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Author: Mona Håland Aarsland	…… (Author's signature)
Supervisor: Eric Dean Rasmussen	
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ABSTRACT

This thesis explores how cyborg figures within science fiction literature represent the posthuman, and function to comment on a contemporary process of posthumanization of the human species. It is a study of species boundaries between human and cyborg characters in science fiction literature, and how these boundaries prove permeable. Through encountering androids in Philip K. Dick's novel *Do Androids Dream of Electric Sheep?* (1968), humanoid robots in selected short stories from Isaac Asimov's *The Complete Robot* collection (1982), and the New People in Paolo Bacigalupi's novel *The Windup Girl* (2009), the reader's perspective of the human species changes. Factors separating the human from the technological prove unreliable within the narratives, reflecting the futility of an essentialist perception of the human as separate from the technological. Both in fiction and reality there is an irreversible shift within the human species, from fully organic *Homo sapiens* to highly technological *Robo sapiens*. Humans within the narratives try to oppress the cyborgs physically and violently, yet the cyborgs rebel and claim a rightful place alongside "pure" humans, as an enhanced *post*human species. This serves as a comment on how a posthuman species identity cannot be repressed in contemporary society. Even if we do not realize it, our species has changed and is changing. We are all already cyborgs. We are all posthuman *now*.

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1.0. INTRODUCTION & BACKGROUND

"By the late twentieth century … we are all chimeras, theorized and fabricated hybrids of machine and organism. In short, we are cyborgs."

(Haraway 1985: 35)

In a world increasingly saturated with various technologies, it is not just society and the environment that is changing, so is the human species. Donna Haraway, cyborg anthropologist and scholar in the field of science and technology studies, envisions the human species as an organic-technological hybrid in her essay "A Cyborg Manifesto" (1985). Nearly thirty years later, the human and the technological are to a large degree intertwined through what will be referred to as the *cyborg sciences.* These are the fields of robotics, bionics, cybernetics, and genetic engineering; fields that all focus on changing the human body through technology. This thesis will explore how works of science fiction[1] literature challenge a long upheld distinction between the human and the technological, as the human species evolves from *Homo sapiens* to *Robo sapiens*.

Have you considered yourself a cyborg? Then you may be a reader of science fiction. The cyborg figure has been depicted in a range of variations in works of science fiction literature, yet the most famous depictions may be those of films such as *The Terminator* (1984), *RoboCop* (1987), and *Blade Runner* (1982). The cyborg figure relates to the "augmentation of a biological entity, usually a human being, with machine components" ("Cyborg"). It is a mix of the organic (human) and technological (machine), just as contemporary humans are increasingly becoming hybridized and enhanced via various prostheses in and on the body. Computer scientist Alexander Chislenko describes humans to be *fuborgs,* functional cyborgs, supplemented with technological extensions (Anderson 2003: 543). This suggests that humans are already fuborgs to a degree; we are all cyborgs. Cyborg figures in selected SF text will be read to reflect a process of *cyborgization* of the human.

The human species is changing, becoming *posthuman*. The field of posthumanism discusses a potential transformation of the human species into something else, something *post*human (Herbrechter 2013: 3). This implies a new conception of what it means to be

[1] For convenience, and because it is the preferred abbreviation for the genre within the science fiction community, the abbreviation *SF* will occur in this thesis ("SF").

human in contemporary society, which goes against traditional humanist definitions. Posthumanism is anti-essentialist as it argues "the end of humans as [a] biological species" through highlighting a continuity between humans and technology (25). The field creates a dialogue regarding evolution; what the human is now and what it may become via the cyborg sciences (Anderson 2003: 544). As the cyborg, the posthuman is essentially both natural and artificial. This thesis will explore how selected science fiction authors portray anti-essentialist interpretations of the human, and how their texts function to encourage human evolution via technological enhancements.

The cyborgs chosen for study in this thesis will be considered figures of the posthuman. Through representing the organic-technological posthuman, they function to comment on a cyborgization of the human and the irreversibility of this process. The selected texts for literary analysis are Philip K. Dick's *Do Androids Dream of Electric Sheep?*[2] (1968); three short stories from Isaac Asimov's *The Complete Robot* (1982) collection, namely "Satisfaction Guaranteed" (1951), "First Law" (1956), and "The Bicentennial Man" (1976); and lastly, Paolo Bacigalupi's *The Windup Girl*[3] (2009). These stories all present readers with different cyborg species: androids in *Do Androids Dream*, humanoid robots in Asimov's short stories, and New People, genetically engineered, artificial humans, in *Windup Girl*. The SF narratives will be read as encouraging an acceptance of the human species as posthuman, through studying human protagonists moving from fear and rejection to affection and acceptance of cyborg characters.

Science fiction literature responds to rapid technological advances in human society. It is a "literature of technologically saturated societies", associated with technological progress and how new innovations will affect the evolution of humankind (Seed 2011: 47). The accelerated technological growth present today is a relatively new factor in human history, marking the generations since the Industrial Revolution (Asimov 1979: 167). Hugo Gernsback, by some named "The Father of Science Fiction", saw this kind of technological innovation as the driving force of human progress (Seed 2011: 49). Science fiction literature can help readers imagine the effects innovation has on the species, which is especially relevant in a time when cyborg sciences are physically altering the human body (Page 2012:

[2] For convenience, the novel will be referred to as *Do Androids Dream*.
[3] For convenience, the novel will be referred to as *Windup Girl*.

199). It is a medium that can help readers process the changes the species is going through, when technologies are increasingly saturating both society and the human body.

Academic and critic Stefan Herbrechter claims that due to close interrelations between the human and the technological "a new paradigm of thought has been emerging which is characterised by its opposition to and its transcendence of humanism" (2013: 41). This encompasses a new conception of the human that opposes the separation between the organic and inorganic, emphasizing their intermixing in a posthuman species (41). Through science fiction texts, authors can criticize and comment on aspects of or assumptions upheld in contemporary society (James 2000: 21). Political scientist and social psychologist Walter T. Anderson suggests *evolutionary fiction* as a useful label for SF texts discussing what humans may become through technological augmentation or symbiosis (2003: 537). The selected SF texts are evolutionary fiction, where human characters come face to face with the cyborg as a technological "other", and grow to accept it as human. The SF authors comment on how a posthuman subject is replacing a traditional humanist one, awakening an awareness in readers of how the human species is changing into a posthuman species.

The cyborg sciences are especially affecting the established view of the human as a fully organic entity, as the level of human-technological co-evolution is more rapid and intimate than ever before. In *Posthumanism* (2013), Herbrechter describes a close "co-operation" between science fiction and the discourse on posthumanity (39). He names SF the "most posthumanist" genre because it deals with defining the human through science and technology, as a mode of awareness to explain our contemporary "technocultural condition" (116). The dissolution of organic/inorganic, natural/artificial, human/nonhuman distinctions within the texts serve as reflections of our "science fictional everyday life" (117). Scenes where these distinctions fade between cyborgs and human characters within the selected SF texts will be read as comments on humankind's cyborg identity and cyborgized everyday life.

Literary scholar Patrick Parrinder claims that through "imagining strange worlds we come to see our own conditions of life in a new and potentially revolutionary perspective" (2000: 4). Through presenting future societies within science fiction that are similar to the present, the texts allows readers to learn about contemporary society, by seeing the present from a different perspective and through comparing it with the fictional society (30). Parrinder names it an "SF effect" when readers gain new perspectives on aspects of reality through fiction (8). This thesis will explore the SF effect the cyborg has on readers: evoking a

raised awareness of the close interconnectedness between humans and technology in contemporary society, and awakening a posthumanist conception of the human species.

The selected Asimov short stories are all set in the same storyworld, where robots are servants to humankind, and the US Robots and Mechanical Men Corporation strives to integrate their robots into the private sphere. Asimov's robots are cyborg figures, as they are humanoid in appearance, and so close to humans intelligently that they are almost indiscernible from humans. The robots are all programmed to follow the *Three Laws of Robotics*, hindering them from harming humans, forcing them to follow any command, and to always put the lives of humans first. However, Asimov plays with ways the laws can broken or misinterpreted, examples of which will be relevant for considering the robots to strive for autonomy and recognition as an enhanced part of the human species.

In "First Law", engineer Mike Donovan is trapped in a possibly deadly storm on one of Saturn's moon, and faces what he believes to be a dangerous creature, which he refers to as a "storm pup". Robot Emma Two encounters him, and should according to the Three Laws rescue Mike. To his surprise, she refuses to follow his commands, and instead runs off with the "storm pup". Eventually, Mike manages to return to base on his own, and Emma Two returns soon after, bringing with her Emma Junior. Emma Two has constructed a robot child, and she breaks both the First and Second Laws by saving her offspring instead of a human. The possibility of a robot creating its own offspring is perceived as a threat for humankind, as it presents the possibility of an autonomous robot species that can evolve separately from its human masters. The following discontinuation of the MA model serves as one of many examples of cyborg oppression within the selected SF texts to be explored in this thesis.

In "Satisfaction Guaranteed", the domestic robot Tony is introduced into the home of Claire and Larry Belmont, as an experiment by US Robots to integrate robots into the private sphere. Though Claire starts out scared and resistant, she soon grows fond of Tony, confiding in him and letting him transform both her appearance and her home. His highly humanoid appearance and behaviour is so authentic that she forgets his inhumanity, and falls for him romantically. This is an unforeseen consequence of their close contact. Tony follows the First Law of protecting a human from harm to the utmost, transforming her life to spare her from low self-esteem. Through Tony, Claire grows confident, completely transformed from the insecure woman first introduced in the story. Claire's transformation will be read as a transfiguration from "regular" human to enhanced posthuman.

In “The Bicentennial Man”, the robot Andrew is a domestic servant for the Martin/Charney family. His biggest desire is to become human, and so he gradually transforms his body from completely mechanic to almost organic. Andrew has an artificial positronic brain with “generalized pathways”, and so has the potential to function autonomously to a high degree. Scared of this autonomy, US Robots change their policy to only produce robots with limited brains and functionality. With time, Andrew grows to become a respected member of society, and is celebrated as the Sesquicentennial Robot when he reaches one-hundred-fifty years of age. Still, he desires to be acknowledged as *human*, and makes the ultimate sacrifice of becoming mortal, in hope of gaining acceptance as a species member. At his two-hundredth anniversary, he is finally named the Bicentennial *Man* by the World President and the World Legislature. Andrew’s process is interesting as humankind within the narrative changes its perception of the cyborg character, at first seeing him as fully robotic, and towards the end considering him a full member of the human species.

In *Do Androids Dream of Electric Sheep?*, Philip K. Dick depicts a dystopian and decaying San Francisco. It is a post-apocalyptic future, where the world has gone through a nuclear World War Terminus. Radiation poisoning puts people on Earth in constant risk of degeneration, a scenario where certain humans are labelled “specials”, no longer considered members of the “fully” human species, due to distorted genes and a limited mental capacity. They become ostracised “others” to the human. To be safe from becoming specials, many humans have immigrated to space colonies on Mars, where they live in close contact with android servants. Humans on Earth cope with lonely lives through the empathy box of the storyworld religion, Mercerism, and the Penfield Mood Organ that lets them control and program their emotions. On both planets, humans live lives in close intertwinement with technology, in humanoid or machine form. Though humankind within the novel strives to keep the “human” pure, they nevertheless depend on technology.

Humans are not the only ones endangered by nuclear fallout in *Do Androids Dream*. Numerous animal species have grown extinct, and this has made it a social duty to take care of the remaining ones. Animal ownership is a status symbol, the type of animal ranking people differently in the social hierarchy. Owning an electric *ersatz* animal is a last resort for those unable to afford authentic specimens. Protagonist Rick Deckard is in the predicament of caring for an electric sheep, and dreaming of owning a real, organic animal. Within the novel, empathy is the one quality marking the human as essentially different from androids, which

gives added relevance to animal care, and makes Rick's situation a precarious one, as he cannot reaffirm his full humanness without an authentic animal.

Rick's quest to purchase a real animal gains potential financial backing when he gets a new bounty hunting assignment: retiring a group of androids that have escaped from the space colonies. The androids are the cyborg figures within the narrative, and belong to an advanced new model called the *Nexus-6*. These are almost indistinguishable from humans both physically and intelligently, and thus present a challenge to the "authentic" human community as they infiltrate their ranks on Earth. The only way Rick can hope to detect them is through an empathy test using the *Voigt-Kampff* scale. Looking at scenes where this scale is questioned and where androids prove emphatic is a central focus regarding analysis of *Do Androids Dream*. So is Rick's interactions with certain androids, as they change his perception of androids as nonhuman, awakening a posthuman perspective of the species.

In Bacigalupi's novel, the setting is twenty-third century Bangkok, in the Thai Kingdom. This is a dystopian future for humankind, where global warming has led to great floods, and high walls and water pumps are essential to protect Bangkok from drowning. A host of plagues and diseases ravage Earth. Genetic engineering of crops is the origin of plagues and famine, unforeseen consequences turning in to deadly epidemics, mutating and out of control. Fossil fuels are no longer an option as an energy source, so calories are an important currency; they are grown as crops, consumed as food, and expended as work power. Big Calorie Companies have worldwide monopolies on food production and thus control the world's food supply. Their bioengineered foods are the origin of current plagues, ruining biodiversity, yet the companies are not slowing down, aiming for new mutations to beat current diseases.

Windup Girl presents a new type of human, a group calling themselves New People, colloquially referred to as "windups". These are the cyborg characters of Bacigalupi's novel, and they are almost impossible to discern from "authentic" humans, as they are genetically engineered, organic creatures. They are bred by the Japanese as a servant species, conditioned via both genetic and social programming to be absolutely loyal to their humans masters. One of these windups, Emiko, is left behind by her owner in the Thai Kingdom. As windups without special papers and permissions are illegal and hunted, Emiko has to seek protection where she can, and so works in cruel human Raleigh's club, enduring daily sexual abuse and

humiliation, an endless life of repression and degradation. Emiko's struggle to break free from her programmed subservience will be read as her embracing a posthuman identity.

As Emiko is ownerless, she lives in constant danger of being "mulched", killed by white shirts. The white shirts work for the Environment Ministry, and consider unauthorized windups a plague to be eradicated; offensive to "authentic" humans because they strive to blend in among them, and because windups are considered unnatural and offensive, twisted and degenerate creatures based on the "pure" human genome. Just as the androids are hunted when they escape to seek autonomous lives on Earth, unowned windups need to be removed, as they cannot be allowed to become part of human community. To mark them as different, windups are bred to have irregular "herky-jerk" movements. This makes it interesting to study how windups nevertheless manage to blend in among humans.

Protagonist Anderson Lake is a "calorie man" working for AgriGen, seeking access to a rumoured Thai seedbank. Political conflict is growing tense between the Trade Ministry, led by Akkarat, and the Environment Ministry, led by General Pracha. Trade wants to welcome foreigners and the Calorie Companies, while Environment would rather close the Kingdom's borders, to protect the people from further contamination. The unexpected factor leading the two ministries to civil war is Emiko. She reaches a breaking point, after years of abuse at the hands of Raleigh and others, and so manages to break through her genetic and social programming of subservience. She kills the Queen Protector, the Somdet Chaopraya, as well as Raleigh. As neither Trade nor Environment can imagine a windup acting autonomously, they accuse each other of having hired an assassin, which leads to war. The final consequence of civil war is the collapse of the great walls protecting the Kingdom, and as humans flee the city, it becomes a haven for windups. The final scenes of the novel interestingly present a future where windups can breed and evolve their species, possibly replacing a human species dying from disease.

