speed of action, and providing it with an appropriate program," would allow it to "play satisfactorily the part of A in the imitation game, the part of B being taken by a man" (Turing 442). The Turing Test's strength comes from its reliance on a social and contextual understanding of intelligence rather than physical origins. Turing's new questions can be simplified to 'can a machine behave intelligently?'

As highlighted by Turing in his essay, the test is only meant to test the intelligence of machines (electronic or digital computers) and not all forms of artificial life. While he focused on computers, he opened his categories to unconventional or creative technologies. The one category he excludes is that of "machine-men born in the usual manner." This distinction is relevant for this project because the general public's response to different forms of artificial life is different and raises different moral questions.[79]

[78] It has been suggested that this game was in fact imagined by Alan Turing himself in the sole purpose of building his argument for his own test.
[79] I will therefore address "grown" artificial life, such as clones, in chapter four.

While the Turing Test and the Voigt-Kampff Test found in *Do Androids Dream of Electric Sheep?* are structurally different, they rely on similar premises and address similar issues. The main differences between these two tests are the following: the number of participants, the quality or ability they look for, and their respective goals. The differences between the tests stem from their goals. The Turing Tests aims to prove that a machine can act intelligently (which, in this case, is synonymous with acting the way a human being would); The Voigt-Kampff Test's goal is to identify androids (or to prove they are not human beings). Nevertheless, both tests operate under the same over-arching questions: what is the characteristic that makes human beings so special and how can we prove its existence? It is on this premise that Yves Abrioux defines the Voigt-Kampff as both a spin-off and a simulation of the Turing Test: a spin-off because it "substitutes emotion for intellect, as a supposedly more robust criterion of the human" (Abrioux 137); a simulation because the results of the Voigt-Kampff test are not based on verbal responses as in the Turing Test, but rather on physical cues.

The shift from intelligence to emotion or empathy can be explained by the fast development of intelligent machines. In the novel, Deckard explicitly refers to the existence of an intelligence test (it is difficult not to see it as a reference to the Turing Test) that had previously been used by bounty hunters but that is no longer efficient: "no intelligence test would trap such an andy. But then, intelligence tests hadn't trapped an andy in years, not since the primordial, crude varieties of the 1970s" (30). Because intelligence is often perceived as factual and logic, it tends to exclude the value of context and relationships between and around facts or data. Kurzweil reminds us that "facts alone do not constitute knowledge. For information to become knowledge, it must incorporate

the relationships between ideas. And for the knowledge to be useful, the links describing how concepts interact must be easily accessed, updated, and manipulated" (284). Artificial intelligence, during its first years, focused on problem solving through the use of algorithms and databases. Human's problem-solving strategies, however, also include the "ability to draw inferences from knowledge that is imprecise and incomplete" (Kurzweil 17)[80] as well as the ability to identify appropriate solutions rather than merely efficient ones.

The notion of the appropriateness of a solution has been a key for the further development of artificial intelligence and is at the core of Dick's Voigt-Kampff Test. With a test based on empathy and therefore emotions, Dick's prefigured the development of a new type of artificial intelligence: affective computing. In her report on the topic, Rosalind Picard defines affective computing as the form of "computing that relates to, arises from, or influences emotions" (1). This new focus on affect is based on the work on emotions by Paul Ekman at the end of the 1960s. Emotions are important for the development of artificial intelligence because they "have a major impact on essential cognitive processes; neurological evidence indicates they are not a luxury. […] emotions play a necessary role not only in human creativity and intelligence, but also in rational human thinking and decision-making" (Picard 1).[81]

The belief that emotions are key to human intelligence and behavior is also at the core of the Voigt-Kampff Test. The purpose of this test is for bounty hunters to identify

[80] In the short story "The Monkey Wrench" (1951), Gordon R. Dickson addresses this issue by imagining a man asking a machine to solve a paradoxical problem. The machine, not able to solve the problem, stops all its routine programs in order to focus on this paradox, leading to the probable death of the people living in its station because it does not keep up with the necessary conditions for man's survival.

[81] There are many reasons why computers with emotions would be a desirable development in computing: they would be easier and more enjoyable to interact with them.

whether their subject is able to feel empathy which means determining whether he or she is human. Early on in the novel, the validity of the test is questioned. Even though Deckard refuses, at first, to consider the possibility that the test is flawed, his understanding of empathy is not reliable, as shown by the definition he attempts to provide: "the empathetic faculty probably required an unimpaired group instinct; a solitary organism, such as a spider, would have no use for it; in fact it would tend to abort a spider's ability to survive. It would make him conscious of the desire to live on the part of his prey" (31). It is the lack of group instinct that Deckard looks for when investigating since "an android […] doesn't care what happens to another android" (101).

In the field, Deckard rarely uses the actual test. The only time Deckard uses the full Voigt-Kampff Test is at the beginning of the novel when he goes to the Rosen Company headquarters to test the newest model of androids. Throughout the novel, the efficiency of the test is questioned. At the beginning of the novel, Deckard and his superior discuss its accuracy as a study made by psychiatrists had revealed "that a small class of human beings could not pass the Voigt-Kampff scale. If you tested them in line with police work, you'd assess them as humanoid" (38). Later on, during Rachael's test (the only actual Voigt-Kampff test of the novel), Deckard is not able to truly determine whether she is an android or not. It is only through their follow-up conversation that he is able to figure out her nature. The main problem is not the test itself but its actual relevance to the extent that it is possible for a human person to fail it. Before Deckard is sent to Seattle and the Rosen Company headquarters, he has a conversation with his superior concerning this possibility, especially in the case of schizoid and schizophrenic individuals. While this is just a theory they are debating, Deckard's own behavior challenges the idea that empathy is an innate human

quality. When he goes on his mission to retire the three last androids, he meets Isidore who is still under the shock of witnessing them cutting off the legs of a spider. Deckard does not react to this cruelty, he does not flinch, he merely says "Androids do that" and walks away (218).[82]

In both the Turing and the Voigt-Kampff tests, it is impossible to establish factual answers that can provide a strict rule to distinguish man from machine. Both tests require a decision from the part of the judge. We are then faced with another question: "if androids and humans can hardly be distinguished, what does it mean to react strongly to androids?" (Barlow 85). In that case, the figure of the android serves as a mirror for humanity's lack of empathy, in the sense that it seems persons (or conscious machines) are means rather than ends:

> In Western capitalist culture we are accustomed to believing that the creator or discoverer of something is its owner and thus has authority to use it or dispose of it. *Blade Runner* and *Do Androids Dream of Electric Sheep?* carry that belief to its logical conclusion in the context not only of the modern world but of the future. This belief that ownership gives an absolute right of disposal of and authority over the owned has defined the relationship of father and child, husband and wife, master and slave in the past, in our times we have denied this belied in relation to those kinds of persons. […] The belief that we have the right to use and dispose of what we own in any way we like, and that we own whatever we make, is still lurking to trap in a morally untenable situation, because we still have not adequately reflected upon what it means to be a person nor appropriately extended the status of personhood. (Gwaltney 37)

This discrepancy between the nature of androids and their status is highlighted by Deckard in his last interaction with Rachael, when she claims that they "could live in sin, except

[82] This is corroborated by his occupation as a bounty hunter, which Isidore defines as: "of something merciless that carried a printed list and a gun, that moved machine-like through the flat, bureaucratic job of killing. A thing without emotions, or even a face; a thing that if killed got replaced immediately by another resembling it. And so on, until everyone real and alive had been shot" (158). Ironically, this description seems to correspond to what Deckard defines as The Killers earlier in the novel, the only one that should be killed following Mercerism.

that [she is] not alive" (198). Deckard's response reveals his new understanding of androids: "Legally you're not. But really you are. Biologically. You're not made out of transistorized circuits like a false animal; you're an organic entity" (198).

Deckard's struggle to understand the nature of androids as opposed to man, who is supposed to be an authentic being, echoes a concern present in most of Dick's works. In the speech "How To Build a Universe That Doesn't Fall Apart Two Days Later" (1978), Dick explained that two major questions are consistently addressed in his works: "what is reality?" and "what constitutes the authentic human being?" These questions are imposed on both Deckard and the readers. At the same time Deckard officiates the Voigt-Kampff test, the novels requires its readers to officiate both Turing and Voigt-Kampff tests on its characters. I will focus on three of the main characters: Rick Deckard, Rachael Rosen, and Isidore. The very fact that each of them belongs to a different category (at least, according to the novel's society) requires the reader to challenge the legitimacy and accuracy of such categories.

Throughout his assignment (killing or retiring the six androids that have landed in the Bay Area), Deckard questions his life and his role as a private detective or bounty hunter. Early on, the frailty of Deckard's belief system is revealed in his attempt to justify his actions as a bounty hunter as he claims that "In retiring – i.e., killing – an andy, he did not violate the rule of life laid down by Mercer. You shall kill only the killers" (30).[83] What allows Deckard to maintain this argument is the looseness of the definition of killer by Mercerism, which allows him to determine, on his own accord, who or what killers are:

[83] Deckard's unstable belief system can be extended to the whole post-apocalyptic society of the novel, which is based on the religion of Mercer, which is in itself problematic. We learn later on in the novel that it is a scam.

> For Rick Deckard an escaped humanoid robot, which had killed its master, which had been equipped with an intelligence greater than that of many human beings, which had no regard for animals, which possessed no ability to feel empathic joy for another life form's success or grief at its defeat – that, for him, epitomized The Killers. (32)

Deckard is, however, not able to sustain his own argument or justification for very long because he is not able to see all the androids he encounters as part of "The Killers."

The turning point for Deckard is his encounter with the android Luba Luft, who is posing as an opera singer. When he goes to the opera house to retire Luba, he does not go straight for the kill instead he sits down and watches the opera before apprehending her. His first attempt at retiring her fails because he underestimates her. Later on, after successfully retiring her, he second-guesses his mission as he evaluates what happened with Luba: "She was really a superb singer, he said to himself as he hung up the receiver, his call complete. I don't get it, how can a talent like that be a liability to our society?" (137). Luba's behavior, especially her reaction to the paintings from the museum where she hides, shows that she is not a threat and therefore not a Killer. "But it wasn't the talent, he told himself, it was she herself" (137). Luba's threat is not who she is, but what she is; it is in her very nature as an android.

Deckard's sudden discomfort about retiring androids was not the only conclusion he reached after retiring Luba. His realization of the nature of Luba's threat comes with a similar revelation about his fellow bounty hunter Phil Resch: "He's a menace in exactly the same way, for the same reasons" (137). Phil Resch is a threat because he does not have any empathy and therefore resembles androids. Resch's lack of empathy explains why Deckard puts him at the same level as Luba, even though one is an android and the other a man: "I rode down with two creatures, one human, the other android … and my feelings

were the reverse of those intended. Of those I'm accustomed to feel – am required to feel" (143). Doing so, Deckard reveals that consciousness is not enough to make one truly human, or rather humane. As suggested by Gwaltey, "consciousness is a necessary, but not sufficient condition for personhood, and it is to personhood that we attach moral rights and responsibilities" (37).

Ironically, when Isidore learns about bounty hunters such as Deckard, he imagines them, not as human, but as threatening machines:

> He had an indistinct, glimpsed darkly impression: of something merciless that carried a printed list and a gun, that moved machine-like through the flat, bureaucratic job of killing. A thing without emotions, or even a face; a thing that if killed got replaced immediately by another resembling it. And so on, until everyone real and alive had been shot." (158)

Following Mercerism, he values all forms of life, from fake animals and androids to human individuals. He, therefore, does not understand the purpose of bounty hunters. The case of Isidore is especially interesting. A "special" (commonly referred to as a "chickenhead" or "anthead") seems to be the one who is the most self-aware throughout the novel.[84] He is aware of his limitations and of how he is seen by society, which enables him to realize that Pris, Roy, and Irmgard are androids without using the test used by Deckard. Isidore does not have the intelligence of Deckard or the androids but he is not lost. Despite his humanity, Isidore is treated as an inferior. When he decides to help the androids, he justifies his decision in the following manner: "But what does it matter to me? I mean, I'm a special; they don't treat me very well either, like for instance I can't emigrate" (163). Isidore is

[84] The choice of the name "anthead" is significant as in another of Dick's "The electric ant" (1969), the noun "ant" refers not to a "special" but to an android who does not know he is not human. Using "anthead" to refer to both androids and a mentally challenged individual, challenges the use of intelligence as a marker of humanity and social status. This conflation is reaffirmed in the novel with the android Polokov: "Polokov is mimicking a special, an anthead. Very deteriorated – or so he pretends to be. That's what suckured Dave; Polokov apparently looks and acts so much like an anthead that Dave forgot" (85).

characterized by his empathy: "what we did on Mars he isn't interested in; he knows us and he likes us and an emotional acceptance like that – it's everything to him" (164). Isidore does not judge others based on what they are. Isidore's identification of bounty hunters as machines and acceptance of androids undermines the speciesism of his situation and functions as a moral compass.

Lastly, the character of the android Rachael Rosen also requires us to challenge the human versus android dichotomy. Despite her intelligence, Rachael is at first unaware of the fact that she is an android. It is only revealed to her after Deckard's test. Throughout the novel, Rachael experiences an identity crisis, as she tries to find herself in spite of society's refusal to see her as an individual:

> Rachael's struggle to express herself in the language of a dominant culture that does not legitimate her status as a person allows her what most human characters avoid: the possibility of a non-essentialized existence. She must consistently grope for terminology that approximates human experience yet still intimates her own experience. (Vinci 98)

Her crisis is highlighted by the sense of a loss of identity because she is not unique, as Pris is the same model as her. The idea of facing Pris, another female android built on the same model, deeply disturbs her and challenges her sense of self:

> Identification; there goes I. My god; maybe that's what'll happen. In the confusion you'll retire me, not her. And she can go back to Seattle and live my life. I never felt this way before. We are machines, stamped out like bottle caps. It's an illusion that I – I personally – really exist. I'm just representative of a type. (189)

In the very last scene in which Rachael appears, we find the same discrepancy in her behavior: she has killed Deckard's goat, which mirrors Pris' earlier torture of a spider and identify as a supposedly emotionless android; however, her action can be read as an act of jealousy in response to Deckard's having chosen the goat over her, which would imply that she does have emotions.

It is here necessary to go back to Deckard's last conversation with Rachael, when he refuses to see her as a non-living being, the status given to her by the law: "But really you are. Biologically. You're not made out of transistorized circuits like a false animal; you're an organic entity" (198). By comparing androids, human beings, and fake animals, Deckard's judgment undermines the very existence of these categories and functions as a criticism of speciesism. His distinction between the legal and biological definition of androids implies that it is socially constructed:

> In order to keep the myth of human exceptionalism alive, androids must remain culturally and ontologically marginalized, enabling a cultural displacement of the inherent absence in the human onto the android. To offset this ideological sleight-of-hand, the animal must be positioned as the android's opposite: it becomes the transcendental marker of humanity's unique ability to feel for or with the other. (Vinci 93)

In "Speciesism and Species Being in Do Androids Dream of Electric Sheep?" (2007), Sherryl Vint argues that the novel highlights how traditional discourses of speciesism allow for both the commodification of animals (a commodification that is found in the novel as the relationship between man and animal is not based on an ethic of care but rather on defining one's social status) and the dismissal of androids as individuals:

> The limitations of speciesism and the failure to realize meaningful relationships with animals within the novel are connected to its critique of capitalism and to Marx's analysis of the alienating effects of the commodity fetish. Cartesian subjectivity relies on an idealist notion of what is essential about the human, an essence of soul that humans are said to have while animals do not. This results in a damaging relationship to nature and to others, seeing them as exploitable resource rather than as subject, as means rather than as ends. (Vint np)

While androids are rejected for their lack of empathy, Deckard's empathy is called into question as he retires the last androids (except Rachael) even if he knows it is wrong. The androids' behavior towards animals is often used to justify their supposed lack of empathy;

it is, however, reminiscent of the way that animals have been used for experiments and how androids are treated as mindless slaves.