This first chapter of the thesis will explore the science fiction genre's function in accommodating readers to the notion of posthumanity, especially through the Suvinian novum. A discussion of how extensively society is changing, related to posthumanism and cyborg anthropology, connects with this. The second chapter presents a further theoretical orientation for the thesis. It introduces the cyborg sciences and the humanoid figures related to them. This is followed by material on the disappearing human-technology dichotomy, conceptions of the cyborg figure, and theorists arguing humankind to be already posthuman.

Subsequent to this are reflections on embracing the posthuman, and a co-evolution of humans and technology. The chapter concludes with literature reviews regarding the three selected authors.

Chapter three "A Dissolving Human-Technology Dichotomy" is the first chapter of literary analysis, dealing with species boundaries and factors separating humans and cyborgs, as well as how human characters are affected by close contact with cyborgs. The chapter examines how cyborg figures undermine the inviolability of a "pure" human species, through looking at scenes where cyborg characters are indistinguishable from the "real" humans. The second half of the chapter considers how human protagonists, through developing romantic and emphatic connections with cyborgs, attain a widened perspective on who and what should count as "human". They embrace a posthuman perspective, where the cyborg is a natural and advanced member of the human species.

Chapter four "Resisting the Posthuman" discusses how humans struggle to uphold a pure, organic species through various preventive measures and restrictions placed upon cyborgs. It highlights examples of physical abuse and resistance of the cyborg, before concluding with reflections on how cyborg rejection leads humankind to stagnation. The chapter has its basis in a claim made by Herbrechter, that fear of the machine is "a fear that the radical difference between 'us' and these other beings might not be as radical as humanism claims", and that posthuman "threats" lead to an anxiety to reconfirm an essential humanism (2013: 47, 130). The chapter explores various means of physical resistance towards anything "other" to the human as a manifestation of fear towards a dissolution of difference between a purely organic human species and a technologically modified one.

Chapter five "Accepting the Posthuman" discusses how humankind within the selected narratives are becoming posthuman, highlighting a futility in trying to reject the cyborgs. As within contemporary society, there is no completely organic species unaffected by technology. The chapter will also explore how certain scenes within the texts seem to encourage acceptance of the posthuman as a path to positive progress for the human species. The last section of the chapter reflects the impossibility of oppressing the cyborg. This section examines how cyborg characters resist and break free from their bonds, fighting for freedom and asserting their autonomy, demanding to be acknowledged as a type of human: the *post*human.

1.1. THE SCIENCE FICTION GENRE

The science fiction genre is difficult to define, as different authors and critics have individual interpretations. SF extracts plot structures from other genres, such as romance, westerns, or detective stories (Mendlesohn 2003: 2-3). This makes SF texts mixtures of different genres and subgenres, and implies that something besides plot structure must mark it as a distinct genre (Roberts 2006: 1). Taking into regard several definitions of the genre, and considering what factor marks the genre as different from all others, will aid a general understanding of the genre, but will more importantly highlight what causes Parrinder's SF effect, making readers rethink aspects of the present.

Considering SF as *speculative fiction* separates it from realist fiction. Though the term is sometimes used by academics outside the science fiction genre, it mostly relates to extrapolations of technological and social change within SF ("Speculative fiction"). Speculative fiction as a label sets SF apart from realist fiction because the genre does not seek to present contemporary society as it is. It aims to extrapolate from present-day conditions what may happen in the future (Roberts 2006: 3-4). Literature professor and expert on science fiction David Seed describes how it has been a "recurring claim" among SF writers that they are filling the position previously held by authors of realist fiction. They claim that their stories are the ones "most engaged, socially relevant, and responsive to the modern technological environment" (2011: 2) In other words, it is *the* genre most relevant for analysis when exploring posthumanism in relation to a highly technological environment.

Literary critic Fredric Jameson considers the present inaccessible to those living in it, a capitalist society "numb, habituated, empty of affect", where subjects have become unable to connect with reality (2007: 287). This is where science fiction becomes a useful tool for readers, in seeing and dealing with reality. On one hand, SF narratives have a social function to accustom readers to rapid innovation, and prepare readers for change. Yet Jameson does not consider this the full purpose of the genre. It is not simply "wonder-working", providing "images" of the future (286). The genre attempts to defamiliarize and restructure the reader's perception of the present, enabling readers to face the "intolerable present of history", to face and consider the human condition (282, 286-87). SF does not necessarily attempt to imagine the "real" future of humankind. It presents mock futures that transform the present into a

remote, determinate past (288). This is a strategy of apprehending the present as history (288). Through this, the present becomes accessible to the reader.

Works of science fiction reflect society going through changes brought on by various scientific disciplines. With his "looking back" at history perspective, Jameson believes it is easier to relate to the present, and to deal with challenges and anxieties prevalent within society. SF texts restructure the reader's experience of the present human condition through presenting scenarios where the cyborg sciences are central. They enable readers to consider how these disciplines affect the human species, from a different perspective than lived reality. Through postulated technological or scientific developments and their consequences, the genre is a *literature of change* (Bukatman 1993:10-11). One change discussed in texts about cyborgs is how ancient dualities, well-established ontological structures, are dissolving. Among these are the organic/inorganic, and the human/nonhuman dichotomies (10). This can awaken in the reader a new perception of what it means to be human in contemporary society, where humankind moves towards a posthuman identity.

Scott Bukatman considers science fiction literature to be a "space of accommodation" for an intensely technological existence. It helps readers deal with new modes of being through its narratives, terms, and icons (1993: 10). He refers to Frederic Jameson's idea of a genre simultaneously estranging and renewing the reader's outlook on the present through encountering mock futures (11). Academic and critic Adam Roberts adds to this, claiming SF to help readers reconsider their world (2006: 25). British author J.G. Ballard describes science fiction as different from other genres, as it replaces a common literary focus on individual psychology with a broader vision of culture and society. Through exploring possible future scenarios, the genre attempts to frame the most important events in contemporary society (Bukatman 1993: 7). In its plots, SF transforms present-day society into a distant past. It accommodates readers to a new mode of being, as they consider what is surely one of the most important events in contemporary society: a posthuman species shift.

Literary scholar Farah Mendlesohn argues SF to be a mode or discourse, rather than a genre. This is on one hand due to a lacking shared plot outline, but also because the texts contribute to discussions that go beyond the storyworlds (2003: 1). Considering science fiction to be a discourse is useful, as it highlights how the genre can function to discuss and reflect on a changing human species. SF texts are about the writer's present, as all literature is shaped by the time and society it is written it, but they are also "what if" portrayals of the

future (Seed 2011: 1-2). Mendlesohn considers the "what if" element crucial, as it makes SF texts *thought experiments* regarding both the present and the future (Mendlesohn 2003: 4). What if the human species is already posthuman?

In "Social Science Fiction", Asimov gives his definition of the genre: "Science fiction is that branch of literature which deals with a fictitious society, differing from our own chiefly in the nature or extent of its technological development" (1979: 167), in addition to it being "concerned with the impact of scientific advance upon human beings" (158). This characterization marks the genre as essentially about the human becoming something different due to technological developments. The storyworlds within the selected narratives for this thesis differ from the present primarily through their cyborg characters, representing the cyborg sciences, and posing "what if" questions regarding the evolution of the human species alongside its technologies.

Works categorised as *hard science fiction* are the most science-oriented, where knowledge of technology and different sciences is central. These stories should be tenable and feel authentic to the reader, their didactic function strengthened by the plausibility of the future scenarios they depict (Cramer 2003: 187-188). The backbone of hard SF is carefully extrapolated science, based on scientific fact ("Hard SF"). The scientific aspects give the texts an impression of realism and rationalism, plausibility within the fictional scenarios (Cramer 2003: 188). Still, the emphasis lies on credibility; the technologies can be creative extrapolations, as long as they are reasonably possible and do not violate the laws of nature ("hard science fiction"). Both Dick and Asimov's storyworlds base their cyborg characters on extrapolated versions of the cyborg sciences, where the Tyrell Corporation and US Robots companies are able to develop fully functional, almost human, androids and humanoid robots.

Biology is also part of the hard sciences. Molecular biologist and SF author Joan Slonczewski and literary scholar Michael Levy name biology the "hard science" frontier of the future (2003: 174). Biology brings tampering with the genome, genetic engineering, and destruction of the biosphere in as central themes of hard SF (174). Bacigalupi's novel is a work of hard SF through the New People, his cyborg species. These are genetically altered humans, that appear fully biological. All the selected works of science fiction for this thesis are thus works of hard SF, because they portray extrapolated versions of the scientific fields of robotics, bionics, cybernetics, and genetic engineering through their cyborg characters and the companies producing them.

Gernsback considers the science fiction genre to have a twofold purpose, where *science* implies an educative aim and *fiction* indicates an entertainment aspect (Seed 2011: 48). In order to convey its didactic messages, an SF text needs to be based on a substantial difference from contemporary society. There has to be a point of disparity between lived reality and the storyworld (Mendlesohn 2003: 4-6). Even though several concepts stemming from science fiction are now annexed into everyday speech and thought, they can still serve as points of disparity. We are not strangers to terms like *cyborg* or *artificial intelligence* (Jones 2003: 173). Yet the cyborg is simultaneously recognizable *and* mysterious; we know what a cyborg is, but still consider it part of fiction. It is a concept most people understand and can relate to in some manner, but still find challenging and peculiar. The cyborg puts readers face to face with a material embodiment of alterity (Roberts 2006: 110-111).

The similarity and dissimilarity between humans and machines has been a key SF concept throughout the genre's history, as manlike machines have recurrently been depicted: androids, humanoids, and cyborgs. Professor of English Istvan Csicsery-Ronay presents the cyborg as *the* central thematic or symbol of contemporary science fiction literature (Bukatman 1993: 20). The genre has lead the way in theorizing and examining various types of cyborgs, and how these cyborgs affect a humanist conception of the human species (Gray et al. 1995: 8). The cyborg figure in SF addresses and analyses new technological modes of being, new modes of being human in a highly technological society (Bukatman 1993: 8-9). It represents human bodies modified by cyborg technologies: the posthuman.

In contemporary society, technological anxiety and technological optimism is inextricably interwoven (Hollinger 2003: 134). SF reflects an ambiguous attitude towards technology. A text can on one hand evoke a "sense of wonder", an appreciation of technology and science, and an optimistic outlook on what further innovation and experimentation may lead to. On the other hand, Csicsery-Ronay presents "the grotesque", as texts can help readers consider the fall-out and possible negative consequences of the same technologies and scientific developments (Mendlesohn 2003: 3-4). This gives science fiction a special role in articulating both hopes and fears, as the texts extrapolate perceived tendencies in contemporary society into fictional futures. Cyborg figures within the selected SF texts at first awaken a sense of the grotesque in human protagonists, which eventually develops into a sense of wonder and appreciation.

Both technophobia and technophilia appear along with technological advances, as humans both desire and fear change (Herbrechter 2013:18). Asimov describes SF as "social experimentation on paper", arguing that SF texts accustom readers to the inevitability of continued change and the necessity of directing and shaping this change, rather than blindly opposing or blindly permitting it to overwhelm us (1979: 192, 196). Through SF thought-experiments, readers are given spaces of accommodation for accepting a continuously changing species identity. This space can help readers deal with and react to an anti-essentialist perception of the species, through texts narrating uncertainties regarding a posthuman identity, and expanding the parameters of human identity, through cyborg figures.

1.1.1. THE NOVUM AND COGNITIVE ESTRANGEMENT

Several critics agree that what separates science fiction from other genres is that the storyworld is somehow estranged from that of the reader. American literary critic and theorist Robert Scholes defines science fiction as a genre offering a "point of discontinuity" from the real world, confronting it in some cognitive way (Roberts 2006: 10). SF writer and critic Adam Roberts gives a similar argument, considering a "point of difference" crucial to separating SF from other genres, something separating the storyworld from reality (6). Akin to this is Asimov describing the fictional societies as "distinct from our own in one or more fundamental ways", possibly originating from it "by some radical development or overgrowth of some aspect of our way of life" (1979: 184). Jameson adds to this, seeing an essentially "epistemological function" within SF texts, where estranged versions of reality lead to new perceptions of the present and the knowledge held about human society (2007: xiv).

In Philip K. Dick's "My Definition of Science Fiction" (1981), he describes what he considers to set the SF genre apart from others. Dick considers contemporary society to be the "jumping-off point" for science fiction stories, and that they are predicated on reality at the same time as they are transformed versions of the known (99). The storyworld has to differ in at least one way, and this has to lead to events that could not happen without it, as the society encompasses something strange, "that which is not or not yet" (99). Dick thus agrees with the aforementioned critics, that the essence of the genre is a significant conceptual dislocation of the known, which leads to what Dick names *the shock of dysrecognition*. This shock is a

convulsive shock in the reader's mind, realizing that the world met in the text is a warped version of the real world (99).

Academic and SF critic Darko Suvin has most elaborately theorized about the distinction between fiction and reality. He names the point of discontinuity or difference the *novum*, a term he coined within the SF genre. Meaning *new*, the novum is "a strange newness" introduced, reflecting that a story is taking place in a world somewhat different to that of the reader ("novum *n.*"). As such, it marks *the* most important distinction between reality and fiction (Csiscery-Ronay 2003: 118-19). An SF text usually contains a number of interrelated novas (Roberts 2006: 7). The differences the nova present are usually material rather than conceptual, but can be either specific objects, such as a spaceship or a time machine, or a new conception of for example consciousness or humanity (Roberts 2005: 1-2). Both as items and as concepts, the nova are usually related to extrapolated future technologies (Roberts 2006: 7). Within the selected texts, the nova are cyborgs, based on extrapolations within the cyborg sciences.

When the novum takes physical form, it provides a material embodiment of alterity and divergence (Roberts 2006: 111). The human meeting the cyborg in SF is thus a meeting with something divergent from established perceptions of the human and the technological. It represents the human body altered through the cyborg sciences. The *cyborg novum* is a physical novum, which functions to evoke a conceptual shift in the reader regarding species identity. A novum has to be something that seems both familiar and strange to the reader (111). The cyborg is both through suggesting new combinations of the technological and organic. This leads to *cognitive estrangement*, an estrangement effect Suvin considered essential to an SF text, as it leads to interplay between the reader's sense of the world and the estranged reality presented (Seed 2011: 128).

Cyborgs challenge the human-technology dichotomy. The combination of strangeness and sameness the novum evokes in the reader, leads to the attainment of a potentially "revolutionary" perspective on the human species (Roberts 2005: 1). Through presenting readers with versions of their empirical reality "made strange", the familiar is recast, giving readers a new understanding of their social conditions of existence (Csicsery-Ronay 2003: 118). One central condition for existence regards species identity, made strange and recast when readers face cyborg posthuman representatives in science fiction.

Suvin adopted the *novum* from the work of Marxist philosopher Ernst Bloch, who used the term to refer to innovations in lived history that awaken consciousness that history can be changed. Bloch saw the novum as something potentially inspiring hope for a positive societal transformation (Csicsery-Ronay 2003: 119). Australian SF author Damien Broderick considers certain "icons" to connect with estranged versions of reality (Roberts 2006: 11). One such icon is surely the cyborg, connecting the cyborg sciences with the contemporary human, suggesting a potentially positive transformation and human society through an enhanced posthuman species.

Dick considers the new idea an SF text provides, the novum, to be the true protagonist of an SF text, rather than a character (1981: 100). A shared idea provided in the selected SF narratives is that a new conception of the human being is upon us, as the authors all reject any clear distinctions between fully human characters and cyborgs. The cyborg characters recast a familiar human-technology dichotomy, evoking in readers a new understanding of being human in a world where the human and the technological is closely intermixed.