As mirror and product of our society, androids remind us that the major driving forces of the modern world are war and greed. In both *R.U.R.* and *Do Androids Dream of Electric Sheep?*, androids are created for these two reasons: in *R.U.R.,* robots are created as cheap labor and later turned into soldiers; in *Do Androids Dream of Electric Sheep?,* we find the opposite progress from the Synthetic Freedom Fighter to "the mobile donkey engine of the colonization program" (16). Similarly, in both texts, the companies creating robots or androids (Rossum and Rosen) claim to have done what was unavoidable: "We followed the time-honored principle underlying every commercial venture. If our firm hadn't made these progressively more human types, other firms in the field would have" (Dick 54).

The Rosen Company produces human-like robots because it is what people want; they want a robot that can fit their need for both labor and connection. However, it is the android's closeness to the human that makes it threatening. Following the concept of "the uncanny valley," introduced by Masahiro Mori in 1970, it is the very humanness of the androids that makes us reject its possible moral status as a person.

The Uncanny Valley

At the beginning of artificial intelligence and robotics, it was commonly believed that the relationship between human-likeness and affinity is linear, i.e. that the more human-like a robot is, the better it will be received. However, the many negative representations of androids in fiction, such as in *Do Androids Dream of Electric Sheep?,* suggest that this view was not shared by all.

In 1970, the Japanese roboticist Masahiro Mori introduced the concept of the Uncanny Valley, inspired by Freud's Uncanny or the "uncertainty as to whether one faces is an inanimate object of living being, the insecurity being heightened when a thing not only looks like an animate creature but also behaves like one" (Brand 8). Freud had defined the Uncanny as "that class of the terrifying which leads back to something long known to us, once very familiar" (Freud 1–2). It can be produced by "effacing the distinction between imagination and reality, such as when something that we have hitherto regarded as imaginary appears before us in reality, or when a symbol takes over the full functions and significance of the thing it symbolizes" (Freud 15). It is significant that the first example of the Uncanny given by Freud is that of the automaton, the ancestor of both robots and artificial intelligence. Mori focuses on the figure of the robot and introduces the Uncanny Valley hypothesis as:

> A non-linear relationship between a robot's anthropomorphism and likeability. It suggests that making robots that look more humanlike will increase their likeability. However, when the gap between a robot and human becomes really small the emotional reaction will instantly become strongly negative. Once the appearance and motion become indistinguishable from real humans the liking of a robot will be the same as for humans. Movement of a robot is expected to amplify the emotional response in comparison to static robots. (Jakub Zlotowski, Proudfoot, and Bartneck 9)

Since the translation of Mori's paper in English in 2005, the Uncanny Valley has been at the center of many debates in the field of robotics, mostly because of the lack of factual evidence in Mori's initial paper. There have been many studies to find empirical data on the matter but none of them have been conclusive, as they tend to contradict one another. Nevertheless, several studies have found evidence supporting a category conflict hypothesis which "states that when human likeness is operationalized as a merger of human and non-human categories, stimuli which lie approximately mid-way between such

categories will be perceived as ambiguous and thus elicit negative affect" (Burleigh, Schoenherr, and Lacroix).

The goal of Mori's paper was, however, not to explore the Uncanny Valley and its rules but rather to "caution that roboticists not design robots with too high a degree of human likeness; instead, he recommends that they aim for the first peak (moderate human likeness and high affinity) and avoid the second peak (greater human likeness and higher affinity)" (Rhee 305). Mori's intent was not to explore the Uncanny Valley and its other side. Nevertheless, the Uncanny Valley allows us to explore and challenge the boundaries between non-human and human. In *Do Androids Dream of Electric Sheep?,* Dick's androids embody the "uncanny as a force that destabilizes normative and exclusionary boundaries around 'the human'" (Rhee 303).

In "Beyond the Uncanny Valley: Masahiro Mori and Philip K. Dick's *Do Androids Dream of Electric Sheep?* (2013)," Jennifer Rhee reads Dick's novel as a succession of Uncanny moments relying on the human-likeness of the robots and the inability of some human to feel empathy in order to question the normalization of the definitions of both man and android. The most powerful instances of the Uncanny are found in the failure of the test to identify androids from humans, in androids exhibiting qualities that are deemed unique to humans and in humans lacking the very same qualities. The use of the Uncanny Valley allows Dick to "redefine[] the human not through dehumanizing and excluding the android other nor constructing and affirming the radical alterity of the android, but instead through acknowledging the deep inhumanity of the human" (Rhee 327).

The Uncanny Valley opens up the possibility of imagining androids as entities with their own lives. In the last pages of the novel, Deckard comes to the realization that "the

electric things have their lives, too. Paltry as those lives are" (241). Deckard's final epiphany prefigures Dick's own claim, ten years after the publication of *Do Androids Dream of Electric Sheep?* in a speech delivered in 1978 at the Vancouver SF Convention at the University of British Columbia:

> The constructs do not mimic humans; they are, in many deep ways, actually human already. They are not trying to fool us, for a purpose of any sort; they merely follow lines we follow, in order that they, too, may overcome such common problems as the breakdown of vital parts, loss of power source, attacked by such foes as storms, short circuits." (Dick, "The Android and The Human")

If androids are able to lead their own lives rather than merely imitate life for other purposes, then we cannot dismiss the possibility that they would be able to develop a first-person perspective, opening the door for the development of personality. However, as Kurzweil reminds us, "it should be noted that personality is not an attribute that can be stuck on an intelligent machine. A personality is almost certainly a necessary byproduct of any behavior complex enough to be considered intelligent" (413).

While Dick's use of the Uncanny Valley allows us to reconsider the nature and moral status of androids, he does so through the eyes of a man – a morally questionable man. If we truly want to explore the Uncanny Valley, we need to do so through the eyes of such androids rather than taking a small glimpse of its possibilities by focusing on our own encounters with them. It is undoubtedly impossible to know what and how an android would feel or think, but imagining its existence allows us to explore how society would and should react in the face of such a being. Narratives from the perspective of a conscious robot or machine provide us an alternative to the narrative of human fear.

Dreams of humanity

Narratives about robots are often based on the fear of change or on a sense of wonder at their possibilities. There is, however, another type of robot narrative, one that focuses on the robot more than on its possible uses or abuses: narratives from the perspective of robots. I will focus on a specific form of the robot narrative, the one in which a robot is in search of the key to humanity. In this chapter, I have analyzed how man has tried to create clear-cut definitions of man and android and to uphold the boundaries between the two. I will now focus on how the robot's quest for humanity attempts to respond to the same question: what does it mean to be human. Following Gibson's suggestion that "we should consider not just how a robot distinguishes itself from a human, but how a robot discriminates between a human and other organic species" (26), I will be analyzing the robot's quest towards humanity in Isaac Asimov's novella *The Bicentennial Man* and Roger Zelazny's short story "For a Breath I Tarry."[85] Both the android, Andrew, in *The Bicentennial Man* and the intelligent machine, Frost, in "For a Breath I Tarry" strive not only to achieve the status of man, and therefore recognition as persons, but rather to become truly human.

The term "human" is used in three different meanings: biological, psychological, and ethical. Biologically, human refers to "a member of the species Homo sapiens" (Coleman and Hanley 45). In both *The Bicentennial Man* and "For a Breath I Tarry," part of the process of becoming human for the robots is to gain an organic body. Throughout the novella, Andrew upgrades his body from mechanical to organic until he becomes fully organic and therefore subject to death. He starts this transformation process by "designing

[85] Another short story, Lester Del Rey's "Helen O'Loy," also explores the theme of the humanization of robots, but it is not narrated through the perspective of the robot.

a system for allowing androids […] to gain energy from the combustion of hydrocarbons, rather than from atomic cells" even though the latter are more efficient (Asimov, "The Bicentennial Man" 160). His solution to this new source of energy is "a device that will deal with solid food that may be expected to contain incombustible factions – indigestible matter, so to speak, that will have to be discarded" (163). Similarly, after centuries of research, Frost's final experiment is to "transfer the matrix of [his] awareness to a human nervous system" because he had come to the conclusion that "the essentials of Manhood are predicated upon a human physiology" (Zelazny 459). These new organic embodiments for the robots are, however, only the conclusion of their journey.

The journeys of Andrew and Frost follow the same pattern and seem to require the same four characteristics identified by Robert Reilly in "How Machines Become Human: Process and Attribute" (1982): intention, time, mental development, and accident. Neither Andrew nor Frost were intended to become human or at least human-like. In both cases, it is an accident or an omission that allows for the robots' respective quests. Asimov's novella is part of "a series of influential robot stories that self-consciously combatted the 'Frankenstein complex' and made of the robots the servants, friends, and allies of humanity" (Asimov, *Asimov on Science Fiction* 162). This is made possible by the creation of robots with "positronic brains that provide them with a form of consciousness" (Brand 1). When Andrew's creativity is discovered, his owner takes him to a robopsychologist in order to understand this unique phenomenon. However, his response is far from satisfactory as Andrew's creativity is identified as "the luck of a draw. Something in the pathways" that is "far too complicated to permit of any but approximate solutions" (139).[86]

[86] In "The Measure of Man?: Asimov's Bicentennial Man, Star Trek's Data, and Being Human," (2003) Sue Short reads Andrew's creativity as "a variation of the 'vital spark' hypothesis with which Descartes

In Frost's case, his whole quest finds its origins in a hobby he picked up to occupy its circuits "free time."

Desire itself, or intention, suggests that both Andrew and Frost show proof of humanity in a psychological sense – "the sense in which one is human if one has roughly the same psychological characteristics as fully developed members of the human species" (Coleman and Hanley 45). One of the most important human characteristics is the status as moral agent, which requires free-will and responsibility: "To be considered a moral agent, a being needs to be able to make judgements (i.e., to have free will and not be compelled to act in particular ways)" (Coleman and Hanley 47). Because they are programmed, robots are considered to not have any free will at all. However, both texts suggest that this is not necessarily true as both Andrew's and Frost's superior intelligence are able to find loopholes in their respective programs.

As all the robots in Asimov's various universes, Andrew is programed to follow the Three Laws of Robotics.[87] However, Andrew learns to use reason to bend these laws. When he requests his organic updates from the director of research of the U.S. Robots and Mechanical Men Company, he threatens the doctor who initially refuses, even though this should be impossible according to the First Law. However, "Andrew felt scarcely any First Law inhibition to the stern conditions he was setting as a human being. He was learning to reason that what seemed like cruelty might, in the long run, be kindness" (162-63). The very conclusion of the novel is based on Andrew's use of a logical loophole to contradict

differentiated between humans and machines, a glitch occurs in Andrew's positronic pathway during production, thus rendering him more than a mere automaton" (211).

[87] 1. A robot may not injure a human being or, through inaction, allow a human being to come to harm.
2. A robot must obey the orders given it by human beings except where such orders would conflict with the First Law.
3. A robot must protect its own existence as long as such protection does not conflict with the First or Second Law. (135)

the Third Law and reveals the depth of Andrew's psychology: "I have chosen between the death of my body and the death of my aspirations and desires. To have let my body live at the cost of the greater death is what would have violated the Third Law" (171). Similarly, Frost uses the holes in his programming to make an independent act and develop his own interests: "He was a processor of data, and more than that. He possessed an accountability acute imperative that he function at full capacity at all times. So he did. You might say he was a machine with a hobby. He had never been ordered not to have a hobby, so he had one. His hobby was Man" (Zelazny 430).

Other elements of human psychology are also found in both robots. Throughout the novel, Andrew uses emotional language even though he does not necessarily understand it:

> Andrew was fond of them, too. At least, the effect they had upon his actions were those which in a human being would have been called the result of fondness. Andrew thought of it as fondness, for he did not know any other word for it. (137)
> I enjoy doing them, Sir. […] It makes the circuits of my brain somehow flow more easily. I have heard you use the word 'enjoy' and the way you use it fits the way I feel, I enjoy doing them, Sir. (138)
> Andrew said, 'I feel bare without clothes. I feel different, George.' (146)

The truthfulness or veracity of Andrew's claims to have emotions is questioned by General Martin, Andrew's owner. However Little Miss, the General's daughter, defends him by arguing the following: "I don't know what he feels inside but I don't know what you feel inside. When you talk to him you'll find he reacts to the various abstractions as you and I do, and what else counts? If someone else's reactions are like your own, what more can you ask for" (142)? We find here the same argument that Turing had offered for his imitation test, as he focused on intelligent behavior because he believes that the existence of intelligence itself could not be proved. The apparition of Frost's emotions is quite

different. It is only when he has transferred his consciousness into a human body that he is able to feel rather than merely measure.[88] Throughout the story, Frost attempts to learn how to feel first through his study of history, literature and art and then through his own attempt to create art. These attempts are, however, not successful and do not prepare him for the strength of perception once he transfers into a human body.

In both texts, the inability to prove the existence of true emotions in robots is compensated by their recognition from others, which is consistent with the third meaning of the term "human." From an ethical standpoint, "human" refers to "the sense in which being considered human grants one full moral standing within the community" (Coleman and Hanley 45). A major part of Andrew's quest is recognition by society as his main battles occur in court: first in his plea for freedom, second in his plea for security under his right to life. In order to truly be free, Andrew needs more than his owner's approval to be truly free, he also needs his freedom to be recognized by society as a whole. Therefore, he seeks legal protection from the World Court, arguing that "there is no right to deny freedom to any object with a mind advanced enough to grasp the concept and desire the state" (144). While the court rules in favor of Andrew's freedom, it does not guarantee him recognition from others.

[88] This is prefigured by his discussion on human perception early on in the story:

> I told you that Man possessed a basically incomprehensible nature. His perceptions were organic; yours are not. As a result of His perceptions, He had feelings and emotions. These often gave rise to other feelings and emotions, which in turn caused others, until the state of His awareness was far removed from the objects which originally simulated it. These paths of awareness cannot be known by that which is not-Man. Man did not feel inches or meters, pounds or gallons. He felt heat, He felt cold; He felt heaviness and lightness. He *knew* hatred and love, pride and despair. You cannot measure these things. *You* cannot know them. You can only know the things that He did not need to know: dimensions, weights, temperatures, gravities. There is no formula for a feeling. There is no conversion factor for an emotion. (436-37)

Once Andrew gains his freedom, he starts developing human habits such as wearing clothes. On his first attempt to go in public on his own while wearing clothes, he is attacked by a group of men. This event leads him to go back to court to ask for an addition to the Laws of Robotics that would guarantee the right to life of robots in so far as it would make illegal any attempt to "order any robot to damage itself or even destroy itself for any reason, or for no reason" (152). Andrew presents his request as a question of justice, using a discourse similar to the one of animal rights:

> "Is this just? Would we treat an animal so? Even an inanimate object which has given us good service has a claim on our consideration. And a robot is not insensible; it is not an animal. It can think well enough to enable it to talk to us, reason with us, joke with us. Can we treat them as friends, can we work together with them, and not give them some of the fruit of that friendship, some of the benefit of co-working?" (152)

Andrew's fight for freedom, rights, and recognition mirrors the fight of many underprivileged groups throughout history. "When Andrew Martin seeks a representative in his last legal battle toward self-determination it is an Oriental woman that chooses to help him, and Asimov makes the parallels clear" (Short 216). Chee Li-Hsing's response to Andrew's request for help is based on this history: "I sympathize with your wish for full human rights. There have been times in history when segments of the human population fought for full human rights" (166). Andrew eventually gains the recognition he has been looking for. The price for this recognition is however, extremely high, as it is only awarded to him when he sacrifices his life and completes his transformation into an organic being and is about to die.

Recognition is also key to the conclusion of "For a Breath I Tarry." Once Frost transfers his consciousness onto a human body, he is not able to handle the amount of data his brain received through his newly acquired senses. He asks another robot to transfer him

back to his original machine, but the robot refuses on the grounds that the First Law of robotics forbids him to harm a human. This means that he has been recognized as a man and is therefore treated as one and becomes the authority figure for the other robots.

In both *The Bicentennial Man* and "For a Breath I Tarry," the robot's story is one of becoming human, at any cost. While it is impossible to truly know whether they became human or another simulation of humanity, both androids show qualities associated with "human" in all its meanings.

Conclusion

In conclusion, the texts I have analyzed in this chapter allow us to explore the Uncanny Valley that Mori warned us about. With the constant evolution of artificial intelligence and robotics, the moral questions at stake are becoming even more pressing. The research on both artificial intelligence and affective computing has greatly progressed but it has not reached the heights that had been promised. As a scientific concept, the Uncanny Valley hasn't proven itself due to the lack of evidence. However, it has led to many important discussions about the differences between man and machine. Meant as a warning for roboticists, the Uncanny Valley is a fertile ground for discussion for science fiction writers and philosophers alike.

When we enter the Uncanny Valley, the boundaries between man and machine become unclear. The Uncanny Valley itself evolves with the development of technology and with the changes of society's view on androids. It would however be a mistake to think that the Uncanny Valley only offers insight about androids and artificial life. It provides as much information about ourselves and our ability or willingness to accept not only differences but also who we are as individuals, as a society, and as a species. The android

is a mirror of the human, it reveals our potential as well as our darker side, especially our fears. In the following chapter, I will address the forms of artificial life and intelligence dismissed by Alan Turing as “machine-men born in the usual manner” by focusing on the figure of the clone (Turing, Ince, and Turing 433).

Figures

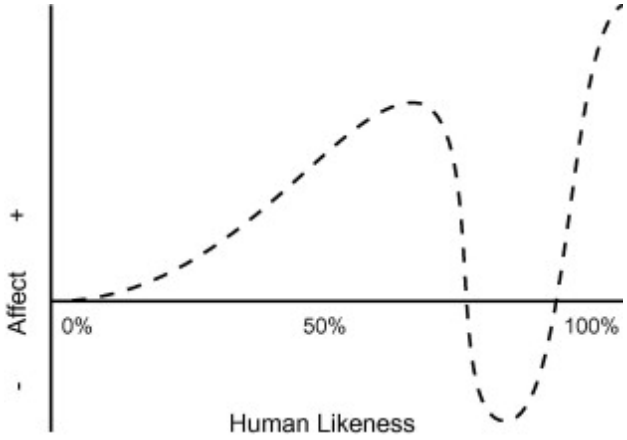

Figure 3.1: Mori's Uncanny Valley Function

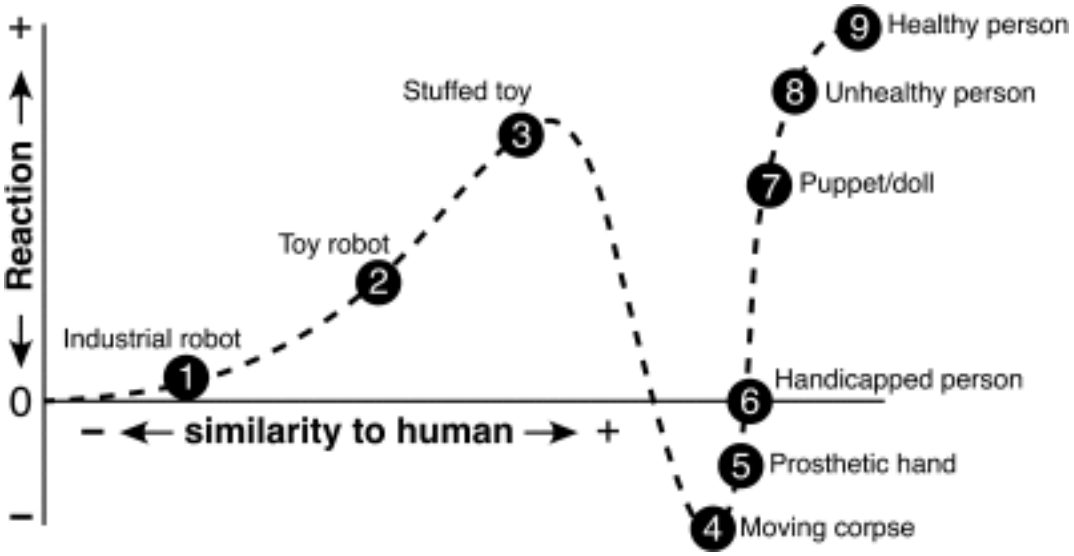

Figure 3.2: The Uncanny Valley Conjecture, adapted from Mori.

Chapter 4:

Who Am I? What Am I?:

A Clone's Quest for Humanity

Cloning techniques have been at the center of many debates since the turn of the millennium. Following the announcement of the successful cloning of a sheep in 2001, cloning could no longer be relegated to the realm of science fiction and became a serious subject of scientific and social debate. After several failures and hoaxes throughout the world, Stemagen, a company based in California, claimed in 2008 to have successfully created early stage embryos through the cloning of adult somatic cells (Price 130). Given the recent successes in animal cloning and stem-cell research, the motif of the clone is especially important in a study on the artificial creation of life because it is now the technique most likely to succeed. Human clones are often dismissed as mere fantasies of science fiction, and therefore not taken seriously. Cloning is often seen as "a metaphoric device serving to focus attention on identical problems that arise from the less dramatic […] forms of genetic engineering and that might slip into public use, protected from public debate by the incremental nature of changes they impose" (Rorvik 71).

While cloning takes many forms, in this chapter I will only include instances of full human cloning in order to focus on the figure of the clone rather than on the creation process. In both fiction and reality, we can find two types of narratives about cloning: therapeutic cloning and reproductive cloning:

> Therapeutic cloning is the transfer of nuclear material isolated from a somatic cell into an enucleated oocyte in the goal of deriving embryonic cell lines with the same genome as the nuclear donor. Somatic cell nuclear transfer (SCNT) products have histological compatibility with the nuclear donor, which circumvent, in clinical applications, the use of immunosuppressive drugs with heavy side-effects. While the goal of reproductive cloning is the creation of a person, the purpose of therapeutic cloning is to generate and direct the differentiation of patient-specific cell lines isolated from an embryo not intended for transfer in utero. (Kfoury 112)

While the aims of therapeutic and reproductive cloning are clearly different, their actual forms are not as clear-cut as shown by the many controversies surrounding "savior siblings." I will devote the first section of this chapter to the representation of therapeutic cloning and the issue they raise in two novels, namely Kazuo *Ishiguro's Never Let Me Go* (2005) and Nancy Farmer's *The House of the Scorpion* (2004).

Because of the pivotal position of savior siblings in the cloning debate, it is necessary to start my analysis of clones and cloning practices with a discussion of the contemporary status of savior siblings, before addressing the representation of therapeutic cloning. I will devote my two final sections to the discussion of reproductive cloning through clones' narratives in contemporary young adult fiction, such as Nancy Farmer's *The House of the Scorpion* (2002), Charlotter Kerner's *Blueprint* (1999), *Deconstructing Dylan* (2006), and Eva Hoffman's *The Secret* (2001). I will address two recurrent aspects found in these novels: the use of the genre of the *Bildungsroman* to explore the development and identity crisis of the clones as they are trying to answer the traditional question "Who am I?" at the same time as the less conventional "What am I?", and the conservative gender roles attributed to the clones and reproduced as models for younger generations.

Despite many controversies, therapeutic cloning (for research purposes in the private sector)[89] is legal in several countries, including the United Kingdom and the United States. This opposes the worldwide ban on reproductive (human) cloning proposed by France and Germany in 2001, effective since September 2006. The distinction between therapeutic and reproductive cloning is problematic as it is based on intent while the methods used in both cases are similar.[90] On a technical level, there is no difference between therapeutic and reproductive cloning. It is therefore necessary to identify why such a distinction is made. In "Imitations of Life: Cloning, Heterosexuality and the Human in Kazuo Ishiguro's *Never Let Me Go*" (2010), Rachel Carroll argues that

> this distinction seeks to address anxieties about the use of human embryos in medical research but cannot conceal the fact that an element of reproduction is integral to all forms of cloning. "Reproductive" cloning is defined in order to be outlawed but this term inadvertently reminds us of the position of human cloning within a spectrum of technologies of assisted reproduction, most of which are routinely "naturalized" as serving the "right to a child." The problematic nature of the use of therapeutic ends to justify medical means is already apparent, in contemporary culture, in the controversial use of technologies of assisted reproduction to produce a child whose body will act as a resource for an ailing sibling. (Carroll 61)

[89]"Committees are formed in different countries to debate and regulate cloning, such as the President's Council on Bioethics, created in the USA in 2002, which is a much less permissive group than the UK's Human Fertilization and Embryology Authority (HFEA). The legitimacy of the latter is being questioned by the Prolife movement under the pretext that they were not democratically elected (5). Canada's Assisted Human Reproduction Act, in vigor since 2004, allows stem cell research only on unimplanted embryos obtained from fertility clinics but forbids SCNT (6). Asia has the highest legal permissibility since the generation of human ESC lines through SCNT is legal (25). Australia is currently reviewing its existing laws (7) to follow the Asian trend in Singapore, China and South Korea, and to legalize the generation of chimeras using human DNA" (Kfoury 113).

[90] Therapeutic and reproductive cloning are considered to be different because therapeutic cloning aims at creating a child whose DNA will be compatible with an already existing person so that their cells (and eventually organs) can be used for patients with diseases that require similar genetic materials to be cured. Reproductive cloning refers to an alternative to other methods of reproduction and its aim is to create a copy of an already existing individual. In that respect, the key difference is that therapeutic cloning's main goal is to cure an already existing person while the goal of reproductive cloning is the actual clone.

Carroll is here referring to the case of savior siblings who are created through reproductive technology for therapeutic purposes.

Fictitious clone narratives are at the core of the debate on humanity and artificial life. In this chapter I will argue that the clone narratives I have chosen function as direct criticisms of society and can initiate a debate on society's responsibility. These narratives show how society is centered on itself and on its own reductive norms. However, while the clones represent otherness and difference, they do not belong to these categories as they are the very products of our society and ourselves. By using the point of view of the clones, the novels twist the traditional representation of the self as opposed to the Other because the first-person narration invites the reader to identify with the clone.

Focusing on Young Adult Fiction

My decision to focus on Young Adult Fiction is motivated by both the sheer amount of YA novels about clones, a trend that has not slowed down, and by the belief that YA novels offer an optimal platform for discussions of clones, especially when they take the form of a *Bildungsroman*.

The category "Young Adult Fiction" is a fairly recent one, established in the late 1960s to market books to a growing adolescent readership. It is important to keep in mind that categories such as "Young Adult" were created by publishers rather than writers.[91] In *Crossover Fiction: Global and Historical Perspective* (2009), Sandra Beckett analyzes the "increased blurring of the borders between adult and juvenile fiction and [the] growing

[91] For instance, Markus Zusak's best seller, *The Book Thief* (2005), was first published for an adult audience in Australia, while it was marketed to a YA audience in the US.

intersection and readership" (23). The creation of the Alex Award in 1998 (awarded each year to ten novels written for adults but that may be enjoyed by teenagers), and its recognition by the American Library Association in 2002, attest to the strength of this phenomenon. This award is fairly new and reinforces the blurring of the boundaries between YA and "adult" literature.[92] One of the novels I have chosen, Ishiguro's *Never Let Me Go*, received this award in 2006. Teenagers reading fiction for adults is not a new phenomenon and is only one aspect of the widespread influence of crossover fiction. A study, conducted in 2012 by Bowker Market Research, revealed that fifty-five percent of the sales of young adult novels can be attributed to adult readers (Sturgis).

According to Beckett, the general appeal of YA novels can be explained by the fact that the coming of age narrative that is at the core of most young adult fiction is a common theme in literature in general: "They are stories about life change and transformation that are equally relevant for adolescents, middle-aged adults, or seniors. More so than in previous decades, perhaps, today's society acknowledges and accepts that metamorphosis and maturation are not exclusively limited to adolescents" (258). In "Redefining the Young Adult Novel" (2007), Jonathan Hunt proposes a similar argument: "the teenage years represent a turbulent phase of growth and change, and the problem novel has historically addressed and explored many of its aspects, but too often in a formulaic and unsatisfactory manner" (146). However, he also argues that the recent popularity of young adult fiction among adult readers is also explained by a change in the literary quality of such works:

[92] The increase in crossover appeal in both directions support the inclusion of YA novels in this study.

> Eschewing the model of the YA novel as a developmental tool for a discrete phase of life, the emerging literary fiction treats those teenage years as part of life's continuum, and thus the novels in this tradition tend to be more artistic and less didactic than their forbearers. They also allow or a fuller, more complex treatment not only of young people as they grow into maturity but also of their burgeoning awareness of the world around them. (Hunt 146)

It is young adult fiction's focus on coming of age narratives that makes it a fertile ground for the figure of the clone, as both teenagers and clones need to learn how to interact with their environment.

The popularity of the topic of cloning in YA fiction can be explained by its relevance to a younger audience since it is this generation that will be facing issues dealing with cloning. In "Colonizing Bodies: Corporate Power and Biotechnology in Young Adult Science Fiction," (2009) Stephanie Guerra defines these novels as a means to prepare young adults to the extent that that the readers "are offered portraits of their culture and generation that demythologize scientific advance, capitalism, laissez-faire economics as moral imperatives and pose plot conflicts that may in reality or by analogy define the next several decades and beyond" (276). By addressing new technologies and their corporate culture, these novels encourage young readers to reflect on issues of bioethics, not as something hidden in a laboratory by a mad scientist but rather as a part of the social and political world.