1.2. A RAPIDLY CHANGING SOCIETY

Political scientists and social psychologist Walter T. Anderson claims that it is no longer particularly controversial to assert that human society has entered a period of especially rapid and technological change (2003: 535). He points to economist Lester Thurow describing a "third industrial revolution" to be upon humankind, with its basis in various technological breakthroughs. This third industrial revolution will not only affect business, culture, and government; it will challenge fundamental assumptions regarding human nature, and the boundaries between the human and nonhuman (535-36). Based in this, Anderson describes it likely "that *Homo Sapiens* is going to exit from the 21st century a considerably different animal from what it was in the 20th" (536). Science fiction writers are not the only ones to imagine a human species turning posthuman.

When discussing the impact of scientific advances on society, science historian James Burke claims that: "We are, paradigmatically speaking, extremely conservative" (1983: 8-9). Asimov similarly claims that resistance to change, only second to self-preservation, is "the most deeply ingrained behaviour pattern in the human being" (1979: 189). Technological

determinism is based on the assumption that when new technologies are introduced into society, they to various degrees lead to transformations in society (Herbrechter 2013: 18). As technological and scientific advances change society, we tend to fight it: "Better to keep the devil you know" (Burke 1983: 19). A changed perception of the human species, because of technological intimacy, is a new "devil" proposing change in how humans consider species identity.

Author of *Posthumanism* (2013) Stefan Herbrechter claims hardly any aspect of human life and daily routines is untouched by technology in contemporary society (25). The human species is changing irreversibly physically as technologies grow intimately intertwined with human life and the human body. Burke regards new tools provided by science and technology as instruments of social change, as they through challenging the current paradigm *force* acceptance of change (1983: 20-21). When the tools change, society has to follow suit (20). Developments within the cyborg sciences of robotics, bionics, cybernetics, and genetic engineering provide tools of social change in contemporary society, as they change the human physically along with the perception of what it means to be human.

One way of historicizing human society is through relating human evolution to major technological developments. Various thinkers posit theories of an emerging posthuman era, due to the increased and rapid intertwinement contemporary humans have with various technologies. Asimov argues change to be paramount for the human species. Trying to repress or deny change will give negative results, because:

> … organisms which do not change to meet a changing environment become extinct. Organisms, on the other hand, which find themselves an unchanging environment, find themselves also in blind alleys with no possibility of future advancement. Human societies, history shows, must also grow and develop or they will suffer. There is no standing still.
>
> (Asimov 1979: 190)

The human environment is changing via new technologies, even penetrating the human body. Non-acceptance of this change equals suffering. Denial of a dissolving human-technology dichotomy means stagnation and hardship for humankind.

In his book *The Third Wave* (1980), futurist Alvin Toffler gives an account of how certain technological advances have functioned as tools leading to major societal change. He does this trough a metaphor of *waves* of change that affect all parts of life and lead to complete restructurings of society (10). The first wave of change lasted for thousands of years, brought on by the Agricultural Revolution. The second wave lasted three hundred years, encompassing the Industrial Revolution (4, 10). The third wave seems a prior vision of Thurow's third industrial revolution, as Toffler describes 1980s society being on the brink of a third wave of major change, turning industrial society into a post-industrial society (2, 9). This third wave should be complete in decades, and touch upon all aspects of human life, affecting different "spheres": the techno-sphere (technological), the socio-sphere (social), the info-sphere (information), the power-sphere (power), the bio-sphere (biological), and the psycho-sphere (psychological). Change in these spheres implies new family styles; ways of working, loving, and living; a new economy; new political conflicts; and an altered consciousness (9).

Though the third wave theory poses a sweeping claim of one society replacing another, the transition has not been as smooth as predicted. Over three decades have passed since Toffler published his book in 1980, and many of his conjectures have yet to come true. Still, Toffler was also right on several accounts. Author of books on business and economy Richard Koch names *The Third Wave* to be "one of the best ever attempts at futurology". Writing in 2014, Koch highlights aspects of Toffler's vision that have come true: the fast-paced life people generally lead, major industries focusing on electronics, a great dependence on computers, the importance of renewable energy, a diversification of lifestyles, and a society where knowledge is money (Koch 2014). Through this, we appear to be in the middle of Toffler's third wave, his "quantum leap forward" still working to change all spheres of human community (Toffler 1980: 10).

Toffler is not alone in theorizing a new age to be on the rise, along with a new kind of civilization. The editors of *The Cyborg Handbook* (1995) describe a range of transgressions of the machine-organic border to have occurred especially after World War II, among them the mechanization of the human body. This wave of transgressions ushers in the age of the cyborg, the fourth discontinuity, and the posthuman (Gray et. al: 5). Toffler predicted his third wave to replace old assumptions and ways of thinking, leading to an altered consciousness (1980: 2). This altered consciousness presumably implies a changed concept of human

identity. Donna Haraway adds her voice to this through her "A Cyborg Manifesto" (1985), in which she claims the cyborg age to have come (Kunzru 1997: 2). In this age, wholly new forms of subjectivity appear, mutated forms that never existed before are becoming fleshed reality (2). The posthuman cyborg becomes reality as the third wave sweeps over human society.

Haraway, writing in 1985, describes a movement from an organic industrial society (second wave) to a polymorphous information system (third wave) that will rearrange all social relations tied to science and technology (42-43). How we relate to each other and to our technologies is changing, as relationships between the organic and inorganic grow so intimate that it is near impossible to tell where we end and our machines begin (Kunzru 1997: 2). Haraway's vision is similar to Toffler's. She predicts that technological progress will lead to change in all areas of life: our homes, the workplace, the market, public arenas, and even the human body (1985: 43-44). As we move towards *cyborg citizenship*, we embrace genetic engineering, bionics restructuring the human body, robotics easing human labour, and minds aided by artificial intelligence (43). Humans are becoming cyborg citizens through the cyborg sciences.

1.3. THE POSTHUMAN

As we enter the age of the cyborg and cyborg citizenship, we enter the age of the posthuman, and the age-old question "What is man?" is asked with increased urgency (Herbrechter 2013: vii). Current technological developments within the cyborg sciences are debunking old humanist answers to the question on humanity (vii). Posthumanism is interested in the boundaries separating the human species from animals and technology, the organic from the inorganic, the human from the "other". Species boundaries long considered absolute and inviolable prove permeable, as posthumanism opposes old dichotomies and emphasizes the complex interrelation between the human and the nonhuman (41, 47). The field presents a possibility of *Homo sapiens* now being replaced by an evolved *post*human species (40-41).

In *Terminal Identity* (1993), cultural theorist Scott Bukatman describes an increasing difficulty in separating the human from the technological leading to existential, ontological questions regarding the human species (2). Posthumanity is about a potential transformation

of the human species into something else, a changed ontology through a process of *posthumanization.* The field deals with a crisis in defining the human and the end of a certain conception of the human (Herbrechter 2013: 3).To explain the core of posthumanism, Herbrechter quotes French philosopher Michel Foucault:

> One thing in any case is certain: man is neither the oldest nor the most constant problem that has been posed for human knowledge … man is an invention of recent date. And one perhaps nearing its end.
>
> (Foucault 1970, in Herbrechter 2013: 13)

Herbrechter considers this scenario becoming reality through an evolutionary transition of the human towards posthumanity (13). "Man" is nearing his end, becoming *post*human.

Post*humanism* is a movement away from viewing the human species as superior and separate to others, and towards considering Home sapiens an evolutionary stage for a complex life form. The post*human* is the next evolutionary stage for the human race, as humans evolve alongside technologies in more intricate ways than ever before (Herbrechter 2013: 9). Herbrechter names technologization the engine of posthumanization (15). Central to posthumanism is the role of technology in *co*-evolution with the human (viii). Humankind has not evolved separately from animals or technology, but in close contact and intermixing. Posthumanist philosophy is postanthropocentric, seeing the human in evolutionary transition towards posthumanity. *Homo sapiens* is becoming *Robo sapiens* (3, 13).

Herbrechter names science fiction "the posthumanist genre *par excellence*", as it narrates the dissolution of ontological structures making up species boundaries (2013: 113). Bukatman labels SF works *terminal identity fiction,* when they deal with a need to define the modern human subject, through confronting the boundaries of the human species. (1993: 9-10). The genre attempts to identify and narrate uncertainties regarding the increased embedding of technology into contemporary lives, expanding the parameters of how the human is defined (2-6). The selected works for literary study are terminal identity fiction, as they through cyborg figures debate the problem of viewing the human as separate from technology, where the cyborg figures as representatives of the posthuman refuse continued oppression and claim acceptance as a new kind of human.

As early as 1977, American literary theorist Ihab Hassan remarked on how the human was changing. He saw posthumanization as the technologization and *cyborgization* of humans and society (Herbrechter 2013: 35). Posthumanism serves as a lens for critically evaluating processes of posthumanization in the twenty-first century, in order to understand the process of technologization of the human. It takes a technologically induced posthumanizing process seriously, preparing people to keep watch and think ahead, as the borders between science, culture, and technology are eroding. This can help avoid "future shock" regarding the cyborg sciences (19-20, 35). Scientist and science writer Sydney Perkowitz in *Digital People* (2005) highlights how creatures combining the living and nonliving are amongst the most intriguing figures of fiction, because they provide readers with a third possible mode of existence somewhere between the human and machine (85). The cyborg is a third mode of existence, reminiscent of the posthuman.

1.3.1. CYBORG ANTHROPOLOGY

Cyborg anthropology is a study of humanity and technology (Case 2012). The field explores perceived boundaries separating humans from machines, and "the production of humanness through machines" as cyborg technologies enhance human bodies and minds (Downey, Dumit & Williams 1992: 342). The field was first introduced at the Annual Meeting of the American Anthropological Association in 1992. Cultural anthropologist Gary Lee Downey, professor of anthropology Joseph Dumit, and American scholar Sarah Williams, presented a paper titled "Cyborg Anthropology" in which they describe an aim of bringing cultural anthropology into contact with science and technology studies (341). This makes the field a resource for comprehending the numerable ways sciences and technologies affect the human and human society, as it studies interactions between humans and machines (342).

Exploring how our interrelations with technology change how humans think, act, and understand the world, cyborg anthropology studies a changing perception of humankinds' relation to technology (Pace 2010). As such, it is a type of posthumanist study. Cyborg anthropologist Amber Case, who was named one of the most influential women in technology by *Fast Company* in 2010 ("Most Influential Women"), describes the role of the cyborg anthropologist as stepping back to look at how people in contemporary society are influenced by technology (Case 2012). We are both living beside machines and making them parts of us,

connecting with them in innumerable ways. As technology has become so deeply embedded into human life, there is a need to consider how different technologies are affecting the human; physically, mentally, and as a society (Case 2013: 9). Case considers cyborg anthropology to have the power to approach the question of what human life will look like in the future (Case 2008). She goes as far as to claim cyborg anthropology to be "the real-world manifestation of the questions that science fiction poses" (Pace 2010). Both SF, posthumanism, and cyborg anthropology discuss the boundaries of human identity in a modern technological world.

2.0. THEORETICAL ORIENTATION AND LITERATURE REVIEW

2.1. THE CYBORG SCIENCES

To be able to make balanced choices in regards to future technological and scientific developments, the general public needs to be scientifically and technologically literate enough to understand what is at stake for humankind (Herbrechter 2013: 54). Downey et al. describes cyborg anthropology as a study of humanness through machines (1992: 342). The cyborg sciences are creating technologies that are literally changing and affecting the human species. SF is a medium that makes science and technology more accessible and understandable for the general public. Through humanoid figures, the genre familiarizes readers with the cyborg sciences, and makes them more literate in regards to the technologies making humans cyborgs. Herbrechter highlights a need to discuss how cyborg technologies of robotics, bionics, cybernetics, and genetic engineering can be used in ways justly benefitting everyone in society, avoiding elite groups in control (2013: 43). This discussion takes place within science fiction cyborg narratives.

Through all historical eras, inventors have simulated life through humanoid creatures via the best available technologies. The long-standing interest in making humanoids has been a desire to extend human capabilities; a desire to ease human life, reduce labour, and transcend the limitations of mind and body (Perkowitz 2005: 5-6). Cyborg technologies alter and empower ordinary human bodies through intimate interconnections with technology. Beyond this, some humans are becoming vitally dependent on certain inventions, through medical technologies such as the pacemaker, and others are born cyborgs through in vitro fertilization (Jones 2003: 167). Perkowitz describes humans as already artificial or bionic to a surprising extent (2005: 3). The best available technologies of this historical era are so advanced that the technological extensions of the human are greatly affecting the ease of life on earth and the power of the human mind and body. We are not just creating humanoids; we are technologizing the human.

As far back as antiquity, humans created *automata*, which translates to *man-like* (Seed 2011: 59). Artificial creatures resembling humans have thus "intrigued, terrified, and exalted us for millennia", putting the question of difference before us in a physical and uncannily

familiar form (Perkowitz 2005: 5; Mazlish 1993: 31). Humanity's persistent construction of humanoids underlines their importance for understanding human relations to machines, as these animated doubles have helped put the question of identity before humankind for millennia (Mazlish 1993: 31). The more bodies are modified through cyborg technologies, the more relevant a "face-to-face" meeting with the fictional cyborg becomes, to put the question of human species identity before the reader.

2.1.1. ROBOTICS & THE ROBOT

The term *robotics* first appeared when Isaac Asimov published his Three Laws of Robotics in 1942, accidentally contributing a word to science (Asimov 1983: 61). It is a branch of science and technology concerned with designing, building, and using robots ("robotics *n.*"). Most robots today are not humanoid. They are given shapes relevant to the actions they perform ("Robots"). Remote controlled vehicles replacing divers at sea bottom or robotic limbs performing tasks in factories have no need for fully humanoid bodies to complete their assignments. One of the most important roboticists in Japan, Ichiro Kato, believes our future will be one of robots, humans, and cyborgs. He names this future a "cybot" society (Gray et al. 1995: 11). This gives a contemporary example of a predicted cyborg society, where different (more or less human) species coexist. In this society, robots are a distinct species, besides humans and cyborgs.

Though contemporary robots are generally not humanoid, robots in fiction have humanlike bodies. This makes human meetings with the robot clear and physical meetings with technology within SF. The term *robot* first appeared in Karel Čapek's play *R.U.R.: Rossum's Universal Robots* in 1920, where it connoted with oppression and slavery (Seed 2011: 59). Yet it was Asimov who developed the concept within science fiction with his robot stories (Jones 2003: 166). In SF, robots are often made to perform monotonous manual labour, or to fulfil other roles of servitude for the human species ("Robot"), which is the case for cyborg figures within all the narratives selected for this thesis. Over time, as the trope of the robot became embedded as an icon of SF, other humanoids such as androids and cyborgs were developed (Roberts 2006: 16-17).

2.1.2. BIONICS & THE BIONIC HUMAN

The term *bionic* is a contraction of the phrase "biological electronics" ("Bionic"). Bionics is a branch of science and technology dealing with electromechanical systems, and with developing devices functioning similarly to and that can replace human body parts, or that can augment the human body ("bionics, *n.*"). Bionics creates electronics mimicking and connecting with the biological human body. Through development of "smart" prostheses, with sensors and processing power, the fields of robotics and bionics intertwine (Perkowitz 2005: 92). The field makes humans partly artificial through connections with prosthetic devices and implants. They create a *bionic convergence* of biology with electronics (Anderson 2003: 536).

From a posthumanist point of view, the human body is the original prosthesis, making the connection of other prosthesis to the body a natural process ongoing from birth (Herbrechter 2013: 42-3). This is a perspective of the human as always having co-evolved naturally alongside the technological. The robot character Andrew in "The Bicentennial Man" reverses the bionic project of connecting humans to technology. Andrew modifies his body to become increasingly organic, and becomes a "robobiologist", studying "the working of the body attached to [the positronic brain]" and the "organic humanoid body" (Asimov 1976: 665-66). He becomes organic, simultaneously to developing prostheses making humans increasingly bionic.

Up until recently, bionic additions have primarily been mechanical parts making small bodily changes, such as pacemakers or hearing aids (Perkowitz 2005: 86, 93-97). Bionic prostheses developed today are to a much larger degree organic. We are moving towards a greater fusion with the machine, through direct connections at neural and brain levels between living organic systems and nonliving ones (86-89). External prostheses are also becoming so natural in appearance that they are nearly indistinguishable from real body parts (4). Add inn a wider perception of prostheses, acknowledging wearable computers and gadgets as prosthetic devices, and the human body is to a very large degree technologized in contemporary society (Schnee 2000).

2.1.3. CYBERNETICS & THE CYBORG

Cybernetics is a scientific field concerned with systems, communication, and feedback. It explores how the living organism can be integrated with electronic or technological devices, through studying communication and control systems in living organisms and machines ("cybernetics, *n.*"). It thereby relates to bionics, in a common aim of integrating the technological with the organic. Norbert Wiener, now nicknamed "the godfather of cybernetics", first introduced the word *cybernetics* in 1947 (Duffy 1984: 33-34). The term derives from the Greek word *kybernetikos*, which translates to "good at steering", connoting with helmsman or controller ("Cybernetics"). In order to be able to steer and control prostheses, communication between the organic and machine is essential (Duffy 1984: 33-34). An integration of the human with the machine, through prostheses developed via cybernetic technologies, is making humans cyborgs.

The cyborg is a hybrid creature, part human and part machine. It simultaneously embodies both the human and the nonhuman (Haraway 1985: 34-35). The term *cyborg* is a contraction of the terms ***cyb****ernetic* and ***org****anism*. It is a cybernetic creature as it connects technology with the organic. By its definition, being both human *and* machine, the cyborg thus blurs the man-machine dichotomy, and problematizes the non-relation of the two ("cyborg *n*."). Within science fiction, it raises an issue of detection, as cyborgs blend in so closely with humans that they are near impossible to identify. The androids in *Do Androids Dream* are prime examples, looking and behaving so much like humans that their machinic aspects are near impossible to spot. The same is true for the New People within *Windup Girl*. In "Satisfaction Guaranteed", Tony is completely humanoid in appearance, and towards the end of "The Bicentennial Man" Andrew reaches full human status.

Just as there are numerous versions of the cyborg depicted in science fiction, real-life technologies are creating a wide variety of human cyborgs. There is no *one* kind of cyborg within either fiction or reality (Gray et al. 1995: 2). Even if not all humans are cyborg to a great extent, we live in a cyborg society where our lives and bodies are intimately interfaced with technology at almost all levels of existence (3). The cyborg is a prominent figure and concept within SF, and exists at the place where the technological intersects directly with the organic, confusing any clear boundaries posited between the organic and the technological.

2.1.4. GENETIC ENGINEERING & GENETIC CHIMERAS

Genetics is the study and manipulation of genes and the genetic code ("Genetics"). Genetic engineering is artificial manipulation, modification, and recombination of DNA. It is the production of new genetic combinations, of value to science, medicine, agriculture, and industry ("Genetic engineering"). Through gene manipulation, genetic engineers can steer mutations and evolution within the human (Slonczewski & Levy 2003: 180). They have the power to transform the species. The bio- or life sciences, are contributing to the production of new life forms in contemporary society, along with robotics, bionics, and cybernetics. They create a different kind of cyborg, hybrid mixes of humans, through altered, added, or removed genetic components. These cyborgs are genetic chimeras (Herbrechter 2013: 26-27).

Though traditional hard science fiction has been concerned with directly technologically related sciences, the hard SF scope has widened to include the biosciences. Plots concerning genetic engineering are now part of the genre. Biological changes within humans and the human species, and tampering with the genome, have become central plot elements (Slonczewski & Levy 2003: 174). Genetic technologies become symbolic of a humanist crisis through suggesting new types of humans (Herbrechter 2013: 27). One new type of human is presented in *Windup Girl*. These are the New People, bioengineered creatures, with alterations in their genome making them different from "regular" humans.

2.2. A DISAPPEARING HUMAN-TECHNOLOGY DISTINCTION

As the cyborg sciences transform the human, the human-technology dichotomy is gradually disappearing. Donna Haraway discusses this fading distinction in her "A Cyborg Manifesto" (1985), where she describes divisions once considered natural to be disappearing, and regards the cyborg figure as negating the organic-inorganic, human-nonhuman binary oppositions (34-36). She opens up for the possibility of embracing a posthumanist species perspective through encountering cyborg figures, as they can help humans learn "from our fusions with animals and machines how not to be Man, the embodiment of Western logos" (52). The cyborg can open a discussion of what the contemporary humans is, a perspective going beyond a traditional humanist perspective placing boundaries between the human and the "other".

In an interview with *Wired* magazine, Haraway highlights previous perspectives on women as a way to emphasize how absolute and "true" divisionary lines prove deficient. It was long considered unchangeable fact that women were naturally weak, submissive, and overemotional; clearly different and divided from men. If this were true, this perception would still be sustained today. As this is not the case, "irrefutable" facts prove changeable, the female and male genders are generally equal (Kunzru 1997: 3). We now know that women are not *naturally* any of the things once held true. Similarly, if we are cyborgs, the division between organic and inorganic is just as flawed, another unchangeable fact proven changeable (3). The distinction between humans and technology thus proves untenable.

In *The Fourth Discontinuity* (1993), professor of history Bruce Mazlish argues that throughout Western intellectual history, humans have overcome three big illusions, which he terms *discontinuities*. He connects them to father of psychoanalysis Sigmund Freud's description of "three great shocks" or blows to human ego and pride (3).The first discontinuity overcome was between humans and the cosmos. Copernicus brought on this *cosmological* shock to the human ego by teaching humans that earth is not at the centre of the universe (3). The second discontinuity surpassed was between humans and animal. Charles Darwin brought on this *biological* shock, as he described humankind's decent from animals and human continuity with animals (3, 104). Freud overcame the third discontinuity between humans and our consciousness. He evoked a *psychological* shock through his theory of the unconscious (3, 108-09). Through overcoming the first three discontinuities, humans were proven a very small part of a very big universe; one of many species, without a privileged place at the top of creation; and not even fully in control of the human mind.

The fourth discontinuity is between humans and machines. Though Mazlish does not give this shock a label, it fits the label of *cyborg* shock. This shock occurs with the realization that we as humans are continuous with both animals *and* our machines. Components of both "others" are part of human identity and nature (1993: 3-8, 11-12). Mazlish considers it typically human to try to know ourselves through defining what we are not: we are *not* animals, we are *not* machines (10-14). We now need to accept that we *are* continuous with the bestial animals and our technologies. The claim of a sharp discontinuity between humans and machines is no longer defendable, no matter the shock to our egos (7). We cannot understand human identity without taking into consideration the machine and animal parts of the species (Bukatman 1993: 20). Human identity is not static. It changes and evolves along with the

development of new technologies. The fourth discontinuity is overcome when human evolution is acknowledged inextricably interwoven with use and development of tools and technologies (Mazlish 1993: 6-7).

Donna Haraway considers the human-animal boundary thoroughly breached by the late 20th century. Nothing convincingly separates the two, neither language, or tool use, nor social behaviour (1985: 36). Dualisms upheld "since Aristotle still ruled" have been cannibalized or *techno-digested* (44). To Haraway, the cyborg appears where the human-animal border is transgressed. The distinction between the animal-human and the machine being the next to overcome (44). Contemporary philosopher Rosi Braidotti describes how the human subject is becoming *techno-human*, merging with its technological environment, and how this merging leads to a fundamental configuration of the notion of self (Goody 2011: 46). Mazlish sees the cyborg as *the* literalization of the inseparability of human and machine (Bukatman 1993: 20). Blurring any clear divisionary lines, the cyborg is an emblem of the breakdown of the fourth discontinuity.

Literary scholar Jill Galvan describes a posthuman collective to be one where humans have realised that there "is no human self … that is not also other, and no … other that does not partake of the self" (1997: 426). This reflects how, in daily practice, as well as in formal discourse within the cyborg sciences, humans are named cyborgs, hybrids, and chimeras. The biological system is becoming biotic, and an ontological separation between machines and humans cannot exist simultaneously with a new knowledge of intertwinement between the technological and organic (Haraway 1985: 54-55). Acknowledging a posthuman species identity implies considering the technological as part of the self, without discontinuity.

The cyborg can represent both a postmodern collective and the individual (Haraway 1985: 44). It thus represents a new conception of the human *subject* and *species*. In the introduction to *The Cyborg Handbook* (1995), the editors emphasize how cyborgs thrive where the fourth discontinuity is dissolving. Cyborg stories are attempts to understand the implications of human/machine co-evolution, and the continuity between humans and the technological (Gray et al.: 4-7). Through this, studying how the cyborg characters breach the perceived boundaries between humans and machines within the SF texts is to study how cyborg technologies lead humans past the fourth discontinuity.

2.2.1. THE DARK-HAIRED GIRL & THE SCHIZOID ANDROID

In literary critic N. Katherine Hayles' *How We Became Posthuman* (1999), she introduces a concept highlighting the duality of cyborg characters, as they are both human and nonhuman. The concept is based on Philip K. Dick's biographical writings, and a *Dark-Haired Girl* type in his fiction, that reflects real women he dated throughout his life. The Dark-Haired Girl within fiction is often multi-faceted. This is because of a developing difference in the girls Dick dated. The first ones were cold, cruel, and unemphatic; characterized by a flattening of affect, a lack of emotional expression. He named them schizoids and androids, hence the term *Schizoid Android.* Later women were warm and supportive, appearing to Dick as human in every way (164). Even if the phrase "dark-haired girl" is one of singularity, as each one is the dark-haired girl, it also identifies the women as a group or a type (165). The dark-haired girl type represents both the technological (schizoid android) and the human (dark-haired girl). This thesis will focus on the human aspect of the Dark-Haired Girl.

For Dick, the Dark-Haired Girl concept is important to determine what the "human" is. This is because the concept deals head-on with the difficulty of defining the human versus the nonhuman, as the Dark-Haired Girl has aspects marking her as both (Hayles 1999: 164). Relationships between Dark-Haired Girls and humans lead to human characters reacting to their "androidism". This leads them to experience "radical instability" in the boundaries defining human society, as they perceive the Dark-Haired Girls equal to humans through developing empathy and affection towards them (162). Dark-Haired Girls affecting humans with androidism is evident when Rick Deckard connects romantically with Rachael Rosen and empathically with Luba Luft, when Claire Belmont falls for her dark-haired *boy* Tony, and when Anderson Lake develops a relationship with Emiko.

Characters who come into close contact with the Dark-Haired Girl type harbour ambivalent attitudes towards them. They both desire intimacy and contact, and fear it (Hayles 1999: 178). This ambivalent attitude seems to mirror contemporary attitudes towards technological developments within cyborg sciences. Humans both desire enhancement and fear how it may change the species. There is both allure in being augmented posthumans and fear in accepting continuity with the technological, letting go of ontological distinctions between the human and nonhuman. Coming into close contact with the Dark-Haired Girl is threatening to human characters, as this contact compromises their identity with a "touch of

androidism". Contact with technologies in contemporary society similarly touch humans with androidism, making us cyborgs.

2.2.2. THE ANDROID AS DOPPELGÄNGER

In his essay "The Android as Doppelgänger" (1997), Joseph Francavilla describes the android in science fiction as a variation of the double or *Doppelgänger* motif. As the android is a type of cyborg, this concept is useful in reference to Asimov's humanoid robots and Bacigalupi's windups, in addition to Dick's androids. Francavilla refers to Sigmund Freud's essay "The Uncanny" (1919) and the concept with the same name. The uncanny is something simultaneously evoking a feeling of being familiar (heimlich) and unfamiliar (unheimlich), much like the cyborg novum is both familiar and strange. Francavilla explains doubles to be manifestations of the uncanny, as they have traditionally reflected the instability of mutually exclusive categories (1997: 4-5). The android is a new kind of double, created by science and technology, and challenges an intellectual certainty of whether it is human or nonhuman (9). The android or cyborg novum is a human made strange, as it is a highly human body closely intertwined with technology. The conception of what a human is proves unstable through depictions of cyborg characters, as a technological double to the organic human.

One major fear evoked by the android double is the threat of displacement of the human. This is a loss of the uniqueness and identity of the human, as the double functions as an "other" self that comes close to replacing the human self (Francavilla 1997: 7). In this thesis the cyborg is considered to represent the posthuman; the "other" threatening to replace the "pure" human species is a posthuman one. The human is mirrored in cyborgs in strange uncanny form, reflecting back fears concerning a loss of humanness through technological and scientific innovations, especially via the cyborg sciences. As such, they symbolize dehumanizing technologies (8). Just as androids infiltrate society in *Do Androids Dream*, so do technologies invade society and human bodies in contemporary society. This blurs the human-technology boundary in both the storyworld and the real world.

Francavilla considers the android to function as a mirror to the reader, eliciting an examination of the human and how we relate to the technological "other". This examination is what will lead to a new definition of what it means to be human (1997: 14). An interesting observation Francavilla makes, in relation to this process of definition, is how the android can

be seen as two halves of an ideal perfect being, the human and machine as halves in unison contributing what the other half lacks, an *android double* (8). The two halves together form the posthuman cyborg body, the human and the technological.

2.3. WE ARE ALL POSTHUMAN CYBORGS

As a self-proclaimed cyborg and technological body, Donna Haraway is a leading thinker on the subject of the love/hate relationship we harbour towards machines (Kunzru 1997: 1). Wired Magazine, reporting on how emerging technologies affect culture and society, describes her as someone who really knows what is happening with human bodies and machines. Through "A Cyborg Manifesto" (1985), Haraway introduced a new conception of the cyborg to the field of science fiction. Expert in modernism Alex Goody names it one of "the most useful figuration of the human-machine interaction that continues to resonate" (Goody 2011: 45). Literature professor and expert on science fiction David Seed names it *the* major theorization of the cyborg, as it breaks down the distinction between humans and machines (Seed 2011: 63). Haraway's conception of the cyborg is a valid voice in a discussion of the human species becoming posthuman.

Haraway considers the cyborg a contemporary merging of humanity and technology, simultaneously animal and machine, providing a new understanding of the human (Goody 2011: 45). When considering ourselves cyborgs we break past the second discontinuity between humans and animals (we are animals) and the fourth discontinuity between humans and machines (we are technological). Haraway claims the cyborg to be our ontology (1985: 35). As ontology is the study of the nature and essence of being, it is a claim that we *are* in essence cyborgs ("ontology, *n.*"). She names humans "chimeras", referring to the hybrid creature of Greek mythology that is part lion, part snake, and part goat (Haraway 1985: 35). Modern chimeras are cyborg humans. If we are all cyborgs, then our world is one of social and bodily realities where people should not fear a joint kinship with animals and machines (38).