Through the lens of the clone, young adult readers are invited to think critically about issues of ethics, justice, and technology and their everyday life actualization rather than as theoretical concepts. The use of the clone's perspective allows for the reader's identification. This identification is crucial in two ways: first, it raises awareness about discrimination and its wrongdoings on an individual scale (something that any reader will

have witnessed at one point or another); second, it encourages the reader to take a stand (rather than being a by-stander) by presenting the clones as role models who are fighting for their lives and recognition. These first-person narratives, which are a dominant trend in YA fiction, encourage readers to think in terms of ethics at a more personal scale as they are meant to identify with the narrators, who, in our case, are clones. In each novel studied in this chapter, the clone-protagonist has at least one friend who is siding with them even after their "clonehood" is revealed:

> A good case in point is Nancy Farmer's *The House of the Scorpion* (2002). Like most clone fiction – Kathryn Lasky's *Star Split* (1999), Ann Halam's *Taylor Five* (2002), Sonia Levitin's *The Goodness Gene* (2005), Patrick Cave's *Blow Away* (2005), or Chris Farnell's *Mark II* (2006) – Farmer's novel represents a type of story where fundamental entitlements are denied to characters representing groups socially constructed as non- or sub-human, and the plot focuses on the protagonists' resistance to this unequal treatment. Concerned with exclusion on the basis of conception, a posthuman version of racism, these novels raise questions about what rights should be granted to posthuman bodies created through technology. (Oziewicz 217)

Marek Oziewicz's identification of YA fiction's discussion of racism and discrimination in all its forms is based on his more general claim, in *Justice in Young Adult Speculative Fiction* (2015), that justice is a key element of YA speculative fiction.[93]

[93] According to Oziewicz, YA speculative fiction is the best avenue to explore issues of justice as it is a "unique medium for thought-experiments" (13). His arguments can be divided into three categories: the philosophical quality of speculative fiction, its entertainment value, and its openness. On a philosophical level, speculative fiction works as a test-run for "speculation on the human condition that involves issues of justice and moral responsibility," while providing the necessary "imaginative distance" (13). It is "the only means to tackle the big questions that we have always asked, but to which science, at least so far, has no answer" thus following the tradition of inquiry typical of philosophy and science but in a way that is accessible to the general public (13). Despite the philosophical undertone of YA speculative fiction, the success and popularity of the genre are due to its sheer entertainment value as the stories are based on "our dream for extraordinary things to happen in our lives" and thus allow for escapism (13). In addition, the hopefulness of most YA novels is inherently motivational as it reminds the reader that change and justice are possible. These novels function as devices for empowerment as "readers are asked to take a stand. They are shown why certain choices matter, and how values have consequences" (13). Lastly, YA speculative fiction is inherently global. Its representation of alternatives to mainstream culture functions as an inclusive move towards others: "it records alternate ways of being, seeing, and interacting with the world, where established vested beliefs support the not-infrequently oppressive status quo" (13). Because it often takes the side of the

The trope of justice in YA fiction is however different from the traditional conception of justice which is based on the retributive system established by the Law. As a matter of fact, the law is often absent or silent in these novels. While the clone novels I am analyzing do not discuss justice on a global scale, they address the question of just or fair treatment of others at the level of the individual. Rather than focusing on punishment and justice as a way to protect the social order, the clones are driven by their experience of discrimination and their need for restorative justice that will allow them to be recognized as individuals deserving fair treatment and consideration. Because of the clones' struggle to overcome their status, their stories are reminiscent of the "this is not fair" claim uttered by so many adolescents and children. As Oziewicz reminds us, this claim should not be dismissed as it is at the core of one's sense of justice:

> Yet, such a sentiment reflects a deeper perception about the nature of justice: that what is right and wrong depends on who defines it and in what context, that some behaviors, although not criminalized, are morally wrong while others, although illegal, may be morally right; that just as morality is a cultural and evolving concept, so too is justice, which needs to be questioned for its underlying assumptions and cultural attitudes, The "this is not fair" adolescent impulse may have a selfish side, but it also has the potential to take the young person beyond the black-and-white notion that a particular act is right simply because it is legal or the other way around. (Oziewicz 11)

In that respect, clone narratives use the "this is not fair" impulse to highlight the injustice of the situations clones are stuck in and the importance of the critical ability to differentiate morality and law (or tradition).

While I agree with Oziewics' claim that the adolescent demand for fairness provides a critical tool to understand the differences between law and morality, I believe

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alternatives, YA speculative fiction proposes subversive narratives which are prone to raising issues of justice.

that the clone novels presently studied reveal another level in the adolescent relationship to justice. Because each clone was born per request of a parent who has specific expectations of who or what the clones should be, from a perfect double to a reserve for organs, he or she has been oppressed since birth. In each case, the first main event of the plotline is the clone's discovery of its status and origins, soon followed by a rebellion against the parent(s). The revolt then leads to emancipation from the family and their attempts to find or create alternative forms of kinship. These novels fit the resistance track of the social justice script as defined by Oziewicz.[94] However, his identification of a conclusion that solves the problem of injustice does not match the *dénouement* of the clone novels. None of the novels present a happy ending. While each of the clones has found his or her place, this is not extended to the rest of society. These more nuanced endings are part of the strength of the novels as they highlight not only the difference between morality and legality but also the very failings of justice as Law. In each novel, the Law has failed to protect the interest of the clones, mostly because of negligence. These novels function as a call for the reader to be accountable in his relationship with others, as a witness able to identify and empathize with the suffering of others, rather than in front of any legal institution. The "this is not fair" impulse is, therefore, not only a way to understand the differences between legality and morality; it is the necessary condition for justice itself.

[94] Oziewicz identifies four signature components of the resistance track of social justice (208):

a. The story is set in a society built on some form of social injustice.
b. The protagonist initially accepts the status quo as a norm but then, as a result of a seminal experience becomes aware of social injustice and determined to challenge it.
c. The protagonist takes action, becoming a social reformer, a rebel, or a fugitive.
d. At the story's conclusion the protagonist's society is transformed or the protagonist has found an alternative society free from that social injustice.

Lastly, adolescence and biotechnology have become metaphors for one another. The traditional YA format of the coming of age story or *Bildungsroman* and its focus on identity formation and on finding an answer to the eternal question "Who Am I?" mirrors the question at the core of the cloning debate, "What Is Man?"

> Writers use the literary tropes of young adult literature (and adolescence itself) to show the complexity of the coming of age: the search for identity and sense of self, the discovery of the lie, the separation between parent and child, the formation of new peer groups, resistance to adult control, decision making, growth and adaptation, and the challenge of hierarchies. The texts, in short, use biotechnology as a metaphor for adolescence. Such extreme treatment of the flexible body that challenges borders adds a dramatic dimension to the changing adolescent body and the identity crisis that arises from it. (Ostry 223)

By borrowing the trope of the identity quest from the genre of the *Bildungsroman*, clone novels naturalize the clone's own quest for identity, which is then doubled as the clone attempts to answer two questions: "Who am I?" and "What am I?". Later in this chapter I will explore how clone narratives subvert the traditional form of the *Bildungsroman.*

Therapeutic Cloning: From Savior Siblings to *Never Let Me Go*

In *Cultural Conceptions: On Reproductive Technologies and the Remaking of Life* (1997), Valerie Hartouni identifies four common bioethical objections to human cloning: its eugenic implications, its potential commodification of human life, its disruption of traditional kinship structures, and its challenge to our definitions of individuality and identity. Despite these fears, the use of cloning techniques has been legalized in several countries when dealing with therapeutic practices. Kazuo Ishiguro's 2005 novel, *Never Let Me Go*, is one of the most popular literary representations of therapeutic cloning and organ transplants. Its popularity is due to both its literary qualities and its relevance to contemporary discourse on therapeutic cloning. The novel opens the discussion of

therapeutic cloning to a wider audience, as an alternative to legal and scientific discourses already available:

> In parallel with these changes in scientific work, discourses such as legal ones, and institutions such as HFEA have arisen, designed to engage with that science both as scientific activity, and as meaning or as legally and ethically circumscribed practice. These seek to mediate between the activity that is science, and its implications and meanings, through a variety of regulatory frameworks. (Griffin 647)

While *Never Let Me Go* is undoubtedly inspired by actual scientific developments, it does not address the science and technology of therapeutic cloning.[95] As highlighted by Gabriele Griffin, "*Never Let Me Go* does not engage with scienticity as actualization of scientific practice, […] the questions it raises are intimately connected with that practice, not as process but as effect" (649). The novel extrapolates on the possible consequences of savior siblings, one of the most controversial instances of therapeutic cloning.

In "Should Selecting Saviour Siblings Be Banned?" (2004), Sally Sheldon and Stephen Wilkinson define a savior sibling as "a brother or sister capable of donating life-saving tissue to an existing child" that has been created "by using HLA (human leucocyte antigen) typing, popularly known as 'tissue typing,' in conjunction with preimplantation genetic diagnosis (PGD)" allowing doctors "to pick an embryo for implantation"(S. Sheldon and Wilkinson 533). The crux of the debate over savior siblings is the lack of clarity of the laws governing who can or cannot legally have access to such technologies and why. The most well-known example of this controversy is that of the discrepancy

[95] Research on therapeutic cloning has shifted towards tissue engineering and reconstruction rather than full-fledged human cloning: "This engineering of organ tissue, albeit for a simple organ in biological terms, signaled the beginning of the actualization of growing organ tissue and creating organ replacements from engineered materials, thus entirely circumventing the need to rely on intact human bodies to yield complete organs for transplantation" (Griffin 649).

between the decisions concerning two families' appeal for such procedures in the early 2000s: the Hashmis and the Whitakers. Both families requested approval from the Human Fertilisation and Embryology Authority (HFEA) for the "use of Pre-implantation Genetic Diagnosis (PGD) and Human Leukocyte Antigen Tissue Typing (HLA typing) to allow parents to select embryos to become "savior siblings'" (S. Sheldon and Wilkinson 137). The Hashmis' request was approved while the Whitakers' was not:

> While very similar to the case of Zain Hashmi, Charlie's case differs in one relevant respect: the DBA [Diamond Blackfan anaemia]from which he suffers is 'sporadic' rather than hereditary. This means that the chances of his parents having another baby with the disease are no greater than those of the general population: five to seven per million live births. As such, there is no reason to believe that the Whitakers' embryo would have the same defect and the second of the HFEA's published criteria (that 'the embryos conceived in the course of this treatment should themselves be at risk from the condition by which the existing child is affected') is not met. (Sheldon and Wilkinson 138)

The HFEA's judgment of the Whitaker case was soon overturned. In their article, Sheldon and Wilkinson argue that such bans are not morally defensible because:

> banning the use of PGD to create savior siblings will lead to the death of a number of children who could have been saved by sibling donation. And given that a ban will be fatal for a section of the population, the onus of proof rests clearly with the prohibitionists who must demonstrate that these children's deaths are less terrible than the consequences of allowing this particular use of PGD. (S. Sheldon and Wilkinson 533)

Sheldon and Wilkinson's argument is threefold as it undermines the three major arguments against therapeutic cloning: child as means, the designer baby slippery slope, and the possibility for physical and psychological harm. While their argument is limited to the use of umbilical cord tissue and does not include other issues at stake such as post-natal procedures or the use of non-renewable solid organs, it has the potential to be extended to other forms of therapeutic cloning. Because the clones of *Never Let Me Go* are the product

of therapeutic cloning, the same arguments discussed by Sheldon and Wilkinson are relevant in a discussion concerning the bioethical implications of such practices.

The first argument is philosophical. It is based on Kant's imperative to "never use people as a means but always treat them as an end" and claims that the creation of savior siblings is a form of commodification of the child. Kant is used in the discussion of savior siblings because these children are created with the purpose of providing tissues and cells for their older siblings in order to save them. They are therefore not seen as an end, but rather a means to the health of their sibling.[96] Furthermore, Jürgen Habermas, in *The Future of Human Nature* (2003), extends the Kantian imperative to clone and "argues that such genetic predetermination would contradict Hannah Arendt's principle of *natality,* whereby the contingency of birth is a foundational event for the existential liberty of the individual. […] This Kantian ethical principle is frequently expressed in the claim that a cloned child would live a life 'in the shadow' of the individual from whom they were cloned" (Marks 339).[97] Sheldon and Wilkinson, however, dismiss this argument for two reasons: they read Kant's dictum as non-categorical and privilege the idea that an individual should not be treated *solely* as a means and they highlight the fact that parents often decide to have children for a variety of reasons such as "completing a family, being a playmate for an existing child, saving a marriage, delighting prospective grandparents, or providing an heir" (534). For these reasons, Sheldon and Wilkinson argue that the commodification

[96] The clones of *Never Let Me Go* are fictional examples of clones (or human beings) treated as means.
[97] Arendt's concept of natality refers to a "conceptual moment when one is born into the political as the sphere where acting together can create the truly unexpected," a moment of "emergence into a social world that both allows one to find one's place but at the same time remains radically open to change" (Champlin 151). In "Childhood in Action: A Study of Natality's Relationship to Societal Change in *Never Let Me Go*" (2012), Lauren Jervis argues that an arendtian reading of the novel "reveals the importance of relationality, political recognition, and education in the development and actualization of this potential for creative action" (Jervis 191).

argument against therapeutic cloning is not strong enough to justify a strict ban on such procedures.

While the level of commodification discussed by Sheldon and Wilkinson is limited to that of family dynamics, *Never Let Me Go* explores its pervasiveness when applied to an institutional level. *Never Let Me Go* "can be best understood within a context of rapidly expanding transnational operability and capital pressures on organ procurement" (Wasson 107). In that context, clones are not seen as humans but as commodities to sustain the life of "normal" individuals. The extent of this commodification is only revealed at the end of the novel:

> After the war, in the early fifties, when the great breakthroughs in science followed one after the other so rapidly, there wasn't time to take stock, to ask the sensible questions. Suddenly there were all these new possibilities laid before us, all these ways to cure so many previously incurable conditions. This was what the world noticed the most, wanted the most. And for a long time, people preferred to believe these organs appeared from nowhere, or at most that they grew in a kind of vacuum. Yes, there *were* arguments. But by the time people became concerned about … about *students*, by the time they came to consider just how you were reared, whether you should have been brought into existence at all, well by then it was too late. There was no way to reverse the process. How can you ask a world that has come to regard cancer as curable, how can you ask such a world to put away that cure, to go back to the dark days? There was no going back. However uncomfortable people were about your existence, their overwhelming concern was that their own children, their spouses, their parents, their friends, did not die from cancer, motor neuronal disease, heart disease. So for a long time you were kept in the shadows, and people did their best not to think about you. And if they did, they tried to convince themselves you weren't really like us. That you were less than human, so it didn't matter. (Ishiguro 257–58)

The disturbing power of Ishiguro's novel resides in the fact that it does not portray an individual scientist operating for personal or financial reason but rather an institutionalized form of commodification which has the approval of society as a whole.[98]

[98] A similar example of what Wasson identifies as State-Sanctioned "Harvest" Heterotopias can be found in Neil Shusterman's *Unwind* (2007). Double quotation marks

In "Scalpel and Metaphor: The Ceremony of Organ Harvest in Gothic Science Fiction," (2015) Sara Wasson provides a study of organ transplantation rhetoric explaining how specific words, used both in *Never Let Me Go* and in current discussions of organ transplantations allow for the commodification of organ donations:

> The novel sketches a rapacious increase in organ need and shows laws being stretched to accommodate that hunger. In the reality of today's Western transplant culture, the language of organ 'scarcity' also saturates public- and practitioner-facing discourse. This rhetoric is driven by ever-expanding criteria for recipient eligibility, and the rhetoric itself drives ever-expanding criteria for donor pool eligibility and increasingly interventionist procurement practices. […] The novels show the toxic efficacy and contagion of those metaphors: these metaphors are internalized by almost all the characters and typically the narrative voice as a whole, to the point of even becoming the structuring tropes by which the protagonists understand their worlds. (118)

This commodification is made possible through the process of "disentanglement," an economic term used to describe an object becoming alienable. Michel Callon explains that in order "to transform something into a commodity […] it is necessary to cut the ties between the thing and the other objects of human beings one by one. It must be decontextualized, dissociated and detached" (quoted in Wasson 107).

Never Let Me Go shows the consequences of a successful disentanglement process when applied to cloning and organ transplantation. Its success is measured by the ubiquity of the metaphor of organ transplants as gifts as the relative isolation of the clone's world. Wasson's focus on the language used to describe organ transplantations in the novel reveals a tendency towards euphemism as a result of this disentanglement: "in complementary euphemisms the hospitals where procurement surgery happens are called 'recovery centres' and dying is called 'completing'" (115). In addition to this denial of the horror of such a situation, the metaphor of organ transplantation as a gift (suggested by the terms "donor" and "donation") "implies that donors are free agents, celebrated and appreciated,

never more so than on Fourth Donation" (115). This is, however, not the case. Kathy and Tommy come to realize, at the end of the novel, that they will never be free when Miss Emily reveals to them that "[their] life must now run the course that's been set for it" (261). The children had been warned before by one of Hailsham's guardians, but they did not understand the full extent of Miss Lucy's confession:

> Your lives are set out for you. You'll become adults, then before you're old, before you're even middle-aged, you'll start to donate your vital organs. That's what each of you was created to do. You're not like the actors you watch on your videos, you're not even like me. You were brought into this world for a purpose, and your futures, all of them, have been decided. (80)

The children's inability to comprehend Miss Lucy's point can only be explained by the pervasiveness of this metaphor of a gift. They have internalized it, preventing them from even thinking about rebelling, which is exemplified by the main characters' final acceptance of their fate.