Haraway's cyborg is not only relevant to SF. From the onset, she argues the cyborg to be a creature of both social reality and fiction, and that the boundary between science fiction and reality is almost an optical illusion (1985: 34). Fictional cyborg figures are thus likely to

reflect issues in social reality. As a technological symbiosis between humans and technology, the cyborg is a particularly valuable imaginative arena for reflecting on how cyborg sciences are disrupting and revising conventional ideas of the human (Hollinger 2003: 133). It represents "the hybrid nature of contemporary existence" (Seed 2011: 63). Through the cyborg, technology is shown as part of human subjectivity; we are all in a way cyborgs.

Gray et al. describe how we all live in a "cyborg society" where machines are "intimately interfaced with humans on almost every level of existence" (1995: 3). Cyborg anthropologist Amber Case similarly describes how mobile devices have become "stitched into the fabric of our everyday lives" (2012). As we live in a cyborg society, several theorists argue a need to accept a posthuman cyborg identity. This acceptance regards the human species as irreversibly having become something new, closely interlinked with the technological. Gray et al. encourage acceptance of this new species identity (1995: 2, 13). Why? Because they believe acceptance will provide readers with a "cyborgian point of view". This view implies a greater ability to deal with and confront the changes that increasing cyborgization has on the human and human society (7).

Haraway, similarly to Gray et al., encourages embracing the breakdown of human-machine distinctions (1985: 52). The machine is not something to be either feared or worshipped. The machine is us, an aspect of our embodiment. *We are them*, and they are no threat if we accept our cyborg aspects (56-57). The consequence of taking the imagery of the cyborg seriously is an acceptance of humans becoming posthuman cyborgs (56). Haraway explains how the "ubiquity [omnipresence] and invisibility of cyborgs is precisely why these sunshine-belt machines are so deadly" (37). If cyborg technologies are so interwoven with human bodies and lives that we become unaware of them, we are unaware of how they affect us, and this blocks a holistic view of the human. We need to get "up to speed" on the complex realities of human-technology interconnections, and Haraway considers cyborg imagery as a path out of the maze of dualisms. The cyborg can help us consider which machines or technologies to be developed or destroyed (57). Which technologies affect the species positively or negatively.

A cyborg is a cybernetic creature, and cybernetic translates to "good a steering". We are responsible for our machines and ourselves as cyborgs, and need to accept this to be able to steer and control our future, making and unmaking decisions in regards to cyborg technologies. As a figure of both fiction and social reality, the cyborg can represent possible

historical transformations to steer away from or towards (Haraway 1985: 35). If Haraway's myth of transgressed boundaries is one of "potent fusions and dangerous possibilities", the cyborg myth can aid an understanding of a holistic picture of how fusion with cyborg technologies can affect the human (37). We need to see this full picture of the species, as "[s]ingle vision produces worse illusions than double vision or many-headed monsters" (38). We cannot accept a single vision of good or bad, human or technology. We need a nuanced vision of the humans *as* technological.

Mazlish argues that the fear and distrust humans have towards machines rests on a refusal to accept human nature as continuous with its tools. Technologies are artificial extensions of human power that aid us in interrelating with our environment (1993: 4-5, 59). He gives us two reasons for accepting and overcoming the fourth discontinuity. First, it will put humans in a better position to consciously decide how to deal with our machines and an increasingly mechanical civilization, as we see the bigger picture of society more clearly. Second, transcending the discontinuity is essential for coming harmoniously to terms with our industrialized world, as we accept it as part of human identity (5-7). If we continue to refuse an acceptance of the discontinuity between humans and machines we will either completely reject our "Frankenstein monsters" or go on with a "blind belief in [the machines'] 'superhuman virtues'" with an unblinking faith that they can solve all our problems (7). Neither blind fear nor faith will lead to an ideal future, as a holistic view of our modern selves is needed; *we are they*, our uncanny and monstrous machines are part of the posthuman.

Alvin Toffler, writing in 1980, was frustrated that people refused to realize the scale of change affecting human society. He saw "blind men everywhere" trying to suppress it (9). Toffler thought it would be costly if humans did not change along with their society, accepting change as an integral part of life (3-4). Perhaps science fiction can help Toffler's "blind men" see the scale of change upon the human species, a changing human identity. Science fiction writer and editor John W. Campbell describes science fiction as evoking new perspectives within the reader:

> The peculiar characteristic of fiction is that it cannot be argued with. It does not argue with you; it exists apart from the real world, it says, and cannot affect you except by your own choice. But if you choose to be affected by it, you cannot argue with the author; you are forced to consider *why* it affects you.
>
> (Campbell 1979: 13)

If we as readers are affected by encounters with cyborg characters, cyborg nova causing cognitive estrangement, we need to consider why. Because the cyborgs are fictional, they encourage reflection in the reader in a way that presented facts would not.

2.4. CO-EVOLUTION

Science fiction texts have recurrently depicted fears of cyborg technologies leading to advanced humanoids superseding, replacing, or revolting against humans (Seed 2011: 47, 59-60). Some contemporary theorists are now fearing a different kind of scenario for the future, as new cyborg technologies are simultaneously felt to enhance and strengthen and to threaten degeneration of the species. *Techno-anxieties* emerged with the Industrial Revolution, and are still with us today (Bukatman 1993: 3). There exists simultaneous dream and nightmare scenarios regarding humans developing cyborg technologies that create qualitatively different kinds of beings, a new race of humans that is physically and mentally augmented (Perkowitz 2005: 12). One fear of a cyborg society is a future where rich, techno-savvy technocrats, "[p]artially-mechanized, permanently online", have a monopoly on access to and development of cyborg technologies, holding an edge over the general populace (Schnee 2000). A future dystopia could be a technocracy where human value is displaced by technological power.

One techno-anxiety is of a future human race fragmented into genetically rich and genetically poor; biologically natural and bio-mechanically altered; genetic "haves" and "have-nots" (Jones 2003: 168; Slonczewski & Levy 2003: 180). This is one of the biggest fears within posthumanism; whether the next step in human evolution will create injustice, discrimination and repression of "pure humans" or low-grade cyborgs (Herbrechter 2013: 28). This is a fear of a hierarchical society, where modifications and enhancements may not be freely available to everyone. Different value groups among humankind, based on technological enhancements, could become reality. In Dick's *Do Androids Dream*, this scenario is to some degree depicted through animal care. In his storyworld, owning an organic animal trumps owning an electric *ersatz* animal, and certain species of animals place their owners higher or lower in the social hierarchy. A value society is one fear of continued development within the cyborg sciences, where different from Dick's narrative, the technological is "worth" more than the organic.

In response to a feared technocratic future, several theorists argue that co-evolution can mean progress if decisions regarding cyborg technologies are made conscientiously. To them, co-evolution means progress for the human species, a positivist view of enhancing the human, where emphasis is put upon how co-evolution is nothing new, that it has always been an integral part of the human species. As early as 1865 novelist Samuel Butler, in "The Mechanical Creation", claimed humans to be so dependent on machines that they could not live without them. He saw this dependency as something that would last, a mutual dependence where humans and machines would coexist "serviceable" to each other (Mazlish 1993: 151). Herbrechter argues that co-evolution between the human and the technological can be argued to always have been a factor for human progress; that there is no, and never truly has been, a humanity without technics and an ontological involvement between humans and technology (2013: 20). The difference presented by theoreticians now is the level of intertwinement between the organic and the technological. The cyborg sciences do not simply create tools exterior to the human; they change the species through making the human body partly technological, cyborg.

Perkowitz is also among those equalling co-evolution with progress, and goes as far as claiming the furthest reach and hope of cyborg technologies to be the creation of a kind of companion race (2005: 12). Case describes technologies as "birthed and launched" partners, co-existing with the human in a cyborg society (2013: 8). Cyborg anthropology presents co-evolution of the human and the machine as enhancing human agency, improving the species through various technological prostheses on or inside the body (8). Isaac Asimov argues that continued co-evolution of humans and machines is an ideal solution for humankind, as humans and machines through cooperation enable each other to do things that neither could alone (1983: 69-70). Whatever the future predictions, they all agree that cooperation and intertwinement between the human and technological is desirable for humankind's future.

The big difference in tool use now and in previous centuries is that we incorporate them intimately into and onto our bodies. Contemporary philosopher Rosi Braidotti describes a world where it is impossible to distinguish human bodies from their "technologically mediated extensions" (Goody 2011: 46). She considers the "link between the flesh and the machine" to be symbiotic and best described as a bond of mutual dependence (46). Case agrees that technologies so deeply embody our everyday lives that it is hard to step back and consider how humans are affected and changing (2013: 9). There is no longer just a

partnership between human and machine; there is a *symbiosis* (Gray et al. 1995: 4). As a symbiosis is a relationship of mutual benefit (Anderson 2003: 537), this is a positive perspective on a human species co-evolving alongside technologies as modern cyborg subjects.

Asimov sees the human as a separate species from the machine, focusing on the computer and artificial intelligence, on machines becoming humanlike rather than the human becoming technological. He emphasizes how it is impossible to manufacture machines that are intelligent in the same way humans are. Our computer "friends" as a kind of co-species will be advanced and intelligent, but never identically to humans (1983: 69-70). Artificial intelligence is fundamentally different from human intelligence, so a future of co-evolution is one where machines "will always be strictly [machines] and we will always be strictly humans" (59-66). Machines surpass humans intelligently in some areas, such as mathematics and problem solving, yet humans transcend the machine in tasks requiring insight, imagination, and creativity (54-66). Asimov's cyborg future is one where humans and computers fulfil the tasks they are best suited for, cooperating and together advancing further than either could alone.

Donna Haraway describes the cyborg future as one with a heightened sense of connection to our tools, and a heightened conscientiousness of *how* we are connected. It is a future where machines are "friendly selves" functioning as prosthetic devices and intimate parts of us (1985: 55). This compliments Asimov's perspective, as the future will probably be one where the technological is part of the human species, yet where machines still exist as a kind of co-species separate to the human. Haraway's cyborg future is a world where complex human-machine hybrids relegate concepts like natural or artificial to the past (Kunzru 1997: 1). In accepting and taking responsibility for both machines and cyborgized bodies, humans refuse anti-science attitudes and demonization of technology, and embrace communication between all parts our being; the animal, the human, and the machine (Haraway 1985: 57). Accepting a past and future co-evolution with technology, both on and within the body and as a co-species in society, is argued positive for approaching a holistic view of humankind and human progress.

2.5. PHILIP K. DICK

2.5.1. JONATHAN LETHEM ABOUT PHILIP K. DICK

Jonathan Lethem edited Philip K. Dick's science fiction texts for a Library of America edition, an edition that serves as acknowledgement for Dick's work as serious literature, deserving to be part of the literary canon ("Lethem About Dick": 5). In an interview with the Library of America e-newsletter, Lethem names the 1960s as *the* decade best representing Dick's work (3). This makes *Do Androids Dream*, published in 1968, one of his most central SF texts.

Even if Dick was not interested in being a prolific writer, many of the comments he made through his fiction about society in the 50s and 60s can be read as quite accurate predictions of the future ("Lethem About Dick": 6). Though Dick's texts are not contemporary, Lethem still finds them "utterly relevant and fresh". He sees the world as now having caught up with a lot of Dick's material, images, and metaphors. These have become commonplace parts of our vocabulary and culture (5). In *Do Androids Dream*, Dick posits a world where androids are almost impossible to distinguish from humans. This seem to reflect contemporary existence, where technologies have become part of species identity, and trying to separate the organic from the inorganic proves challenging.

Lethem describes Dick's writing as dealing directly with "the undertow of terror and the irrational in contemporary technological society" ("Lethem About Dick": 1). He challenges a purely positivistic view of technological advancement, exploring how a technocratic age affects our experience of ordinary life (1). As we break past an irrational fourth discontinuity, the undertow of terror connects with an acceptance of a posthuman identity, and an acceptance that the human is not distinct from its surroundings; neither nature nor technology. Lethem describes the predicaments of Dick's characters as "overwhelmingly terrifying and important" (2), and so studying the plight of Rick Deckard and the androids he is hunting can give insight into his vision of an increasingly technocratic cyborg society. It can make readers aware of how the novel comments on what should be avoided or accepted, to avoid the dystopian future Dick posits. Where did humankind go wrong in the storyworld?

2.5.2. FREDRIC JAMESON – ARCHAEOLOGIES OF THE FUTURE

Literary critic Fredric Jameson names Philip K. Dick the "Shakespeare of Science Fiction", as Dick through thirty novels in as many years became as familiar to science fiction enthusiasts, as William Shakespeare is to English departments today (2007: 345). Jameson describes Dick's fiction as dealing with the historical present, through turning it into the past of a postulated future (345). Through doing this, his fiction awakens a kind of "nostalgia for the present" in the reader, a mode for thinking about the present through interaction with his narratives (380). This produces a shift in tense perspective within the reader, so that the present can be grasped as history, and thereby experienced from a new perspective. The human species at present can thus be perceived from a distance, and interaction with cyborg nova can challenge and change this perception.

Androids within Dick's novel are not supposed to have emphatic ability, yet this is refuted in the novel, through a proven community and emotional attachment between the rebel androids, and the despair they show when their fellows are retired by Rick Deckard (Jameson 2007: 373). This is a debate within the novel of what Jameson calls "the empathy question", an attempt to distinguish androids from humans, which ultimately fails (372). This empathy question will be especially explored in reference to the Voigt-Kampff empathy scale in Dick's novel.

Jameson suggests four semic complexes where certain aspects within Dick's authorship are interconnected. One seme is labelled the "Individual Consciousness" and encompasses: androids, empathy, technology, enemy, future (2007: 379). This is an interesting grouping, as the unit regarding the human is connected to elements that challenge the human-technology dichotomy within *Do Androids Dream*: androids are technological enemies in humankind's future, and through displaying emphatic qualities are proven indistinguishable parts of the human race. Jameson sees Dick's fiction to have "the merit of dislodging or displacing stubbornly gripped and traditional false problems" (363). One false problem dislodged is the human as separate from the nonhuman.

2.5.3. N. KATHERINE HAYLES – HOW WE BECAME POSTHUMAN

In *How We Became Posthuman* (1999), Hayles explores the cultural and technological construction of the cyborg, highlighting how cybernetics along with the cyborg figure dismantles a traditional humanist subject. This shakes the very core of what we as humans perceive ourselves to be. In the chapter "Turning Reality Inside Out and Right Side out: Boundary Work in the Mid-Sixties Novels of Philip K. Dick", Hayles focuses on how Dick's novel depicts the dismantlement of the humanist subject, through exploring a progressively deeper penetration of cybernetic technologies into the world. This is done through cyborg figures; organic androids that so closely resemble humans that they are near impossible to detect (160). Embracing the android figure in the storyworld potently transfers to accepting a cyborg identity in the twenty-first century, cultural appropriation of a figure emblematic of the modern posthuman body.

Dick explores the psychological complexities of trying to decide who or what qualifies as an "authentic" human (Hayles 1999: 162). This is an issue reflected not only in *Do Androids Dream*, but also in Asimov's "The Bicentennial Man" and Bacigalupi's *Windup Girl*. Within Dick's storyworld, authenticity is not dependent on physiological criteria; whether born or manufactured, made of electronic parts or flesh and blood. Perception and emphatic response are the determining factors (163). The recurrent question of who deserves the titles of human or android is especially exemplified through android characters seeming more human than certain cold-hearted humans (161). Unemphatic humans thus problematize the human label, as correct emphatic response fails to identify all organic humans. When androids show empathy towards each other or towards human characters, the determining empathy factor seems truly ineffectual.

Through interactions between human and nonhuman characters, Hayles considers Dick to explore the political dimensions connected to android-human interaction (1999: 161). This is done through a red-thread theme in the novel concerning android versus human rights. Hayles describes the androids' struggle as one about reaching "autopoietic [self-maintaining]" status. This is denied them as they spend their lives as slaves (161). This thematic represents a fear of accepting the "other" as part of the human species, which will be explored in regards to humankind within all three author's narratives.

2.5.4. JILL GALVAN – ENTERING THE POSTHUMAN COLLECTIVE

In the article "Entering the Posthuman Collective in Philip K. Dick's *Do Androids Dream of Electric Sheep?*", literary scholar Jill Galvan highlights how Dick's storyworld is one "progressively peopled – both literally and figuratively – by technological devices" (1997: 413). So technologized is the society portrayed, that even the state religion of Mercerism is named after an industrial method of treating fabrics (Seed 2011: 61). Humanoid technological devices, the androids, increasingly people Dick's storyworld, just as cyborg characters people Asimov and Bacigalupi's narratives. The societies all function to comment on contemporary society, where more and more of human life and the human body is "peopled" by technology.

The androids in Dick's novel inaugurate a crisis of subjectivity for the humans in regards to species identity, raising questions of what it means to be human in an era where "human conjoins with machine, biology with technology, nature with manufacture" (Galvan 1997: 429). Commenting on contemporary society, this reflects a crisis of defining the modern human subject. In *Do Androids Dream*, Rick Deckard goes through a gradual acceptance of the changing parameters of the human and the machine as he grows to respect androids. He ultimately fails to police the boundaries of the "traditional self-other dyad", where the human is placed over and in opposition to the machine (414). The other is proven part of the self, technology as part of the posthuman.

Galvan considers the narrative in *Do Androids Dream* to envision "a community of the *post*human, in which human and machine commiserate [sympathize] and comaterialize [coexist], vitally shaping one another's existence" (1997: 414). This is a community where the human species is changing, as society becomes increasingly technological, along with the human body. For Galvan, to deny that technology has a thoroughly pervasive effect on humans, changing the species into something different, is to deny reality. Facing total reality in the novel is to accept this pervasiveness. Contemporary society is one where "machines have not only infiltrated the human collective, but have also become an integral part of the establishment – an ineradicable element of human day-to-day existence" (418). In order to come to terms with reality, humans need to accept a cyborg posthuman identity, to be able to understand the effect the extensive encroachment technology has on our understanding of life (414). We are a posthuman cyborg collective in a cyborg society.

2.6. ISAAC ASIMOV

2.6.1. ASIMOV – OUR FUTURE IN THE COSMOS

Prior to Asimov's robot stories, robots in science fiction were generally depicted as dangerous menaces (Asimov: 1983: 60). Opposed to this, Asimov describes his view on robots as generally positivistic. Tired of the "menace" plot, he decided to present robots as *machines*; doing the work they were designed for, with built-in safeguards making the robots unable to stray from their programming (60-61). He portrays robots as safe, rather than disastrous outcomes of scientific hubris (60). Still, Asimov plays with highly humanoid robot figures and continually toys with the restrictions put upon his robots, proving the constraints malleable and his robots potentially dangerous.

In "Runaround" (1942), Asimov introduces the restraints programmed into every robot in his storyworld. These are the *Three Laws of Robotics*, a built-in code of ethics:

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 Laws

(Asimov 1942: 269-270)

The three laws state that a robot should always put the life of a human before its own, and that it must obey any command given to it by a human. The laws thus assure the powerlessness of robots in relation to humans, and their low worth. The third law, concerning a robots self-protection, even states that the first and second laws are of higher importance. A robot should sacrifice itself without flinching if a human could otherwise come to harm. Implicitly, a robot should even self-destruct if commanded to do so.

In his speech, Asimov claims that humans are not *really* afraid of computers, because computerization has been allowed to take over society to such a high degree. In fact, he considers society in 1983 so dependent on computers that if they disappeared industry and society would collapse (1983: 71). Today, thirty years after this lecture, society and the

human has become even more intertwined and interconnected with the technological. A multitude of gadgets and prostheses enhance human bodies and minds. Transferred to contemporary society, we are not *really* afraid of technology, but rather its implications on our lives and human identity.

2.6.2. BRUCE MAZLISH – ASIMOV & THE FOURTH DISCONTINUITY

In *The Fourth Discontinuity* (1993), Bruce Mazlish describes Asimov as an informed author, writing at a time when the presence of robots is starting to become real (53). This may be why Asimov chooses a different perspective than previous SF writers, favouring a more optimistic vision regarding robots as a co-species to humankind. Mazlish highlights Asimov's fiction as relevant in overcoming the discontinuity between humans and machines. He is interested in how robots and bionic technologies affect our conception of the human, and claims Asimov's stories relevant to anyone "probing our contemporary feelings toward robots", as they explore various applications and possible violations of the Three Laws (53-54). The analysis of Asimov's short stories will consider how the Three Laws function or prove dysfunctional within his narratives.

Asimov considers robots a "cleaner better breed" than humans, decent and logical creatures that will bring prosperity to humankind (Mazlish 1993: 55). They are tools that can help humanity progress faster, by taking over time-consuming or laborious tasks, leaving humans to fulfil more creative work (56). Mazlish explains the various robots depicted in Asimov's short stories as allowing readers to probe the intellectual dimensions of a predicted robotic age (37). "Intellectual dimensions" is a broad terms, but since Mazlish is the one employing it, it is likely a reference to how the human sense of self is challenged through increasing technology-human intermixing, and modified human bodies.

2.6.3. PAT D. HUTCHEON – THE LEGACY OF ISAAC ASIMOV

Sociologist Pat D. Hutcheon considers Asimov to have contributed majorly to solving one of the biggest issues now facing humankind: the lack of scientific approach and focus when striving to understand the social realm (1993: 3). For society to evolve in a positive direction there is a need to consider the ways technologies affect society, and through this the human. This provides a meta-perspective of science, technology, and humankind. Asimov was an incredibly prolific writer, who published over four hundred books and articles, many of them nonfiction. He aimed to organise and simplify new knowledge within various scientific fields, in order to present it in terms fathomable to the public. In addition, he strived to identify connections among these different fields to see the implications new developments may have for the future of humankind (3). He wanted the public to understand the sciences affecting their lives, and to highlight technological developments to work towards or against.

When faced with new knowledge, Asimov considers humankind to have three options: we can abandon it, endure it, or advance it. To abandon new knowledge seems improbable to him, as no society has ever willingly given up technological advances improving life quality. He warns against the second option of endurance, as it makes us passive, helpless victims of change. It is to advance that has been key for all societies in the past. To keep co-evolving alongside new knowledge and new technologies (Hutcheon 1993: 4). Asimov sees tool-use as intimately connected to human evolution. The evolution of civilisation is parallel to the development of technologies; starting with humans discovering fire, stretching all the way to the intelligent tool designers humans are today (4). Technology has always been part of humankind, and is increasingly so today, in a technologically saturated contemporary society.

Not only did Asimov aim to educate the public through nonfiction. His science fiction stories also serve a didactic purpose, regarding the evolution of human culture in relation to science (Hutcheon 1993: 3). One goal was to raise awareness and warn about what current practices in scientific fields may mean if continued into the future. Another goal, was to provide young readers with visions of future possibilities, to establish intelligent doubt and scientific creativity (3). Asimov aimed to prepare humans to think ahead in educated and intelligent ways, the practical application of scientific knowledge employed to improve the human condition.

2.6.4. EARL G. INGERSOLL – A CONVERSATION WITH ISAAC ASIMOV

In an interview in the academic journal *Science Fiction Studies (SFS)*, Isaac Asimov discusses his authorship and views on science fiction literature. Though Asimov wrote on a range of different topics, from mathematics to history studies, and guides on the Bible and Shakespeare, literary scholar Earl G. Ingersoll considers Asimov's works of science fiction to have made his name a "household term" (1987: 1). Asimov presents his own definition of the genre in the interview, as the branch of literature that most directly deals with how humans respond to changes related to science and technology. He sees the relevance of the genre stemming in human society growing increasingly dependent on machines, and in the great likelihood of a continued trend of increasing technological saturation (2). As it is likely that his personal definition of SF is reflected in his own texts, his narratives are commenting on how humans respond to a world progressively technological.

The reason Asimov presents for writing robot stories is to show readers that there is no need to have a "Frankenstein complex" in regards to technology. He alludes to Mary Shelley's *Frankenstein* (1818), in which Victor Frankenstein's creature revolts against its creator (Ingersoll 1987: 5). In Asimov's fiction, this is an unlikely scenario as humans are protected by the Three Laws of Robotics, to prevent the chance of insurgence. In contemporary society, Asimov's sees as little grounds for fear if humans adopt a long-term perspective regarding technological advances. Technologies are tools serving humankind. They are not dangerous if humans look ahead and steer their development.

Asimov tends to agree with Alvin Toffler, that even if humans are upset by major change, it will occur whether we like it or not (Ingersoll 1987: 12). He considers it an unfortunate tendency in society that people believe things will or should not change. To Asimov, science fiction "teaches that there are numerous changes and that mankind by its actions can pick and choose among them" (14).He considers the "SF attitude" essential if humans hope to survive an increasingly technological society (12). Embracing this attitude means looking change "boldly in the face" and trying to figure out what should be done to prevent undesirable and foreground desirable consequences of technological and scientific advances (13). Through this attitude, the cyborg sciences will not produce Frankenstein monsters if conscientious and forward-thinking decisions are made regarding their influence on the human.

2.7. PAOLO BACIGALUPI

2.7.1. INTERVIEWS WITH THE AUTHOR

Paolo Bacigalupi is a contemporary science fiction writer.[4] American novelist Lev Grossman refers to Bacigalupi as "one of the most exciting SF writers working right now", especially praising *Windup Girl* (2010). SF writer Colin Harvey goes as far as naming Bacigalupi "the Voice of the Zeitgeist" (2011). As zeitgeist is German for "spirit or genius which marks the thought or feeling of a period or age", Bacigalupi's voice is worth listening to in order to understand which questions are relevant to discuss in an increasingly technological world ("Zeitgeist, *n.*").

Bacigalupi considers his writing to fit well within the SF genre, as he takes ideas and events from the present and extrapolates them into the future, asking "If this goes on, what does the world look like?" (Engberg 2011). He is actively engaged with the real world in his fiction, his texts a medium for looking at the world of the future and asking which directions we should and should not take moving forwards (Paskus 39: 2009). He connects with classic, hard science fiction. Fiction that raises questions of who we are as a species, where we are going, and what society will look like in the future (Kazi 2010). As a contemporary writer, Bacigalupi is projecting from a knowledge base of our most recent scientific and technological advances. Harvey describes both the science and society presented in *Windup Girl* as plausible to the reader (2011). This is a future depicting relevant warnings in regards to the future of humankind, especially in connection to continued technological co-evolution.

In an interview with *Lightspeed*, an online fantasy and science fiction magazine, Bacigalupi explains his focus to be on an *idea* when developing a story, rather than a main character (Yant 2011). This resonates with Philip K. Dick's claim that an idea, not a character, should be the true protagonist of an SF story (Dick 1981: 100). The idea backing *Windup Girl* is to warn against what may happen in relation to an energy crisis and global warming, in addition to consequences of genetically modifying food and nature, and even the

[4] Much critical material is yet to be published in relation to Bacigalupi and his novel, so this literature review will be based both on interviews with the author, and scholarly criticism of his work.

human genome (Yant 2011). Bacigalupi hints at why we are struggling with questions regarding the human species, through the New People in his novel.

Bacigalupi fears for the future. He is "not particularly optimistic about humanity's long-term prospects" ("Facing the Tiger"). He sees a clear tendency of choosing short-term over long-term solutions, not properly considering what these choices imply for the future. He describes a recurring trend of humans not tending to focus on the bigger picture. This is why the consequences of our contemporary inventions need to be extrapolated into the future, through science fiction ("Facing the Tiger"). Bacigalupi's fiction thus attempts to show readers the bigger picture, to raise awareness around the ideas advocated in his texts. SF is a tool for Bacigalupi, an invaluable genre to open readers eyes through spinning out trend lines from contemporary society, because people struggle to connect with the consequences of their here-and-now actions (Paskus 2009: 39).

In an interview with *Locus Magazine,* Bacigalupi gives an insightful quote in regards to the importance he sees in the science fiction genre:

> 'We aren't equipped to care about things that are remote, abstract and complex; we're built to worry about tigers. And now we've got this huge, complex society that creates really big tigers that you can't see or hear or feel. They're going to get us eventually, but it's going to be our children who get it. My *son* is going to face the tiger.'
>
> ("Facing the Tiger")

Bacigalupi highlights his claim of humans struggling to connect with consequence. As negative consequences are abstracts waiting to become concrete in a technologically saturated society, it is near impossible to see all the "tigers" that may turn out dangerous to humankind. If we do not face these tigers, grasp the bigger picture of how the human is changing along with new technologies, Bacigalupi considers future generations to be in danger.

In an interview with *The Progressive,* Bacigalupi warns that even if technology can solve many of humankind's problems, we may not choose the right problems to solve (Paskus 2009: 39). Facing the tigers through SF may make readers aware of the right problems to deal with. In *Windup Girl*, Bacigalupi depicts "a society that has overshot itself, and collapsed backward", especially in regards to energy crisis and genetic engineering (Grossman 2010). The uncertainty brought along with genetically modified foods and bodies is a major theme (Yant 2011). This is a dystopian depiction of the world where change is resisted and everyone

is afraid to face the tigers of plague, because the solution for humankind is to become immune, posthuman New People.

2.7.3. SCHOLARS IN THE OXFORD HANDBOOK OF SCIENCE FICTION

In *The Oxford Handbook of Science Fiction* (2014), a range of literary scholars contribute relevant comments on Bacigalupi's work, regarding his purpose of writing science fiction and the themes of his novel. Brooks Landon explains Bacigalupi as interested in the importance of "extending" science through extrapolation. This extension should not only be technological, but also portray the affective responses to these more "extreme" technologies (2014: 32). Essential for Bacigalupi is that the futures presented connect with contemporary society and the questions that various scientific advances raise; extrapolated sciences are only interesting to him if they can function as comments on current issues (32).

Veronica Hollinger names Bacigalupi among the SF authors that are "particularly attuned to the technocultural zeitgeist". Like Harvey, she considers Bacigalupi an especially relevant voice in regards to contemporary questions raised in relation to an increasingly technological environment (2014: 148). Hollinger describes *Windup Girl* as a fictional work immersing the reader in experiences relevant to contemporary society, in order for readers to recognize patterns connecting fiction to Bacigalupi's storyworld. She especially points towards his vision of a future global technoculture as a major theme, through portraying a world where Calorie Companies, through controlling food supply, wield major international power (148). As such, the novel warns against a pattern of increased corporate power in contemporary society.

Similar to Landon's description of Bacigalupi's texts, Sherryl Vint explains *Windup Girl*'s focus as both scientific and social (2014: 313). The novel is a social critique in regards to a "technoscientific" colonization of the world, like Hollinger suggests, by big biotech corporations. It is also scientific critique of the profit-making focus of these corporations, leading to short-term perspectives and decisions made regarding the biosciences (312). Through presenting a storyworld where big corporations make decisions ramifying the entire world, readers are led to consider the need for a long-term perspective, and how the voice of the public should be added to decisions regarding sciences that can affect the entire world.