The extent to which the clones are alienated from the rest of society is revealed by the physical distance between the clones and the outside world. Throughout the novel, clones have very little interaction with the outside world; their only contact with outsiders is through the deliveries of supplies. At a younger age, the clones live in Hailsham, a boarding school away from everything. Once they leave Hailsham, they live in an abandoned farm, The Cottages. When they become carers or donors, they live in medical infrastructures that are away from any urban area and the only "normal" people they have contact with are doctors. Having clones performing the role of carers is necessary to keep the divide between citizens and clones. The few times Kathy and her friends interact with citizens, their identity is never revealed and they can, therefore, pass as regular citizens. These encounters are however always superficial, and described as eerie for the clones.

The clones' sense of belonging serves as a protection from the outside world, which always remains mystical and unattainable: "Because somewhere underneath, a part of us stayed like that: fearful of the world around us, and – no matter how much we despised ourselves for it – unable quite to let each other go" (118).

In the case of *Never Let Me Go*, the clones' compliance reveals that they have internalized this rhetoric which has become "the structuring trope by which [they] understand their worlds" (Wasson 119). It is this compliance that gives such a melancholic tone to the novel, which can also be argued as being one of its strengths.[99] This compliance makes the reader uncomfortable because it ultimately denies agency to the clones with whom the reader has been identifying. This compliance mirrors and condemns a specific "disposition in contemporary culture – that of witness, testimonial, confessional, passivity even, rather than intervention" (Griffin 657). The tragic position of the clones, who are aware of their position while not fully grasping its significance, is only made possible through the voluntary blindness of the rest of society. Kathy's narrative serves as a counterpoint to this denial as it "hails the 'innocent bystander' position, the observer function that has so haunted Twentieth-Century critiques of human relations at intimate global levels" (Griffin 658). In that respect, Ishiguro condemns a society that is willing to look away from unethical medical practices when they are benefitting many individuals. It is a reminder that the way we talk about medicine shapes the way we see those who are

[99] The clones' compliance has often been read as a mark of their inherent difference from human beings. See Martin Puchner's "When We Were Clones" (2006) and Shameem Black's "Ishiguro's Inhuman Aesthetics" (2006).

involved: when the rhetoric of transplantation commodifies and strips donation from its moral value, it leads to the commodification of the donor himself.

The second argument against savior siblings is based on the fear that legalizing such procedures would pave the way for "designer babies." According to the Oxford English Dictionary, designer babies are defined as babies "selected by prenatal testing to ensure the presence or absence of particular genes or characteristics" ("Designer, N.") While the OED provides a strict definition of designer babies, this definition is problematic because it does not reflect the popular understanding of a baby "selected for his or her superficial characteristics (for example brown eyes, black hair, or tallness)" (S. Sheldon and Wilkinson 534). In the strictest sense, savior siblings belong to the category of designer babies. However, the designer babies argument against savior siblings relies on the popular understanding of designer babies. As highlighted by Sheldon and Wilkinson, this argument is based on a slippery slope and is therefore not logical even if it is possible.

> We conclude therefore that the slippery slope or designer babies objection fails to justify a ban on the creation on saviour siblings because: (a) even if there is a ''slope'' there is no reason to believe that a ''slide'' down it is inevitable and (b) there are important differences between saviour siblings and designer babies which the slippery slope argument overlooks. (Sheldon and Wilkinson 535)

The differences identified by Sheldon and Wilkinson are mostly ethical and refer to the different motives between designer babies and savior siblings: savior siblings are selected in terms of their potential to save the life of their siblings while designer babies are selected in terms of their parents' preferences. The HFEA's role in the savior sibling controversy is to determine, case by case, whether the appeals presented belong to either category. The HFEA is, therefore, preventing the slide from savior siblings to designer babies.[100] While

[100] The very concept of designer babies raises many ethical issues that extend beyond the scope of this chapter.

Never Let Me Go does not portray the creation of designer babies, it has been read as ”a world of cultural sameness, a normative ideal of white, middle class culture” that is often associated with the practice of designer babies (Black 797).

This reading of the novel can be explained by the lack of ethnic markers as well as the traditionally English names given to the clones (Kathy, Ruth, Tommy). In “Ishiguro’s Inhuman Aesthetics” (2009), Shameem Black argues that:

> [the clones’] truncated identities suggest the triumph of a white, fascistic racial ideal that effectively obliterates the markers of multicultural Britain so common in the late 1990s. Kathy H., thirty-one at the time of her narration, would have been cloned around the time of Enoch Powell's notorious 1968 outcry against the changing racial composition of Britain. The deracinated world of Never Let Me Go seems to figure what England might have become, had Powell had his way. Homogenized, deprived of cultural specificity, and raised to serve the needs of others, the condition of the students also offers a frightening parable for the assimilative energies of First World metropoles that absorb the embodied labor and cultural identity of people from diverse parts of the world. (797)

Such an interpretation of the novel suggests that the clones are the results of a eugenics policy that would have been implemented before Kathy’s time. Once again, the issue with cloning identified by Ishiguro is systemic and goes beyond the family unit contemplated by Sheldon and Wilkinson.

The last and strongest argument against savior sibling is the issue of harm, whether physical or psychological, that could be inflicted on savior siblings. In the specific case of savior siblings, only umbilical cord stem cells are used and the child will not have to go through any postnatal intervention. The only possible physical harm for the savior sibling would happen during the screening of the embryo. Studies on the matter are however inconclusive so far because they have only been able to analyze the possible short-term consequences: “A recent editorial in The Lancet suggests that ‘embryo biopsy for [preimplantation genetic diagnosis] does not seem to produce adverse physical effects in

the short term, but it is too early to exclude the possibility of later effects'" (Sally Sheldon and Wilkinson 535). The physical harm argument against savior sibling is therefore void as long as there are no other interventions other than the use of umbilical cord stem cells.[101]

The case of psychological harm is however more ambiguous. Sheldon and Wilkinson argue that "even if we concede for the sake of argument that it would be hurtful or upsetting for a specially selected sibling (A) to discover that she had been conceived for the primary purpose of saving the life of an existing child (B), it seems unlikely that A would be less happy than another, randomly selected sibling (C) who was unable to act as a tissue donor" (536). Their argument is based on a quote by Robertson: "the fact that the parents are willing to conceive another child to protect the first suggests that they are highly committed to the well-being of their children, and that they will value the second child for its own sake as well" (536). While Robertson's claim seems plausible, it is not guaranteed and therefore does not hold as a general rule. Once again, it is the role of the HFEA to evaluate the situation and identify the cases in which parents would fit Robertson's rules.

Sheldon and Wilkinson's quick dismissal of the psychological harm argument is problematic to the extent that it does not take into account the role of self-determination in one's identity formation and development. In many ways, the psychological harm argument can be seen as an extension of the commodification arguments as it is grounded on the psychological consequences for the subjects that are treated as means rather than ends. The backbone of Jürgen Habermas' argument against genetic engineering (from designer babies to clones) relies on the principle that they "may intervene in the self-

[101] In this case, the strict regulation of procedures is necessary in order to guarantee the safety and well-being of savior siblings. Issues dealing with the strain of being a savior sibling and its responsibility are discussed in Jodi Picoult's *My Sister's Keeper* (2004).

relation of the person, the relation to her bodily or mental existence" (53). This intervention would have major consequences on one's self-awareness as it would shift "from the performative attitude of a first person living her own life to the observer perspective which governed the intervention one's own body was subjected to before birth" (Habermas 53). Focusing on the relationship between one's identity and one's body, Habermas argues that the "intention of another person intruding upon our life history" is disruptive of the "capacity of being oneself" (57). Drawing on Arendt's concept of natality, Habermas claim that, in order to truly be oneself, "it is really necessary for [a] person to be able to ascribe their own origin to a beginning which eludes human disposal, to a beginning, that is […] not at the disposal of some *other* person" (57).

In light of Habermas' identification of a shift from a performative to an observer perspective, the clones' compliance to their fate can be interpreted as a psychological consequence of their clonehood. In his review of *Never Let Me Go*, Martin Puchner describes Kathy's narrative as uncanny because of her naïveté and blandness. From the very beginning of the novel, Kathy's style is more reminiscent of the "chatty familiarity of a schoolgirl, whose confiding naïveté betrays a consciousness much younger than her purported age" – she is thirty one at the time of narration (Puchner 35). However, it is not her blandness that is actually disturbing; rather, it is her blandness and compliance towards her fate as a clone:

> This horrifying world is described almost in passing, as an afterthought. Kathy H.'s chipper tone never wavers for a moment, even when she uses the jargon of caring, donation, and completion. The more one learns about this underclass of organ donors, the more disturbing the casual blandness of Kathy H.'s voice becomes, leading to an ever increasing divide between her disaffected tone and one's own growing horror and outrage. Kathy H. is apparently undisturbed by what she narrates. This lack of outrage more than anything else makes one wonder whether

> she is not somehow deficient, perhaps in a way one might expect from a manufactured creature. (Puchner 36)

The issue of the discrepancy between Kathy's tone and her actual story is also raised in John Mark's analysis of the novel when he asks "why Kathy H. – an otherwise apparently perceptive, sensitive individual, who clearly has a recognizable interior life (a 'soul') – can accept her difference and her fate with such equanimity?" (Marks 348). Kathy's acceptance of her fate does not stand out within the novel. All the clones portrayed share her attitude, even the rebellious, unruly Ruth. A couple of days before her second donations, which will be fatal, Ruth calmly states: "I think I was a pretty decent carer. But five years felt about enough for me. […] I was pretty ready when I became a donor. It felt right. After all, it's what we're supposed to be doing, isn't it?" (223). Not only have they accepted their fate, but the clones never had another choice insofar that they have internalized their status as clones. In Habermas' words, they are mere observers of their life stories because they are not able to alter, or to even think about changing, the course of their life. They are denied the performative role that Habermas associates with "being one's self."

Never Let Me Go suggests that the boundary between therapeutic and reproductive cloning is not as clear as it may seem. Because the novel requires us to consider clones as individuals rather than organ banks, it suggests that the form of cloning depicted belongs to both categories. We find the same ambivalence in Nancy Farmer's *The House of the Scorpion*, in which the main protagonist, Matt, the eighth clone of a drug lord, is created and kept alive and well in order to provide organs if or when necessary for his original, El Patròn. The main difference with Ishiguro's text is the fact that Matt lives with El Patròn and is given an actual childhood because the latter wants to see how his clone develops, as

a reminder of his own childhood. This blurring of the boundaries between therapeutic and reproductive cloning highlights the necessity to discuss reproductive cloning.

Subverting the *Bildungsroman*: What Am I?

While therapeutic cloning is the only legal form of cloning so far (and only under very specific circumstances), it is reproductive cloning that has inspired most of the YA novels dealing with clones. I believe this to be the case because reproductive cloning adds another layer to the clone's identity quest; they wonder who they are, what they are, and also about what kind of agency they have with regard to their "original" and/or family. In this section, I will identify the specificity of the motif of the clone's *Bildungsroman* through the analysis of four novels: Nancy Farmer's *The House of the Scorpion*, Eva Hoffman's *The Secret*, Lesley Choyce's *Deconstrucing Dylan*, and Charlotte Kerner's *Blueprint* (see appendix for synopses). I will then analyze how these narratives subvert the traditional coming of age story.

The novels are focalized on the clone and his or her experience, "they have the virtue of presenting the cloned life, however problematically, as an imagined and embedded social and psychological experience" (Marks 333). The narrative of the clone provides an attempt to give some answers to ethical issues about cloning by imagining what clones could say or feel. In each novel, the narrative centers on the clone's discovery of himself or herself and of how his or her environment work, including the limits it imposes on them. Thus, we witness the evolution of the clones – Matt, Dylan, Iris, and Siri – towards their transformation into socially aware individuals. However, instead of a child growing into a man or a woman, we have a clone striving for humanity or individuality. The chronological structure of the novels is justified as the events are linked by a cause-

consequence relationship with the conception of the main character as the key issue. The reader is, therefore, a witness to the evolution of the clone.

The evolutionary structures of *The House of the Scorpion* and *Blueprint* are made obvious by the way the novels are divided into sections depending on the age of the main character. In *The House of the Scorpion*, these parts are at first defined by Matt's life stages: "youth: 0 to 6," "middle age:7 to 11," and "old age:12 to 14." His rite of passage in the section "Age 14" is followed by the opening of his new life as an adult in "La vida nueva." In *Blueprint*, we find a similar chronological divide with section titles reflecting both time frames and the different states of the relationship between Siri and her original/mother: "Double Goddess: The Year Zero," "Unison: Childhood I," "Duet: Childhood II," "Discord: Youth I," "Duel: Youth II," "Double Life: The Second Year Zero," and "Pollux Seul: Ten Years Later."

At the beginning of each novel, the clones are the only ones of their kind and have to define their own identity. *Blueprint'*s Siri is the only one to be aware of her nature from the beginning. She is straightforward about her origins and starts her narration by defining herself as a blueprint rather than a clone: "I don't like the word *clone*, by the way, because it's become threadbare and jokey. I prefer to call myself a *blueprint*. A blueprint is a copy that is made without detouring through a negative and displays white lines on a blue grounds" (Kerner 12). In *The House of the Scorpion*, Matt's struggle to understand his nature leads him to ask "Am I a machine?" and, "So I'm just a *piece of skin*?" (Farmer 80). When Dylan's parents call the scientist who created him to help him cope with his discovery, Dylan's response is to ask "What am I – some kind of science project? A walking, talking lab experiment?" (*Deconstructing Dylan,* Choyce 145). Similarly, in *The*

Secret, Iris' reaction when she discovered that she is a clone is that of self-doubt and self-deprecation: "I was nothing more than a Xerox of her cellular matter, an offprint of her genetic code. A microchip off the old mother-board. […] I was a thing, but a living one" (Hoffmann 61). What the clones reveal is their fear of being a mere thing, whether it is a blueprint, a piece of skin, a Xerox, or a lab rat.

However, this fear is not sustained throughout any of the novels as the clones are overcome by powerful feelings of loss and confusion. While their identity crisis is marked by this first question – "Am I a thing?" – it soon evolves into "Am I a monster?" as their feelings demonstrate that they are not mere things. The most powerful example of this crisis is found in *The Secret* when Iris is almost killed by a bus because she is lost in her thoughts about death. Her survival instinct takes over, forcing her to realize that she would not be able to give up on life, thus proving to herself that she is not an object:

> But here was the thing: I'd swerved. I swerved because I – something in me – didn't want to be crushed by the hurting tonnage of the shuttle, didn't want to disappear on metallic impact. Despite what I felt, what I knew. That surprised me, but it had to be taken into account. Real monsters, after all, are supposed to self-destruct, I felt monstrous, all right, but I was a monster apparently made too well in the human image. Too close to the real thing, that was my spiky, impossible dilemma. I could almost envy the Golems, the Frankensteins, with their fully fledged monster-identity. Those Jekylls and Hydes, who could boast not one but two personalities. The monsters who knew who they were and what they had to do: be monstrous and die. I was an hybrid, an amphibian, and I kept moving between life and death. (125)

Iris' reflection suggests that her identity crisis was not only triggered by the idea that she was not human but also by a loss of her sense of the self.

In *Blueprint*, *The Secret*, and *Deconstructing Dylan*, the most challenging obstacle in the clones' identity quest is to define themselves in opposition to their experience of a sense of identity that is bound to their original. Dylan's experience seems to be the least

problematic as his original Kyle had died before his birth. While he is confused, he does not experience the antagonism that Siri and Iris have with their originals/mothers. Dylan describes his confusion as stemming from the impression that he was not just himself, that there was somebody or something else within him: "Which part of me, of my physical self and my identity, was me and which part had come from Kyle? I was confused. Confused and angry. Overriding everything was a sudden fear that I would never be able to simply *be* myself again" (Choyce 126). Since Dylan is able to hold on to his own sense of self, his main concern is not to break away from his original but to be accepted by others.

The cases of Iris (*The* Secret) and Siri (Blueprint) are however different to the extent that they grew up with their originals and with certain expectations imposed on them. When Iris discovers the truth, one of her first reactions is to look at herself in the mirror, provoking even more confusion:

> I was looking at myself and I was queasy with a confusion that bordered on terror. I was her, I was her, I was her … Then who was I, who was she, what had she done? Did she steal my soul, my very self, or did she give me her own, by an unspeakable act of black magic? Was I a specter, a creature of her fantasy, or was I the dreamer, inventing both myself and her? (58)

Siri experiences a similar moment when she reaches an older age and starts to be able to pass for her mother: "The more I resembled you, the stranger I felt in my own body, which I regarded mistrustfully. It did not belong to me but to you. I no longer wanted to be like you, but as a clone I had no choice, and I developed according to my/your/our genetic code" (96). Both mirror scenes are significant as they show the extent to which both clones are not able to define their own identities. These two scenes function as two failed lacanian mirror stages, in which the child (or teenager) is unable to differentiate herself as she does

not see herself but rather her mother.[102] In "Clone Stories" (2010), John Marks defines *The Secret* as a Baudrillardian fable of contemporary life, which explores "Baudrillard's claim that the clone is unable to experience the mirror stage. The mirror stage is, of course, a phase of self-recognition *and* separation" (344).[103] This lack of a mirror stage initially prevents both Iris and Siri from forming identities separated from their mothers', leading to a pathological relationship between mother/original and daughter/clone. In *Blueprint*, Siri's use of conflated pronouns ("myself/her/us," "her/me/us," "your/my," "Iyou," "YouI," "me/you/us," and "we/you/I") attests of her confused sense of self and of her symbiotic relationship with her original/mother.[104] In that respect these relationships are extreme variations of the mother/daughter relationship defined by Simone de Beauvoir in *The Second Sex* (1949): "the daughter is for the mother at once her double and another person, the mother is at once overweeningly affectionate and hostile towards her daughter; she saddles her child with her own destiny" (de Beauvoir 281). Iris and Siri are actual

[102] In "The Mirror Stage as Formative of the *I* Function as Revealed in Psychoanalytic Experience" (1949), Lacan argues that identity formation is rooted in a process of representation of the self and leads to alienation through what he calls the mirror stage. This stage starts at an early age (around six months old) when the child is able to recognize himsef/herself in a mirror, an event made obvious through the child's "mimicry of experience" which expresses "situational apperception" and therefore an act of intelligence (75). Through this experience, the child discovers the relationship between his movements and his environment, and therefore between himself (his body) and what surrounds him. It can be interpreted as an identification stage as it reflects "the transformation that takes place in the subject when he assumes […] an image […] as imago" (76). It is characterized by the formation of the ideal I, the I outside of the self versus other dialectic and before being subjected by language and determined by society.

[103] "For Baudrillard, the clone cannot enter into any of the dramas of socialization and identity – essentially Freudian dramas – that have their roots in sexual reproduction. In short, cloning entails a 'monstrous' parody of the mirror stage. There is no longer any image into which the object can project itself, and consequently cloning abolishes the imaginary" (Marks 342). In "The Hell of the Same" (1990), Baudrillard argues that a clone cannot have any subjectivity because "identical duplication ends the division that constitutes him" (115). Cloning is a monstrous parody of the mirror stage as it "keeps nothing of the timeless narcissistic dream of the subject's projection into an ideal alter ego, for this projection too works by means of an image – the image in the mirror, in which the subject becomes alienated in order to rediscover himself, or that seductive and mortal image in which the subject recognizes himself as a prelude to his death" (Baudrillard and Benedict 115)

[104] This style is reminiscent of Luce Irigaray's use of "me/te" and "toi/moi" in "Et l'une ne bouge pas sans l'autre" (1979).

doubles of their respective mothers and have to break free, not only from the destiny imposed on them by their mothers, but more importantly from the conflation of their identities.

The pathological aspect of these relationships is symptomized by what Iris calls "The Weirdness," a feeling that she and her mother have an abnormal relationship (even before she realizes why).[105] In *Blueprint*, this weirdness is referred to by Siri as a harmony: "there was a harmony and closeness between them that no singleton understands" (44). Those bonds are however not able to survive adolescence as the clones discover the existence of a deeply rooted competition with their originals/mothers. As suggested by Hilary Crew, antagonism between clone and original is characteristic of YA clone novels as they "emphasize the individual's uniqueness and value as a separate human being. Writers use character development to demonstrate how cloned teenage protagonists possess unique personalities and identities. Teenagers are shown breaking away from the expectation that they follow in the footprints of their originals" (208). However, the rejection of the maternal expectations is not enough for either Iris or Siri because not only do they feel the need to separate themselves from their original/mother, they also feel the need to become superior.

In order to understand this need for superiority, it is helpful to look at Maria Aline Salgueiro Seabra Ferreira's application of Walter Benjamin's essay "The Work of Art in the Age of Mechanical Reproduction" (1969) to clones. Mechanical reproduction strips the

[105] The pathological mother-daughter relationship is often used to explain or describe "the psychosexual difficulties as resulting from collapsed identifications, lack of boundaries, and murderous and suicidal fantasies deriving from primitive anxieties about engulfment inside the mother and separation from her" (Amber Jacobs 175).

original and the clone from their value. Iris claims: "I don't need to kill you, my very existence makes the less of you. Because you have made me, you too must know; you are counterfeit. Because you know how to make me, you must know you are less than dust. I am your logical conclusion, the QED of your nothingness" (*The Secret* 103). Iris' vengeful cry echoes Benjamin's, for whom "the mechanical reproduction of an object undermines its unique aura, given that through repetition of the same they become evened out to relative unimportance and worthlessness, a perception that can help to shed light on the investigation of the reactions and profound anxieties exhibited by cloned characters" (Ferreira 25). In both novels, the competition is defined by relationships outside of the mother-daughter unit: both clones attempt to have intercourse with their original/mother's lovers, though only Iris is successful. Doing so, the clones assert their youth and power over their originals and become rivals. While Iris' original/mother never learns about Iris' affair, this rivalry continues on another level. When Iris meets her original/mother's parents in the hospital, she pretends to be her mother in order to sooth her dying grandmother.

Because of the inevitable competition between the original and the clone,[106] Iris and her original/mother have to go separate ways and Siri can only become herself after her original/mother's death. This resolution is however not necessarily a happy one as is shown by both Iris' and Siri's grief. Iris wonders: "I was a copy which had lost its original; and I had no way to authenticate myself. A clone alone. What did that make me? What

[106] In "I am the Other," Ferreira argues that the competition between clone and original is unavoidable:

> If the cloned person can be described as a simulacrum, a copy of a copy that has lost sight of an original, then his copy can be said to subvert the authority and legitimacy of the original. In that sense, the whole notion of human cloning as a narcissist project is undermined by precisely the emergence of this potentially threatening figure that will in fact make one's very image the model for a repetition matrix. Human clones would inevitably force us to rethink the secondary status attributed to the copy in relation to the original, given the potential addition of health-promoting genetic material or removal of harmful genes. (32)

kind of entity? Had I, in my attempt to make myself One, rendered myself zero?" (174-75). Siri's case is a little more complicated as her mother's death seems to be a relief for her: "For the first time in my life I could look at you without asking myself what you wanted from me. Almost twenty-two years after my birth, on a June summer day, I could for the first time say *I* without lying. I had become an I, unique and for the first time undivided, finally and individual" (157). We find a similar situation in *The House of the Scorpion*, when Matt escapes death (literally) by leaving El Patròn's domain. Furthermore, it is only through El Patròn's death that he is finally legally recognized as a human being. When Matt reaches a safe haven in Atzlán and is taken under the protection of Esperanza Mendoza, María's mother and a human rights advocate, he is told that he is not legally considered a clone due to El Patròn's death:

> First of all Matt, you aren't a clone. […] Oh, you *were* a clone. There's no mistake about that. But we're talking about international law now. […] In the first place, clones shouldn't exist. […] But if they do exist, they're livestock, as you say. They makes it possible for them to be slaughtered like chicken or cattle. […] You can't have two versions of the same person at the same time, […]. One of them – the copy – has to be declared an *unperson*. But when the original dies, the copy takes his place. […] It means you really are El Patrón. You have his body and his identity. You own everything he owned and rule everything he ruled. It means you're the new Master of Opium." (366-67)

Matt's existence is only validated by El Patrón's death. The legal question here is especially interesting because it is the only mention of the law in the four novels. It suggests that the competition between clone and original is not only a matter of identity but is also institutionalized by different legal statuses.

The clone's confrontation with and liberation from their original are paired with their challenge of the legitimacy of their original's decision. This confrontation is all the more significant given the fact that "mainstream discourse on cloning invariably attributes

the desire to clone to a morally misguided other. Whether it is a wealthy egomaniac aiming for immortality [El Patròn in *The House of the Scorpion*] or bereaved parents attempting to recreate a child [Dylan's parents in *Deconstructing Dylan*], the desire to clone is frequently represented as, at best, a desperate measure, and at worst a deeply misguided narcissism" (Marks 332). When El Patròn gets sick and requires a new heart, Matt realizes that he was never intended to be a regular individual: "[his] education and accomplishment were a sham. It didn't matter how intelligent he was. In the end the only thing that mattered was how strong his *heart* was" (216). This revelation is a shock to Matt because he had always thought that El Patròn had been his protector, that he had broken the law and prevented the injection that would have destroyed Matt's brain at birth. He realizes that it was only another one of El Patròn's sefish games, in which El Patròn could live a perfect childhood through his clone's. El Patròn's selfishness is echoed, to a lesser extent, in Siri's original/mother character:

> [her] motivation to have her daughter created and brought up as an exact replica of herself is presented as the ultimate act of a selfish and narcissist individual who does not see any value in human life if it is not like herself, and attitude which Habermas describes as the moral obscenity of an autocratic, self-absorbed duplication of one's own genetic make-up. Further emulating Habermas' views, it is not the fact of Siri's artificial creation as such which prevents her from developing into an independent individual, rather it is her own and society's knowledge of the genetic programming which condemns her to the inferior status of the copy. (Mueller 6–7)

In the case of *The Secret*, Iris' original/mother realizes the selfishness of her behavior and participates in its resolution: "Anyway. I'm the mother, after all, and it's up to me. It's time for me to make room for you. To let you find your very own space. So I will" (227). Finally, Dylan cannot blame his original, as Kyle was not involved in the decision of cloning him. Dylan does not openly blame his parents either as they have built a good life for him,

without imposing expectations on him. On the contrary, he describes his parents in a very humane way, as parents in grief, who are trying to do the best they can.

Because the originals/parents are not involved in the actual creation process, the figure of the scientist emerges as a responsible entity within the clone's life. Iris, Siri, and Dylan reach toward the scientists who created them. Dylan's relationship with the scientist who created him is the most balanced. While Dylan is aggressive and dismissive at first, the doctor's humble behavior and honesty eventually convince Dylan that he had not acted on a selfish impulse. On the contrary, after some reflection, Dylan accepts to help the doctor with other, younger clones and to become an advocate for clones. Siri's relationship with her creator is very superficial. When she seeks him, their meeting is awkward. When she addresses him as "father," she herself dismisses it as a joke. She does, however, condemn the very idea of cloning: "The word *clone* that was on everyone's tongue is a technical term, valueless and neutral. But I want to be moralistic, so I have created a moral word to spit at you. Don't talk anymore of cloning or of clones, talk of *misbreeding*. The word resembles the word *misuse*, as in abuse, and that is exactly what's intended" (*Blueprint* 104).

Finally, *The Secret*'s representation of the encounter between a clone (Iris) and his/her creator is the most revealing as it is very confrontational. Iris accuses the doctor of not having thought about the consequences the whole procedure would have on the created child: "You never thought about me, did you? […] You never thought about it would be like for me?" (98). The doctor's response, "why … it was what your mother wanted. We did have your mother's consent," clearly shows that he had, in fact, not thought about the type of life a clone would or could have. He is clearly made uncomfortable by the whole

conversation and reverts back to a defensive state and dismisses Iris altogether: "I am a scientist […] I can't hold back change. We have new developments in procreative techniques and they are good techniques. They work well. They work very, very well. If our mother has any complaints, she can write me, or come and talk to me. She was my costumer, not you" (100). This response encapsulates all the ways that biotechnologies can be abused: a dismissal of the possible non-medical consequences, a focus on technical efficiency rather than on the well-being of those involved, and the greed of capitalist corporations.

In *The House of the Scorpion*, El Patròn is neither the clone's father nor his creator; he is his genetic source. The question of El Patròn's responsibility reflects the modern debate on consumer responsibility in a capitalist society. It is not the producer but the consumer who has the responsibility to take care of the clones because without the consumer there would be no clones – something already suggested by the doctor who created Iris in *The Secret*. Furthermore, El Patròn holds the position of Matt's protector, even if it is for a perfectly selfish reason: Matt is his living medicine. The father figure represented is not a guide or a model but an owner. The relationship is not based on human interaction but on the protection and control of a mere belonging. Seeing Matt as his property allows El Patròn to refute any form or moral responsibility towards him. It is this denial of responsibility that the novel challenges.

The confrontation between the clones and their originals and/or creator reveals several problems with society: the common inability to accept death, the selfishness behind the very desire for designer babies or clones (ego-clones in *Blueprint*), and the tendency of the biomedical industry to function like corporations rather than follow the Hippocratic

conception of medicine as care-taking. It is such a system that the clones need to rebel against in order to assert their value and their own sense of self. As Elaine Ostry reminds us in "Clones and Other Formulas in Science Fiction for Young Readers" (2009), "the opposition between the young protagonist and the adult society is a longstanding trope in young adult books, particularly dystopian ones. Young protagonists call their own society into question, something that is part of the maturing process" (197).

In a previous article, "Is He Still Human? Are You?: Young Adult Science Fiction in the Posthuman Age" (2006), Osly reads YA clone novels as participating in the traditional liberal humanist ideology that contrasts with some of posthumanism's hopes for a new understanding of the self:

> The excitement of a changing, flexible definition of the human being is not generally sustained in these books. There is much apprehension about the clones' unusual conditions. Although the posthuman bodies that the book depicts are a challenge to the liberal humanist definition of 'human,' the authors mostly reject this challenge in the end. The characters tend to uphold a conventional definition of humanity despite – or because of – the obvious challenges to it. (Ostry 235)

While I agree with her conclusion that "young adult science fiction is intent on asserting the liberal-humanist self against the threat that biotechnology poses" (Ostry 199), I do not believe that it necessarily implies a criticism of science and technology, but rather one of society's lack of supervision on such issues. In *Blueprint*, "it is not the fact of Siri's artificial creation as such which prevents her from developing into an independent individual, rather it is her own and society's knowledge of the genetic programming which condemns her to the inferior status of the copy" (Mueller 7). Similarly, in *The House of the Scorpion*, it is not the fact that Matt is a clone that is problematic for the law, but rather the fact that there were two individuals with the same identity, which challenges their conception of the individual and his legal rights.

In these four novels, cloning is not the problem. On the contrary, it is presented as a successful technique that creates healthy individuals. Most of the hardship encountered by the clones is generated by a society that is not willing or ready to accept them. In that respect, they embody difference and are part of a narrative of justice and tolerance. While these narratives can be considered as successful for the clones as they find their own place and identity, the author's narrative choices, especially pertaining to gender, already undermine their attempt to provide a more inclusive understanding of identity formation.