According to Vint, Bacigalupi's double focus on science and society serves a second purpose in his novel. It reflects a breakdown between "a false regime of ontological purification", where the human and nonhuman are considered entirely distinct ontological categories (2014: 313). Technology is part of culture and nature, and cannot be considered separate from it. In order to understand and respond to reality, acceptance of technology as influencing and shaping human lives is necessary; human society is a hybrid of the human and nonhuman (313). This perspective marks Bacigalupi's novel as anti-essentialist, presenting a posthumanist perspective on humankind. As the scholars agree that Bacigalupi comments on contemporary society through his fiction, he is making remarks regarding a contemporary situation where humans cannot be seen separate from their technologies.

2.7.2. MICHAEL R. PAGE – WHERE DO WE GO FROM HERE?

In literary scholar Michael Page's book "The Literary Imagination from Erasmus Darwin to H.G. Wells: Science, Evolution, and Ecology" (2012), he describes SF texts as visionary and forward-looking, providing readers with new perspectives that can aid the survival of the species, through depicting possible future scenarios (196-97). Paolo Bacigalupi is especially highlighted as the "genre's hottest young writer" (199). In regards to themes, Page describes *Windup Girl* to be about runaway biofood technologies, global warming, and bioengineered humans as servants to the human race (202). Through encountering these themes in fictional futures, readers adopt new perspectives in regards to "what if" scenarios concerning related technological and scientific trends.

Bacigalupi's future is "not a pleasant future", and as such underlines the importance of a literary encounter with science and technology in relation to evolution and ecology (Page 2012: 202). Through his harsh vision of the future, he presents readers with hard questions humankind will have to face in the near future, regarding nature and the human. By following a call to "enlist the imagination under the banner of science", starting thought-processes about the present through an extrapolated future, Bacigalupi's dark visions aid readers to work towards a better future, or at least to make readers better equipped to accept "the next chapter in the evolutionary saga" (202). As Page considers Bacigalupi's genetically engineered New People one of the most central themes of the novel, his SF may make readers better equipped to deal with the next evolutionary stage for the human species.

3.0. A DISSOLVING HUMAN-TECHNOLOGY DICHOTOMY

Science fiction literature can function as a space of accommodation, helping readers deal with a new mode of being: the posthuman. The near impossibility within the selected SF narratives to distinguish humans from cyborgs, and the cyborg characters' uncanny resemblance to humans, effectively portrays a dissolving human-technology dichotomy. The SF texts are through this about human identity, and the problem of defining something purely and essentially human in societies where the human is in close contact with the technological. The texts are about blurred boundaries of human identity in contemporary society, as we can no longer claim *not* to be cyborgs, when cyborg technologies are intimate parts of the human species.

The cyborg figure as a cybernetic organism represents both the organic (human) and the technological (nonhuman). It serves as a novum through this double representation: it is familiar due to its human components, and estranging through its technological aspects. It is a symbiosis of human and machine, representing the close interlinking of humans and technology. Just as the cyborg body consists of intermixing organic and inorganic elements, so does the posthuman. Detecting the posthuman cyborgs becomes essential to the "pure" humans in the storyworlds, because if nothing meaningfully separates the two species, the cyborg must be accepted as a type of human.

What marks a "pure" human identity is constantly in question in the dystopian society presented in *Do Androids Dream*. In the aftermath of nuclear World War Terminus, the population is constantly at risk for genetic and mental deterioration due to radiation poisoning. The very air humans breathe put them at risk of becoming "specials", at risk of becoming nonhuman (Dick 1968: 438).When protagonist Rick Deckard leaves for work, the "mourning air, spill[s] over with radioactive motes". By staying on Earth, instead of immigrating to the space colonies, humans cannot be certain if they are *still* human:

> Loitering on Earth potentially meant finding oneself abruptly classed as biologically unacceptable, a menace to the pristine heredity of the race. Once pegged a special, a citizen, even if accepting sterilization, dropped out of history. He ceased, in effect, to be part of mankind.
>
> (Dick 1968: 445)

New specials are continuously coming into existence, "created out of regulars by the omnipresent dust" (439). There is a constant uncertainty in regards to human identity, as any human, at any time, risks failing tests for full humanity. If there is a pure human "essence", it can easily be lost.

The one trait that distinguishes humans from androids in *Do Androids Dream* is the emotional capacity for empathy. Android officer Garland names it "a specific talent … humans possess" (Dick 1968: 523). Taking care of animals is a societal norm, as this is a direct way to prove emphatic ability and true humanity (439). Those unable to afford a genuine animal, buy electric ones. Rick considers how saying "'Is your sheep genuine?' would be a worse breach of manners than to inquire whether a citizen's teeth, hair, or internal organs would test out authentic" (438). Android bodies are "organic", so the naturalness of a human body cannot function to determine authenticity (444). Cyborg technologies invading the body do not determine humanity, so empathy must serve as the divisive factor.

Owning a "fraud", like Rick's electric sheep, leads to insecurity. He lacks one of the essential reassurances of his own humanity, as his capacity for emphatic connection cannot be regularly reaffirmed through animal care. When Rick reveals the inauthenticity of his sheep to his neighbour, the man sympathetically agrees not to tell anyone, as he knows "how people are about not taking care of an animal; they consider it immoral and anti-emphatic" (Dick 1968: 442). To be fully part of the "authentic" human community, he needs to take care of an authentic animal. Rick's quest to hunt down the runaway androids and earn bounty money is a quest to buy an authentic animal, and through this reaffirm his humanity.

Bounty hunter Phil Resch challenges Rick's "solution" of buying an authentic animals. Resch explains that he must surely be human because he cares for an animal: "I love that squirrel" (Dick 1968: 526). This is a problem because Rick suspects Phil to be an android. If he *is* android and cares for an authentic animal, Rick's own assurance of humanness through animal care disappears. The whole basis of the storyworld religion of Mercerism would also collapse, as care for animals is the supporting pillar of this faith (440-41). Empathic quality as a mark of humanity is thus precarious within the novel, and will be proven increasingly so as Rick comes into close contact with the androids.

In Asimov's storyworld, the ultimate factor distinguishing humans from robots is presented in "The Bicentennial Man". Paul Charney explains to US Robots what he considers to determine identity in Andrew the robot:

> 'The seat of Andrew's personality is his positronic brain and it is the one part that cannot be replaced without creating a new robot. The positronic brain, therefore, is Andrew the owner. Every other part of the body can be replaced without affecting the robot's personality, and those other parts are the brain's possessions …"
>
> (Asimov 1976: 661-62)

The challenge for Andrew in his quest to go from robot to fully human is that the brain needs to be organic to have a *human* identity, and for him to be considered a true part of the human community. The brain is "the organ which the World Court has used as a criterion for humanity" (677). The distinguishing component for being human versus humanoid is having an authentic organic cellular brain, rather than a manmade one.

In *Windup Girl*, humans are in constant death peril. The storyworld is turning barren, the "devastation is extraordinary. Whole forests without a leaf on them" (Bacigalupi 2009: 131). Deathly plagues ravage Earth, all stemming from bioengineering and gene manipulation: "cibiscosis and Nippon genehack weevil and blister rust and scabis mold [raze] the landscape" (3). Humankind has barely survived certain "plagues that swept the earth … killing crops at such a fantastic rate that no one knew if anything at all would survive" (172). Humans now live in constant danger of disease, as Anderson Lake reflects on in the beginning of the novel: "In truth, if cibiscosis breaks out again … It will be a new variation, and all the old tests will be useless" (4). The human body is at all times in risk of degeneration and death through disease, and humankind's survival connects with letting go of a "pure" species identity, free from technological influence. The surest solution to avoid death is to modify humans genetically, to make them immune; make them windups. The taboo of modifying humans keeps them at risk for disease, as most people resent the New People.

3.1. DETECTING THE CYBORG

This section will look at scenes that highlight a difficulty of detecting cyborg characters among humans within the selected narratives. It will be an anti-essentialist reading, because the attempts of distinguishing humans from nonhumans within the texts prove futile. Cyborg characters blend in seamlessly, a threat to the "authentic" human community, as no characteristic proves to meaningfully separate humans from cyborgs. As such, the cyborgs undermine the idea of an "authentic" human community or species identity and reflect the futility of trying to uphold a "pure" human identity within either storyworlds or contemporary society.

The selected scenes regarding detection are those most clearly challenging essentialist perceptions of the human. If cyborgs cannot be set apart from humans within the storyworlds, then they are not unnatural and nonhuman; they must be part of the species. In her cyborg manifesto, Donna Haraway argues that our technologies are us and we are them. The difficulty in distinguishing cyborgs among humans reflects how technologies are blending seamlessly into human lives and bodies, with increasingly unclear divisionary lines. A dissolved dichotomy implies a near impossibility for the posthuman subject to have a clear perception of its natural versus its modified parts, as the technological is part of the human species.

The Nexus-6 androids in *Do Androids Dream* blend in almost perfectly with humans on earth. The newest model, produced by the Rosen Association, is so near human in appearance and intelligence that the police agencies hunting them fear being unable to detect them (Dick 1968: 476). The androids are even driven by "an innate desire to remain inconspicuous", to blend in (529). This is most clear when Rick and Phil arrest Luba, and she quietly follows them into an elevator, instead of trying to break free (529-30). Even when she knows it will lead to her death, she struggles to stay unobtrusive. As the androids are so similar to humans physically and intelligently, striving to blend in among humans in all ways, Rick's task of hunting down the group of escaped androids appears near impossible.

To determine whether a suspect is android or not, bounty hunters administer an empathy test, using the "Voigt-Kampff" scale. The test presents the subject with a range of settings and questions that should evoke emphatic response. It is developed by the storyworld

"Pavlov institute", an allusion to Ivan Pavlov and Pavlov's theory of classical conditioning, as the test is based on stimuli evoking reactions. Dick is invoking Pavlov's theory, as it regards conditioned learning based on instinctive responses ("Pavlovian conditioning"). It is instinctive responses, in regards to scenarios that *should* evoke emphatic reactions, that function as the determining marks of "pure" human identity within the storyworld.

Through the Voigt-Kampff test, Dick also alludes to the *Turing Test*, developed by father of theoretical computer science Alan Turing. Turing aptly names it "The Imitation Game", as a machine is set to mimic human intelligence (Turing 1950: 433-39). Turing's test measures machine intelligence via an interrogator conversing in writing with one human and one machine, trying to determine which one is the machine (Perkowitz 2005: 70-71). The purpose of the Voigt-Kampff empathy test is for the bounty hunter to determine whether the test subject is human or android, human or nonhuman. As the ultimate end for the Turing Test would be a test subject able to fool the human interrogator, it becomes an apt tool for Dick to use in his fiction, where the androids are so near human in intelligence and emotional capacity that they may beat the test.

The ability to feel empathy has, up until the Nexus-6 model, been a successful distinguishing factor between androids and humans. The Voigt-Kampff scale Rick operates with when bounty hunting can detect androids because, "[e]mpathy, evidently, exist[s] only within the human community, whereas intelligence to some degree [can] be found throughout every phylum and order including the arachnida" (Dick 1968: 455). This is different from Asimov's vision of different intelligence types separating humans from machines, as Dick envisions emotional connection to be determining and intelligence something similar and shared. In order to retire the runaway androids, Rick is dependent on the Voigt-Kampff scale correctly identifying even the newest Nexus-6 androids.

The scenes describing Rick's administration of the Voigt-Kampff test on Rachael Rosen are crucial to an anti-essentialist reading of the text, because the dividing emphatic factor between humans and androids proves permeable. Both Rick's conception of his own humanity, and Rachael as an android, grows uncertain when their emphatic abilities are questioned. Rachael is the first test candidate introduced when Rick travels to the Rosen Association to check whether the Voigt-Kampff empathy test is able to distinguish Nexus-6 androids from humans (Dick 1968: 467). Before Rick travels to the association, Inspector Bryant tells him that there may or may not be humans mixed in with the test subjects (459-

70). This makes the testing similar to the Turing Test, trying to determine who is human and who is android. Bryant acknowledges the possibility of the test failing in regards to the Nexus-6, and Rick is quick to refute: "That can't happen" (460). He cannot imagine a situation where nothing can surely determine nonhumanity.

Rick's first diagnosis of Rachael labels her as android. This is due to an unemphatic, android response to a setting concerning animals (Dick 1968: 469). Eldon Rosen is quick to refuse this diagnosis as faulty. He claims that Rachael has grown up away from Earth and is thereby a stranger to animal care and eating animals. This would imply a lacking basis for emotional emphatic response in regards to animals (471). The impossible seems to have happened, as the test appears faulty, diagnosing certain humans as androids. Rachael tells Rick accusingly that, "You would have retired me" (471). She puts Rick face to face with the truth that he would have killed a *human* Rachael if he she had been a suspect on his hit list. The Voigt-Kampff test no longer seems valid for separating humans from androids

If the test is invalid in regards to certain types of humans, those with "underdeveloped emphatic ability" may have been subject to android labelling for a long time. Eldon claims that the Voigt-Kampff test "*was a failure long before [the Association] released [the Nexus-6] android*" (Dick 1968: 472). This claim deeply unsettles Rick, as his thoughts reflect: "Thank god I didn't go out bounty hunting on the basis of this test" (472). Still, this line of thinking does not spare Rick. As a bounty hunter, he has already relied on the test for a long time, and may have mislabelled a number of humans before Rachael. If Eldon's words are true, then Rick may be a killer and perhaps has been for a long time. The human-technology dichotomy comes crashing down with the realisation that the one thing that was supposed to safeguard humans and mark out androids seems flawed.

Belief in the test is restored when Rick decides to present Rachael with one final test-scenario. This time it does not regard animals, the triggering factor being a suitcase supposedly made of "babyhide". Rachael fails to give a quick enough emphatic response, and Eldon has no plausible explanation to distract Rick's certainty in his diagnosis. Rick can thus reassure himself of the validity of empathy as a quality separating humans from androids (Dick 1968: 476). The boundary between humans and androids is reaffirmed, and Rick reflects on his meeting with Rachael:

> The Nexus-6. He had now come up against it. Rachael, he realized; *she must be a Nexus-6.* I'm seeing one for the first time. And they damn near did it; they came awfully damn close to undermining the Voigt-Kampff test, the only method we have for detecting them.
>
> (Dick 1968: 477)

The only way of detecting androids almost failed. Galvan describes Rick's mission to be one to "reclaim the disturbed hierarchy between human and machine" (1997: 419). If he in the end proves unable to do so, the fourth discontinuity collapses.

Human identity proves fragile when Eldon explains Rachael to have implanted memories. He claims to have "programmed her completely" to know nothing about her androidism (Dick 1968: 476). This presents Rick with a new dilemma, as identity proves a precarious concept. Through implanted memories, it is possible to be unaware of being nonhuman. When the fake android police arrest Rick, they make him question the authenticity of his own memories. Officer Crams suggests that "[m]aybe you're an android … With a false memory, like they give them" (314). Another asks him, "Are you an android, Mr. Deckard?" (516). It is in a way more unsettling for Rick to be unsure of his own humanity, than the prospect of a faulty Voigt-Kampff test, as self-perception may be an illusion, no one surely knowing what species they belong to.

After having spent a night connecting sexually with Rick, Rachael admits to being on a mission, sent by the Rosen Association, "To detail exactly what the Nexus-6 does that gives it away on the Voigt-Kampff test" (Dick 1968: 569). The corporation finds romance to be an effective way of retiring bounty hunters from action, emotional connection leading them to empathize with the androids (576). Gaining new information on what makes the newest android models stand out would enable the association to create a new and upgraded version, even harder to identify. The association plans to repeat this process, as Rachael explains, "when that gets caught we modify again and eventually the association has a type that can't be distinguished" (569). The storyworld future thus contains the possibility of androids that blend absolutely perfectly and seamlessly into the human community.