Reproducing Gender Normativity through the Figure of the Clone

The comparison of the four novels studied here reveals the existence of two different patterns in the representation of clones, depending on their gender, their behavior and the societal expectations imposed on them. The novels seem to imply that, in order for the clone to find himself or herself and to be accepted by society, he or she has to comply with traditional gender norms. The words the clones use to define themselves – a lab rat or a piece of skin for Dylan and Matt, a blueprint or a Xerox for Siri and Iris – already suggests different gender dynamics pertaining to cloning as the boys see themselves as objects while the girls feel limited to the realm of appearances.

In *The House of the Scorpion* and *Deconstructing Dylan*, the main characters – Matt and Dylan – are described as young heroes. Their identity quest is deeply rooted in the sense that they have to save (or help) the world and their actions have a strong impact on society. Matt helps orphans escape from an orphanage/work camp in Atzlàn, defends the oppressed (the children or the eejits, illegal immigrants who have been caught and turned into slaves through the use of a chip in their brains) and finally agrees to replace El Patròn after his death to fight the powerful drug cartels. Similarly, at the end of *Deconstructing*

Dylan, Dylan agrees to represent clones in the press and help younger clones through the psychologically harrowing process of understanding their nature.

In both *The Secret* and *Blueprint*, the tension is domestic. Neither Iris nor Siri focuses on what the world thinks of them. All they want is to be their own individual rather than a copy of another woman. The fact that both girls feel the competitive need to replace their original/mother and that their sense of self has to be validated by the love of a man, suggests a very patriarchal view of the place of women or girls.[107] Both narratives are critical of a close relationship between mother (or original) and daughter:

> The notion that the relationship [between Iris and her original/mother] is too close, however, does make a substantial assumption about the proper nature of mother-daughter relations: that "the daughter must distance and differentiate herself from the mother if she is to assume an autonomous identity as an adult." Andrea O'Reilly identifies this view, which I would argue, underpins the whole of this novel, as part of the 'patriarchal narrative of the mother-daughter relationship. It is taken for granted in this text that the daughter should separate completely from the mother, and that the degree of alikeness and the closeness between Elizabeth and Iris are undesirable. (Stuart 47)

While the competition between the female clone and her original underpins both novels, there is no sign of any competition whatsoever in either *Deconstructing Dylan* or *The House of the Scorpion*.

These traditional gender representations can also be found in the originals' motivations for getting cloned. While all originals display a certain selfishness, it appears in different forms. In *The House of the Scorpion*, El Patròn's decision is mostly pragmatic

[107] In *The Second Sex*, Beauvoir explains this competition by the loss of the mother's aura in the eyes of her daughter: "When the younger woman begins to assert herself, she judges and compares: the other, who has been chosen just because she was akin and not intimidating, has not sufficient *otherness* to impose herself for long; the male gods are more firmly established because the heaven where they reside is more distant" (347).

as he needs organs to sustain his life. In *Deconstructing Dylan*, Kyle and Dylan's parents decide to clone their dead son partly out of grief and a sense of injustice, and partly to have control on the clone's genetic sequence, allowing them to erase the genes responsible for Kyle's terminal cancer. In both cases, the decision is a very practical one. We find a very different motivation in *Blueprint* and *The Secret*. Both originals want a child that will be just like them because they think very highly of themselves. Siri's original explains: "for me a clone is the only choice. I couldn't bear to waste myself on a talentless child" (23). Similarly, Iris' original attempts to justify her decision: "though I guess I had enough vanity, or self-love, to think that whoever you were, whoever you turned out to be, you might be pleased to be … like me" (225). It is vanity that drives both women to get a clone of themselves rather than opting for other reproductive practices.

In these novels, straying from traditional gender roles and the family unit is depicted as unhealthy for the future child/clone. The single-parent family is represented as less than ideal for the clone/child. As a response, the clones all look for "normal" relationships (relationships that are not changed by the knowledge that the protagonist is a clone) outside of their family unit. The type of relationships that the clones need in order to evolve are very "normal" as opposed to the ones that created their troubled childhood: both Dylan and Matt are rewarded as hero by "getting the girl" (a traditional trope in young adult fiction) while Iris and Siri can only find themselves through a relationship with a man who validates their existence. For these reasons, the narratives suggest that acceptance can only be achieve if once can fit society's expected behaviors, which includes having the relationships that are deemed normal by society. While they offer a positive outcome for the clones and are inclusive, these novels are problematic in the sense that they teach a

younger audience that in order to be accepted one has to behave in a certain way; it is society's approval that matters more than one's actual sense of the self.[108]

Conclusion

In this chapter, I have shown that young adult clone novels function as narratives of justice that are advocating for clone acceptance. These novels are both subversive and conventional: they are subversive in the sense that their very use of the first-person narrative implies that their clones are human; they are conventional in the sense that they reproduce traditional gender roles and expectations and seem to privilege traditional family units. This ambivalence is, however, necessary in order to provide more credible and realistic narratives for a younger audience. These narratives show that change is necessary and possible within the framework of contemporary society without claiming that it will fix every problem. The novels studied show that one needs to know how to navigate society's expectations in order to find a balance between identity and social influence.

At the end of all five novels, the reader is left to ponder the nature of this necessary change. While Marks argues that "the fear – and sometimes revulsion – that the figure of the clone inspires in many ways serves a protective function against more diffuse, complex biotechnical threats" and that its corresponding "bioethical rush to ban human cloning is the clearest example of this protective function" (332). The solution he proposes is to read "cloning as a *fictional* event in that, whilst there is no immediate prospect of widespread human cloning, scientific breakthrough such as Dolly evoke spectres that live, in a cultural

[108] *Deconstructing Dylan* is the only novel that strays from this pattern as Dylan compares his own experience to Robyn's friend, Carla, who committed suicide because of the way she was rejected by others due to her homosexuality.

sense, by means of powerful fictional framings" (332). This fictional event can be read as the counterpart of a normalized discourse of the natural, which, as argued by Hartouni, is a legal construct:

> If monstrosities exist, they are […] the progeny of legal rather than biological machinations or efforts to track and tell one story of origin, relationship, relatedness, and identity in the voice of the natural when these new practices and processes have rendered such a telling, I am inclined to say "unintelligible," but "afflicted" and "exposed" are perhaps more accurate. […] these new practices have produced a proliferation of possible stories or forms of generation, constellations of relationship, and modes of relatedness that cannot "arise in nature," that transform the meaning of "natural facts" and profoundly refigure what counts as "natural." And in this respect, they have had the effect of destabilizing dominant narratives grounded in nature about who or what is called a person, mother, parent, family, fetus, and body.(115)

Drawing on both Marks and Hartouni, the clone can be defined as the disturbance of the distinction between natural and artificial. We find ourselves back with Haraway's motif of the Cyborg – after all, the clone is both artificial and organic by definition. Clones are, then, just like us "chimeras, theorized and fabricated hybrids of machine and organism" (Haraway 150). Acknowledging our mutual appartenance to the category of the Cyborg requires us to find an alternative to humanist representation and ethics. Shameen Black identfieis this movement in *Never Let Me Go* as "Ishiguro's inhuman style suggests that only by recognizing what in ourselves is mechanical, manufactured, and replicated – in a traditional sense, not fully human – will we escape the barbarities committed in the name of preserving purely human life" (786). In order to be ethical, to be human, we need to embrace a form of posthuman ethics in which we are not sacrificing the Other, whether it be a clone, machine, or animal, but rather ourselves or at least the belief in our own exceptionalism.

Conclusion:

Towards A Posthuman Ethics

In this dissertation, I have analyzed how fiction discusses biotechnologies and offers a fertile ground to engage with ethical issues stemming from these new technologies. Through the narration of either the encounter with artificial creatures or of the actual creatures' experiences, the texts I have chosen address the artificial creation of life not as a mere scientific endeavor and its regulation by the Law, but rather as a social phenomenon affecting the community as a whole and the lives of all its members. Most of the debates on the artificial creation of life rely on whether such practices would be beneficial to man, as an individual or a species. Doing so, they tend to leave out other problematic issues such as the ways artificial life could transform social relations and the focus on artificial beings themselves. It is within this gap that the novels I have chosen operate as they present the lived experiences and interests of artificial beings which includes their social interactions. In that respect, analyzing accounts of lived experiences allows us to put back the "bio-" in bioethics that Cary Wolfe identifies as lacking in mainstream bioethical discourse:

> One of the central ironies of bioethics in its dominant institutionalized form is that it is subtended by a certain notion of the human that remains – despite wave after wave of changes in our understanding of the "bio-" of bioethics – not only uninterrogated but indeed retrenched, and nowhere more clearly (or more

> predictably) than in the confidence with which the boundary between human and nonhuman animals is taken for granted as an ethical (non)issue. (Wolfe 49)

By focusing on the evolution of the artificial creation of life, I have mapped how the development of new technologies, from the Enlightenment to the current day, have changed our definition of man without challenging society's reliance on a stable category of the human which is opposed to the rest of the world.

Starting with Villiers' *L'Eve future*, I have shown that artificial creatures trigger anxieties about man's place in the world to the extent that they challenge the speciesism of traditional humanist discourse. In *L'Eve future*, the *andréide* functions as a criticism of scientific discourse's focus on the material world and the industrialization of production's emphasis on efficiency that tended to dismiss moral and spiritual interpretations of man. If the human body was relegated to a mere mechanism, man's superiority over the natural world had to be re-established. This recuperation was achieved by defining man as the soul animating the human body. Villiers' *andréide* is the ancestor of the modern figure of the human robot I explored in chapter three. The mass production of industrial robots and the development of artificial intellignce led to a new anxiety: while the automaton of the Seventeenth and Eighteenth Centuries were seen as a replacement for workers, the modern robot is seen as a threat to man as a species. The robots of *Do Androids Dream of Electric Sheep?* force us to reconsider the justification of man's superiority based on his intelligence and moral agency. Andrew and Frost, respectively, in *The Bicentennial Man* and "For A Breath I Tarry," behave in a way that suggests that they have emotions, or at least, the ability to make independent decisions, showing proof of their individuality. *Do Androids Dream of Electric Sheep?* functions like a Turing Test in which the reader takes on the role of the judge and has to identify robots from humans. Doing so, the novel challenges

society's use (and abuse) of beings that cannot truly be proven to be without a sense of self and therefore a conscience.

As a counterpart to the mechanical man, I have also focused on artificial life created from organic/biological material. By giving a voice to the creature in *Frankenstein*, Mary Shelley challenged the common idea that language is what makes man different from other species. However, the creature's use of language is not enough for him to pass as human because of his appearance. I have argued that Shelley's representation of an artificial creature highlights the difference between life and the appearance of life, or between consciousness and its semblance. Finally, in the last chapter, the study of clone narratives revealed that our understanding of man is closely related to that of identity and uniqueness. In *Never Let Me Go*, the clones are deemed inferior because they are mere copies, their lives are set in stone. In that respect, they are thought of as lacking individuality and agency.

While all the texts studied address the question of the human, none of them actually provide an actual definition. Each of them (except "For A Breath I Tarry") uses the artificial creature as a foil for the human, leading to a reconsideration of the qualities that are usually considered to be specifically human. Ultimately, these texts do not identify any specifically human characteristic, often referred to as the Factor X. On the contrary, the list of attributes that is traditionally associated with human beings is getting shorter and shorter. In *Our Posthuman Future* (2002), Francis Fukuyama argues that the Factor X "cannot be reduced to the possession of moral choice, or reason, or language, or sociability, or sentience, or emotions, or consciousness, or any other quality that has been put forth as a ground for human dignity" (Fukuyama 171). Although each text challenges a specific definition of the

human (his ability to speak, his intelligence, and his emotions being the most common), it is the combined study of these novels that is the most revealing. The combined study of their criticism of different definitions of the human shows that they also challenge the legitimacy of the very existence of such a category of the human as opposed to the rest of the world. Doing so mirrors Foucault's prediction about the death of the concept of man.

Whether we are talking about bio-engineering or the creation of artificial life through robotics, the questions that emerge are quite similar. They ask us to reflect on our relationship not only with technologies, but also with ourselves and others as they challenge the supremacy of the humanist subject. These questions require us to open ourselves to the other and to realize that our identities are profoundly marked by our environment, the technology we use, and the people around us. It is because the artificial creation of life forces us to reconsider the place of man that discussions about biotechnologies are often limited to polarized confrontations between libertarians who believe "that society should not and cannot put constraints on the development of new technology" and "a heterogeneous group with moral concerns about biotechnology, consisting of those who have religious convictions, environmentalists with a belief in the sanctity of nature, opponents of new technology, and people on the Left who are worried about the possible return of eugenics" (Fukuyama 183). Fukuyama concludes his argument by highlighting the fact that we need to move beyond this stalemate, since both sides are unrealistic. Eventually, the development of biotechnologies is inevitable, as shown by the case of therapeutic cloning. Because biotechnologies and artificial life in all their forms have so much potential to be very beneficial for society, in terms of medical advancement and of productivity, it is extremely unlikely that they will not be pursued. For that reason,

Fukuyama calls for a "nuanced regulatory approach" in order to palliate the fact that "while everyone has been busy staking out ethical positions pro and con various technologies, almost no one has been looking concretely at what kinds of institutions would be needed to allow societies to control the pace and scope of technology development" (Fukuyama 183). While I agree with Fukuyama's conclusion, I also find it very unsatisfying because it is too vague and relies solely on governmental regulations without addressing cultural values.[109]

As a social issue, the artificial creation of life forces us to consider some crucial ethical questions: Who is responsible for these creatures? What kind of responsibilities do these new technologies entail? How should these creatures be treated? These questions are crucial to any discussion of the artificial creation of life and are at the core of the discipline of bioethics. It is bioethics' pragmatism that Wolfe challenges because it does not focus on what ought to be done but on what people are likely to do, which is contrary to the very philosophical core of ethics. In its current state, bioethics is problematic because of its focus on technical policies and its reliance on institutionalized speciesism.

[109] I find Fukuyama's belief in governments' ability to guarantee ethical practices rather problematic because these beliefs not realistic. Through the discourse of biopolitics, reproductive practices can be seen as a tool for population control. In *Mothers and Masters in Contemporary Utopian and Dystopian Literature* (2009), Mary Elizabeth Théis argues that the characteristic paternalistic utopia of the 20th and 21st Centuries becomes dystopian precisely when it usurps or undermines maternal roles in order to drain the mother/baby dyad of love, agency, and a sense of community. The control of the individual by the state is obtained by either the abolition of the mother as primary educator – as found in Aldous Huxley's *Brave New World* (1931) – or the regulation and perversion of family life – as in George Orwell's *1984* (1949). It would only be in 1985, with Margaret Atwood's *The Handmaid's Tale*, that a dystopia revolving around the oppression of women was finally recognized and applauded. The success of *The Handmaid's Tale* is undeniable and the genres of feminist utopian and dystopian fiction have become the center of a new-found interest, leading to the re-discovery of Burdekin's *Swastika Night* and *The End of This Day's Business* (written in the 1930s but not published until 1989). Using similar premises and symbolism, Elisabeth Vonarburg, a Francophone Canadian writer responds to *The Handmaid's Tale* in her 1992 novel *Chroniques du pays des mères* – translated in English as *The Maerlande Chronicles* or *In the Mother's Country*.

The first ethical issue raised by the texts studied is that of responsibility.[110] I have identified three potential figures that can be held responsible for artificial creatures: their creator (a scientist), the company that produces them, and finally their owner (or "parent" in the best scenarios). In the case of the scientist and the company, responsibility is established by evaluating the creature's ability to meet certain expectations. They are challenged only if the creature, their product, malfunctions: Victor's rejection of his creature is based on the fact that he sees the latter's ugliness as a failure on his part; the robots' rebellion in both *R.U.R.* and *Do Androids Dream of Electric Sheep?* is described as an anomaly in their behavior in the same way that Andrew's creativity and sensibility are created by a glitch in his positronic brain (*The Bicentennial Man*). The scientists/corporations in both *R.U.R.* and *The Secret* attempt to deny any responsibility by claiming that they are only responding to a demand and that the ones "ordering" the creatures should be considered responsible. In all these cases, the artificial creation of life is justified through an ultimate goal that is not the actual creature, whether that be a quest for knowledge or financial gain. For that reason, their morality can be challenged under the Kantian categorical imperative because they do not see the creatures as ends in themselves, but rather as means to an end.[111]

Even though scientists, corporations, and owners are seen as the primary responsible parties, the texts also highlight the responsibility of the rest of society. The

[110] The responsibility of society towards all its members, including artificial ones, has been the main concern of my discussion of bioethics in literature. I have focused on how artificial life could change social relations. This focus, however, does not mean that the artificial creatures are not responsible for their own behaviors and towards society as a whole. Rather, it implies that responsibility is inherently social and cannot be seen as a matter of isolated behavior.

[111] The case of the clones in *Blueprint* and *The Secret* also presents a different version of this breach to the Kantian imperative. While the originals' main goal is to have a clone, they are motivated by the desire to live again through their clones rather than to create a new, autonomous individual.

most powerful examples are found in *Frankenstein*, *Never Let Me Go*, and *The Bicentennial Man*. In *Frankenstein*, the creature's anger is driven not only by Victor's rejection but also by other members of society. In *Never Let Me Go*, the absence of these three figures suggests that society as a whole is complicit, which is corroborated by the fact that the rest of society benefits from the clones' abuse. Finally, in *The Bicentennial Man*, Andrew's various court cases are not a response to his master's abuse. After being attacked by strangers in the street, he pleas for society's legal recognition so that he is protected from the abuse of any human member of society. We are confronted with two types of responsibilities: the creator/owner's responsibility can be defined in terms of an awareness about the potential consequences of the artificial creation of life and society's responsibility towards the actual living creatures. Because bioethics is focused on policy, it operates as a regulation of technologies and therefore targets scientists and corporations' practices rather than the treatment of these creatures by members of society. By considering lived experience, these narratives attempt to put back the "-ethics" in bioethics.

Bioethics' dismissal of the actual lives of artificial creatures reflects its blindness towards the treatment of nonhuman animals. Because of this similarity, animal studies and animal rights discourse are fertile grounds for the discussion of the ethical status and treatment of artificial life. Bioethics' prejudice towards the non-human is "based on species difference, and an incapacity to address the ethical issues raised by dramatic changes over the past thirty years in our knowledge about the lives, communication, emotions, and consciousness of a number of nonhuman species" (Wolfe 56). Drawing on Peter Singer's criticism of speciesism, I have mapped some of the problems raised by such an approach through an analysis of the representation of various species in *Do Androids Dream of*

Electric Sheep? While it is undeniable that there are differences between human and non-human animals, it does not necessarily follow that these differences justify the objectification of other species. This recognition implies that we are all fellow creatures, including animals and artificial beings. It does not mean that the human is necessarily undermined. Rather it implies that the interests of other beings need to be taken into consideration and that they should not be treated as commodities but as living beings.

Speciesism is especially visible in the discourse of rights, as exemplified by animal rights activism. Because of its focus on policies, most forms of bioethics rely more on what is allowed, or likely to be accepted by society rather than on the core of the ethical problem. However, the notion of rights is in itself problematic as it depends "on a substantive judgment about [one's nature]" (Fukuyama 146). The law is significantly absent in most of the novels I have studied and its absence is often part of the moral problem as it does not force the creators of artificial beings to be responsible for their creations. The novels reflect the current state of biomedical law that allows research to be privately conducted (the case of therapeutic cloning and stem-cell research) or is unable to effectively regulate such practices. In the two texts in which the law has a significant place, *The Bicentennial Man* and *The House of the Scorpion*, it does not solve any of the problems. In the case of *The House of the Scorpion*, the law does not protect the rights of clones and is unable to regulate their creation (clones are only allowed if their brain functions are destroyed, but El Patròn bypasses this ban without being challenged). The case of *The Bicentennial Man* is slightly different as it is more nuanced, and, I believe more realistic. It recognizes the importance of the law to the extent that it allows Andrew to gain autonomy while reminding us that recognition in front of the law is not enough to guarantee one's acceptance by

society. Andrew's legal rights are not enough and therefore highlight the downfalls of thinking of morality only in terms of policy.

In order to go beyond the discourse of rights, Wolfe proposes to follow Cora Diamond's alternative: "It is not by denying the special status of human being but by intensifying it that we can come to think of nonhuman animals not as bearers of interests or as rights holders but rather as something much more compelling: fellow creatures" (Wolfe 77). Drawing on the works of Diamond and Martha Nussbaum, Wolfe switches his focus to fiction and its "sympathetic imagining of the lives of non-human animals" (78). Nussbaum's argument that "imagining the lives of animals make them real to us in a primary way, as potential subjects of injustice" (qtd in Wolfe 78) can be applied to the cases of artificial creatures. For both Diamond and Nussbaum, fiction is a useful route to think about ethics because it is different from philosophy and policy:

> The force of literature for Diamond is its *difference* from philosophy, its ability to confront propositional, analytic thought with its own limitations […], for Nussbaum literature serves as a kind of kinder, gentler supplement to analytic philosophy's project of "sentimental education," stirring in us identifications, empathetic responses, and projections that may then be readily formalized in analytical propositions. (Wolfe 78–79)

The process of identification is critical in every text I have included in this project as it functions as a challenge to the validity and legitimacy of speciesism and of the definition of human nature. This identification is reminiscent of Fukuyama's claim that "human beings are always making sentimental reference to their 'shared humanity,' but in many cases what they are referring to is their shared animality" (145).

It is this movement toward the animal that posthumanism appropriates in order to respond to the development of biotechnology. It is the same quality that Black had identified in *Never Let Me Go* in which the clone narrative compels us to search for an

alternative to humanist ethics by "recognizing what in ourselves is mechanical, manufactured, and replicated – in a traditional sense, not fully human" (Black 784) and that "to be human […] is to recognize oneself as inhuman" (Black 801). My main concern here has not been to define what the posthuman is, looks like, or should be – its many forms make such a project impossible.[112] Rather, I have explored ways in which humanist ethics fail when confronted with posthuman beings and requires an alternative theory of ethics. While the texts I have studied do not provide such an alternative, they articulate a form of ethics that corresponds to the one proposed by Patricia MacCormack in *Posthuman Ethics* (2012) as she shifts the guiding question from what the posthuman is to "how posthuman theory creates new, imaginative ways of understanding relations between lives" (1). For MacCormack, posthuman ethics is rooted in the body as "the site of lives inextricable from philosophy, thought, experiments in being and fantasies of the future" (1).

Identifying the body as the locus for posthuman ethics forces us not to dismiss the questions of physiological difference and to include the question of difference as key to our ethical project:

> The posthuman as an ethical practice is a practice toward life itself, or rather, lives – real, singular and connective, uniquely emergent without predictable development and directly addressed lives for which we seek to expand the capacity to express. […] The field of posthuman Ethics deal with life which resembles nothing except itself and not consistent with itself, only tactically. Posthuman ethics

[112] Another problematic aspect of many posthumanist arguments is that they tend to see the posthuman in the service of man. From this standpoint, biotechnologies are seen as a tool to enhance man rather than a challenge to the humanist tradition. Theorists holding these beliefs are usually defined as transhumanists and are often affiliated to one of two organizations, Humanity+ and Extropy:

> Many cyber-theorists, and organizations, such as Humanity+ (formerly the World Transhumanity Organization) which attempt to think transhumanist futurity such as that of Extropy ethically and accountability, embody (or disembody) a commitment to the human which has overcome humanness primarily through overcoming finitude. In this way time also ceases to be a spectre, but this futurity necessarily repudiates the now beyond its usefulness for an infinite tomorrow(ing). Extropy could be described as the cyber-biotechnological version of humanist, transcendental practice, while Humanity+ exhibits anxieties about symmetry in access, distribution and manipulation. (MacCormack 8)

> sees the dividuation of life in opposition to identity, as it acknowledges the inevitable connection between living bodies as the point of ethical address and, in a seeming postmodern conundrum, the individual is constituted only by its connection to other individuals. (MacCormack 4)

Posthuman ethics asks us to forgo traditional categories of beings – which are mere constructs – and to focus on identity as lived experience through the body and in relation to others. The form of posthumanism highlighted by my study is an extension of Levinas' inter-human order to Nussbaum's "fellow creatures." The novels I have studied participate in this project (even if not intentionally) to the extent that they present the life of the other. None of the novels offer a verdict on the nature of the artificial creature; they question the nature and the difference between artificial and natural. It is for this very reason that they embody the practice of posthuman ethics.

In order to limit the scope of this project, I have chosen to focus on the ethical implications of the artificial creation of life on the actual creatures. It would, however, also be necessary to look at the perspective of the creator as to provide a more comprehensive image of the dynamics of the artificial creation of life. Doing so would provide an understanding of the values and power dynamics at the core of such practices. Novels such as Louise Lambrich's *A ton Image* (1998) as well as Michel Houellebecq's *Les Particules élémentaires* (1998) and *La Possibilité d'une île* (2005) explore the psychological motivation of cloning from a cure to infertility to the desire to reproduce without a partner. Other justifications for the artificial creation of life range from the mere technological challenge, as in Xavier Mauméjean's *La Vénus anatomique* (2003), to the biological imperative to modify human beings so that they can survive impending environmental catastrophies such as in Bernard Werber's *La Troisième Humanité* (2012). Looking at the human motivation of the artificial creation of life might seem like a step back towards the

human. However, I believe that, because we live in a posthuman era and we are already posthuman in many ways (in Haraway's words, we are already cyborgs), such a study would reveal that our relation to artificial creatures is not as different from the one we have with other members of ours species. The practice of posthuman ethics suggested in the novels I have studied requires us to see others as fellow creatures worthy of consideration, whether they are from a different species, race, or gender. This form of relational ethics is not limited to the one humanity has with other species, it also includes the relationships we have with members of our own species. In the posthuman framework suggested by my study, the question at stake should not be "to which species does one belong" but rather "what kind of life does one experience."

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Appendix A – Synopses

1. Auguste Villiers de l' Isle Adam's *L'Eve future*

In *L'Eve future*, the main protagonist, Edison, agrees to build an artificial woman in order to convince his friend, Lord Ewald, not to commit suicide. Lord Ewald's despair stems from the disappointment brought to him by his love interest, Miss Alicia Clary, whose intellect does not match her beauty. Edison's solution is to build an android, Hadaly, who looks like Alicia but who does not have her flaws. Despite his initial reluctance and even disgust, Lord Ewald eventually accepts the android as a new companion. The novel closes with the sinking in the Atlantic of Ewald's and Hadaly's ship.

2. Mary Shelley's *Frankenstein*

Frankenstein tells the story of Victor Frankenstein, a student of natural philosophy obsessed with discovering the cause of generation and life and re-animating dead matter. He recreates a human being by assembling body parts from corpses. After successfully animating his creature, he is disgusted by his work and rejects his creation. Rejected by all, the creature turns into a vengeful murderer, chasing and punishing his creator.

3. Carel Čapek's *R.U.R*

This play, which unfolds over eleven years, takes place on the island where the Rossum factory produces their robots. The play begins with the arrival of Helena Glory, the daughter of the company's president. The aim of her visit is to persuade robots that their

treatment by the company is inhumane and therefore unacceptable. The first act closes with Helena's forced marriage to the head of the factory, Harry Domin. The second act describes the rebellion of the robots ten years later, while act three focuses on the confession of Dr. Gall, one of the company's directors and lead scientists. He reveals that he had modified the robots so that they could feel physical pain. And lastly, in the epilogue, Dr. Gall is the only human survivor, enslaved by the robots who want him to find the lost formula of their production.

4. Philip K. Dick's *Do Androids Dream of Electric Sheep?*

Several sophisticated androids, that are for the most part indistinguishable from human beings, have escaped from their colony on Mars and are hiding on earth. Rick Deckard, a bounty hunter, is required to "retire" (kill) them. However, his encounter with these androids lead him to challenge the legitimacy of his work and of the legal distinction between man and android.

5. Isaas Asimov's *The Bicentennial Man*

Andrew, a house robot and domestic servant, develops a talent for sculpture, intellectual pursuits, and eventually, even develops feelings. The story follows his struggle to gain his freedom, the recognition from society that he is an individual, and finally to become human by replacing his mechanical body with organisms, making him mortal.

6. Roger Zelazny's "For A Breath I Tarry"

This short story traces the evolution of Frost, a sentient computer with too much free time, that becomes obsessed with man, a species that has been extinct for centuries. Frost explores the earth, looking for ruins or remains of human culture. He learns about history

and art, but cannot comprehend feelings. Ultimately, he transfers his consciousness to a well-preserved corpse, which reanimates. He is then submerged by sensations and recognized as a man by all the other robots and computers.

7. Kazuo Ishiguro's *Never Let Me Go*

Kathy retells the story of her life at Hailsham, a secluded boarding school in England. As she is reunited with her childhood friends, Ruth and Tommy, she reflects on her condition and her life as a clone while she is caring for both Ruth and Tommy, who are in the process of donating organs (leading to their early completion, or death). As Kathy and Tommy are trying to gain an extension before Tommy's next donation, they come to understand that they have never been truly free and that their lives had been set for them from the beginning.

8. Nancy Farmer's *The House of the Scorpion*

The story follows the evolution of Matt, the clone of a drug lord, from birth to adolescence. We witness his childhood and education, after he learns that he is a clone. A major section of the novel is devoted to his struggle to be accepted by other members of the Alacràn estate. His position is ambivalent because he is considered an aberration because he is a clone but he is also very powerful because he is the drug lord El Patròn's favorite (or protégé, because of his organs). When El Patròn-becomes sick, Matt has to escape to Atzlàn in order to survive by finding the only person who had accepted him in the past and who now lives outside of the land of Opium. He has to overcome several obstacles (learning about the real state of society and opening his eyes to the horror of El Patròn's oppressive power and its consequences) before he can find Maria and be recognized as human.

9. Eva Hoffman's *The Secret*

The Secret is a confession to both an advisor (therapist) and the reader, as Iris Surrey narrates her life as a clone. We follow her through her childhood, ignorant of her nature, and then through her discovery and struggle. After learning that she is a clone, she leaves her house to find herself. Her adventures in New York are not enough for her to accept herself, and she sets out on a pilgrimage to her original's parents to understand more about her family history. This leads to a confrontation with her original. At the end of the novel, she is able to find herself by distancing herself (figuratively and literally) from her mother/original and meeting a man who accepts her and does not compare her to her original, in spite of her being a clone.

10. Lesley Choyce's *Deconstructing Dylan*

Dylan, a teenager in high school, feels different. His mother does not approve of his new romantic interest, which leads to a confrontation. Following this confrontation, he finds a picture in his parents' bedroom of another boy who looks just like him but of whom he has no memory. He decides to do some research and discovers that he is the clone of his late brother, Kyle. The novel explores Dylan's inner turmoil and his attempt to understand who he is. At the end, he agrees to be an ambassador and a role model for other, younger clones.

11. Charotte Kerner's *Blueprint*

This first-person narrative is Siri's own account of her life, her relationship with her original/mother and her fight to liberate herself from her original's expectation of her. Siri was told as soon as possible that she was a clone. Her orginal decided to clone herself

because she was diagnosed with MS and wanted to have a lasting effect on society. The struggles Siri describes are centered on a desire to be independent from her original, not only because she is a clone but also because her original wants her to be a mere copy of her and not her own individual self. It is only after her original's death that she is able to do so.