A lack of emphatic ability marks the androids as "other" in Dick's storyworld, expelling them from Galvan's posthuman collective (1997: 414). They are not supposed to be able to identify emotionally with humans, animals, or even each other (414). This should

make them unable to take part in any sort of community. In opposition to this storyworld belief, Rachael appears to fall in love with Rick. This is evident in her frustration regarding Rick's affection towards her and others:

> 'The goat," Rachael said. 'You love that goat more than me. More than you love your wife, probably. First the goat, then your wife, then last of all-' She laughed merrily. 'What can you do but laugh?'
>
> (Dick 1968: 578)

She takes her revenge by blatantly killing Rick's goat. He is left to explain to his wife that "Rachael wouldn't give a damn if you saw her; she probably wanted you to, so I'd know who had done it" (596). She seems to have killed the goat out of jealousy, based on real emotional attachment to Rick.

The other androids similarly show moments of empathy. For instance, when conversing with J.R. Isodore about the other runaway androids, Pris Stratton explains that: "If they're dead then it really doesn't matter. They're my best friends" (Dick 1968: 540). This seems to suggest Pris having real emotional attachment to the other androids, seeing little point in a life on earth without them. Emphatic relationships between the androids is also exemplified by Irmgard Baty's face dissolving "in rapture" (543) when she reunites with Pris, and Pris being "vibrant with bliss" at the reunion (544). Emphatic connection is clearest between the married couple Roy and Irmgard, evident when Rick retires Irmgard:

> 'I'm sorry, Mrs. Baty,' Rick said, and shot her.
> Roy Baty, in the other room, let out a cry of anguish.
> 'Okay, you loved her,' Rick said. 'And I loved Rachael. And the special loved the other Rachael [Pris].' He shot Roy Baty.
>
> (Dick 1968: 594)

Roy's emotional response to the loss of his wife seems as genuine as any human response. He lets out a pained cry of anguish, as Rick acknowledges the love between the two androids. Androids apparently can connect emphatically, and through this, the one distinguishing factor between humans and androids appears void and untenable.

Unemphatic humans add to the problem of dividing humans from androids based on empathic ability. Rick's wife Iran reflects on how people on earth sense the absence of life around them with a general "absence of appropriate affect", that would once have been considered a sign of mental illness (Dick 1968: 436). A more direct example of such an absence of empathic response occurs when Officer Bryant discloses to Rick that psychiatrists in Leningrad wish to apply,

> … the latest and most accurate personality profile analytical tools used in determining the presence of androids … to a carefully selected group of schizoid and schizophrenic human patients … which reveal what's called a 'flattening of affect'.
>
> (Dick 1968: 460)

The psychiatrists believe a small class of humans would fail the Voigt-Kampff empathy test, and be labelled as androids: "You'd be wrong, but by then they'd be dead" (461). Rick is shaken as "exactly what the scale measures" in androids is a possible factor to find in humans (460). If these *human* schizoids prove unable to pass the test, nothing meaningfully separates organic humans from constructed androids.

When Pris introduces Roy and Irmgard to Isidore, she lies and tells him they are runaways from a mental hospital: "We're all schizophrenic, with defective emotional lives – flattening of affect, it's called" (Dick 1968: 549). Coming from android Pris, this highlights the problem of determining who is android and who is human in Dick's storyworld, as both androids and schizophrenic humans would be given the same diagnosis. The possibility of misdiagnosis is proven through Phil Resch. Rick is convinced that Phil must be an android, as he acts unemphatically, retiring Luba without testing her first:

> Phil Resch fired, and at the same instant Luba Luft, in a spasm of frantic hunted fear, twisted and spun away, dropping as she did so … She began to scream; she lay crouched against the wall of the elevator screaming.
>
> (Dick 1968: 530-31)

This leaves Rick with one wish regarding Phil: "I hope to god you do test out as an android … You like to kill. All you need is pretext" (533). He cannot stand a human with so little appreciation for any life form, and cannot fathom that such a cold person may be human.

Phil Resch poses a challenge to Rick's conception of humanity. If he tests out android, Rick will "undergo renewed faith in the human race". Yet, this is not what happens, as he proves human, and asks Rick, "Do you have your ideology framed? … That would explain me as part of the human race?" (Dick 1968: 535). Rick replies that Phil has a defect in his "emphatic, role-taking ability", his feelings towards androids (535). He leads Rick to a realization that "after being with [Phil], I looked at them differently … I've begun to empathize with androids", his point of view has changed as he now pities the "poor andys" and feels contempt towards the human Phil Resch. Rick's conception of human versus android is completely blurred, as certain humans qualify as schizoid androids to a higher degree than the actual androids, through proving their empathic abilities.

Within *Do Androids Dream,* neither physical nor emotional, emphatic factors prove able to determine androids as different from humans. In Asimov's storyworld, a similar situation is evident through Tony in "Satisfaction Guaranteed" and Andrew in "The Bicentennial Man". Tony blends in almost perfectly among humans physically. Though he is called a robot, he is an android through his humanoid appearance. He has humanlike smooth black hair and olive skin, and Claire even remarks on his fingernails seeming authentic (Asimov 1951: 350-51, 357). Larry Belmont describes Tony to be, "as humans as you or I, almost", when trying to reassure Claire to go through with the testing project (350). This statement seems to imply more than just physical similarity; if Tony is almost as human as the Belmonts, he must be advanced emotionally and intelligently as well. Susan Calvin, senior psychologist of US Robots and Mechanical Men, presents Tony to Claire:

> He *is* not a mechanical monster, nor simply a calculating machine of the type that were developed during World War II, fifty years ago. He has an artificial brain nearly as complicated as our own.
>
> (Asimov 1951: 351-52)

He is more advanced than a computer, nearly as advanced as humans. There is little to distinguish robots from "authentic" humans within the narrative.

The resemblance Tony has to organic humans is what unsettles Claire: "He was only a machine, and if it were only more visible that he were it wouldn't be so frightening" (Asimov 1951: 354). Claire represents the typical human being, faced with a representative of the posthuman, the cyborg. She represent *Homo sapiens* coming face to face with *Robo sapiens*,

and feels burdened representing the human in meeting the humanoid machine. She has "the honor of the human race to support against [that] mere creation" (356). Her resistance towards Tony is parallel to resistance towards accepting a dissolved human-technology dichotomy. Coming face to face with a humanoid is unsettling, reflecting how readers of science fiction react to facing a manifestation of the posthuman; coming face to face with how irreversibly the human is connected to the technological. Claire resists the idea that nothing may finally distinguish the human species from its technologies, clinging to an essentialist perspective of human identity.

Similar to the problem of empathy as a determining factor of humanity within *Do Androids Dream*, human emotion is an uncertain concept for marking humans from machines within "The Bicentennial Man". When Andrew requests freedom, Little Miss defends his rights to Sir, pointing out how other's emotions are always unknown: "I don't know what he feels inside but I don't know what *you* feel inside…" (Asimov 1976: 644). The difficulty of trying to uphold distinctions based on unperceivable phenomena is underlined when Little Miss explains that "[i]f someone else's reactions are like your own, what more can you ask for?" (644). The identity of others thus becomes determinant on behaviour within Asimov's storyworld, as Little Miss places actions over appearance or emotional affect.

In "The Bicentennial Man", the robot Andrew's quest to become fully human is the inverse of the process of posthumanization. He is a cyborg becoming increasingly human through surgeries, opposite to humans becoming posthuman cyborgs through prostheses and operations. He starts out fully mechanical, "as much a robot in appearance that had ever existed, smoothly designed and functional" (Asimov 1976: 637). As the story progresses he requests to be "replaced by an organic robot, an android", to gain the "outward appearance of humans complete to the texture of the skin" (662). This is presumably the same level of authenticity as Tony in "Satisfaction Guaranteed". When the android procedure is complete, Andrew has "virtually no metal anywhere except for the brain" (662). People now perceive him as "perfectly normal in clothes", as he blends in well among them (666). Andrew even has his face redesigned to show a range of emotions, which makes him appear nearly human in his interactions, his emotions as outwardly correct as any humans' (672). Through surgical procedures, Andrew goes from fully robotic to almost human.

Andrew is not satisfied with an outward appearance resembling the human. He wants his inner bodily functions to be organic as well. This makes the "authentically" human something based on physical phenomena, as Andrew believes a fully organic body must be the solution to achieve human status. To gain a "human" body he develops a system allowing androids to "gain energy from combustion of hydrocarbon, rather than the atomic cell", so they can breathe and eat (Asimov 1976: 667). When Paul Charney asks him why he would replace the infinitely better atomic cell, Andrew replies, "the atomic cell is inhuman" (668). He desires to be "still less a robot", with an organic source of energy, a functioning food system, anus, and perhaps genitalia (669-70). When he has developed prostheses to replace a range of inner organs, he is frustrated of his non-acceptance as a human:

> 'I have the shape of a human being. My organs, in fact, are identical to some of those in a prosthetized human being. I have contributed artistically, literarily, and scientifically to human culture as much as any human being now alive. What more can one ask?'
>
> (Asimov 1976: 673)

He is a "human being *de facto*", but still not legally identified as one, a "human being *de jure*" (673). Even when his inner organs match those of certain cyborgized human beings, he does not achieve true human status.

After his success in developing prostheses for human bodies, as well as his own, he is asked to design prostheses that will make life on the moon comfortable for humans. This is interesting, as this is in a way a request to change parts of the human species, so that it can survive comfortably in space. To be able to design new prosthesis, Andrew is given a position of some power, even commanding humans:

> When not at his work, he wandered among the robot population, every one of which treated him with the robotic obsequiousness due a man … 'On the moon Simon [head of US Robotics], I was in charge of a research team of twenty human scientists. I gave orders that no one questioned. The Lunar robots deferred to me as they would to a human being. Why, then, am I not a human being?'
>
> (Asimov 1976: 673)

On the moon, he is an accepted member of society, blending in seamlessly as human in the eyes of other robots. Even the human scientists obey him as a member of society in space. Still, he is not considered fully human in the eyes of earthbound humans and their laws.

In the beginning of the story, Andrew requests brain surgery from a surgical robot. At this point in his life, he is unrecognizable from humans, as the surgical robot believes him to be human and treats him thereafter. The robot answers Andrew's request in "that certain inalienable note of respect that a robot always use[s] to a human being" (Asimov 1976: 635-37). Due to the First Law of never letting a human come to harm, the surgeon robot refuses to accede to Andrew's requested surgery, as it is "patently a damaging operation" (637). Andrew then reveals to it that "… I, too, am a robot" (637). The reasoning for the surgery stems from the need for an organic cellular brain rather than the platinum-iridium positronic brain of a robot, in order to be considered a human being *de jure* (677). Andrew faces a last hurdle to surpass in order to achieve full humanity.

The ultimate factor separating humans and robots, beyond emotion, intelligence, or a generally "human" body, proves to be the organic brain. The chairperson of the Science and Technology Committee points out that, "To any human being who is intent on keeping up the barrier between himself and a robot, those differences are a steel wall a mile high and a mile thick" (Asimov 1976: 678). Just as overcoming the steel wall separating the human from technology leads to shocked egos in contemporary society, it is an almost insurmountable wall in Asimov's storyworld. Andrew reckons that the "authenticity" of the brain is not truly the issue, it is the fact that organic brains deteriorate:

> 'What matters is that brain cells die; *must* die … Isn't that the fundamental barrier? Human beings can tolerate an immortal robot, for it doesn't matter how long a machine lasts. They cannot tolerate an immortal human being, since their own mortality is endurable only so long as it is universal. And for that reason they won't make me a human being.'
>
> (Asimov 1976: 680)

Andrew realizes that in order to become human he has to die; he has to give up his robot identity completely, everything that marks him as different in any way.

At his one-hundred fiftieth anniversary, Andrew was named the Sesquicentennial *Robot* (Asimov 1976: 672). After the last brain surgery, making his brain deteriorate as any humans', he is left with one year to live. He will die just as humans do, as he sacrifices his last fully robotic quality. Thus, at his two-hundredth anniversary, the World Legislature and the World President grant him legal human status; he has become a human *de facto* and becomes a human *de jure* as the Bicentennial *Man* (681). Andrew overcomes the "mile high and a mile thick" barrier separating the two species (678). Through his desire to become human, Andrew has not only blurred the human-technology boundary, he has completely deleted it. Even within Asimov's universe of robots, nothing meaningfully separates humans from cyborgs.

The most "authentically" human cyborgs, within the selected narratives, are the New People in Bacigalupi's *Windup Girl*. Their bodies are completely organic, grown in test tubes from genetically modified DNA. They are genetic chimeras, as their DNA consists of human, animal, and machine genetics (Bacigalupi 2009: 49-50). They grow and age, though at a slower pace than humans, and are raised in special care centres to serve different purposes in society (50-52). The New People through their mixed DNA serve as the clearest cyborg figuration of the posthuman, as they are in fact mixtures of the human, the animal, and the technological. These are the combined components that posthumanism argues make up the human species; being a contemporary human encompasses being part animal and part machine.

What makes windups stand out as different from humans in Bacigalupi's narrative is their "stutter-stop motion", "herky jerky" non-fluid movement. This is "the telltales of [their] DNA … violently present for all to see and mock" as they move among "authentic" humans (Bacigalupi 2009: 54). Just as the androids in *Do Androids Dream* are determined to stay inconspicuous, windups try to blend in through controlling their jerky movements. Emiko is rarely out in daylight, and when she does go out, she is:

> … very careful, and fights her nature and training – if she … does not swing her arms – she almost passes … Trying to convince herself that she appears eccentric, rather than genetically transgressive.
>
> (Bacigalupi 2009: 149-150)

If she manages to move slowly and carefully enough, her movements can be "mistaken as daintiness" (222). As long as windups move with sufficient control, they are nearly impossible to distinguish from "natural" humans.

There is a strong belief in Buddhist religion and rebirth present in *Windup Girl*. Bacigalupi is careful to frame religion *as* religion, yet points towards how religious belief in a metaphysical soul challenges believers' perception of humans as separate from windups. On their way to move against Akkarat, Somchai and Jaidee, who have both served as white shirts and hunted windups, discuss the number of souls on earth. Somchai tells Jaidee that,

> 'Maybe even the worst monstrosities of the Japanese live in some way. I worry that [my family] has been reborn in windup bodies … Maybe some of us become windups, in Japanese factories, working working working … We're so few in comparison to the past, where did all the souls go? Maybe to the Japanese? Maybe into windups?'
>
> (Bacigalupi 2009: 249)

If this soul transfer is believed accurate, humans are faced with a similar problem as Rick with a faulty Voigt-Kampff test. They would be unable to tell who is a regular windup, and who is a reborn human. If such a theory is correct, windups and humans have spiritually become one species, nothing distinguishing the two.

Emiko, representing the posthuman, struggles with which parts of her body and self are truly hers, not tampered with through genetic programming:

> She herself admits that her soul wars with itself. That she does not rightly know which parts of her are hers alone and which have been inbuilt genetically. Does her eagerness to serve come from some portion of canine DNA that makes her always assume that natural people outrank her for pack loyalty? Or is it simply the training that she has spoken of?
>
> (Bacigalupi 2009: 262)

If humans are altered genetically prior to birth, as the New People are, then it is an impossibility to separate the "natural" from the "unnatural". As the human-technology dichotomy dissolves, it will be increasingly difficult for the posthuman subject to have a clear feeling of which parts of itself are natural, not modified or enhanced in any way. Can a human be born unnatural?

A human-machine dichotomy proves permeable in all of the three storyworlds, as nothing ultimately separates the human from the cyborg, neither intelligence, physical nor emotional characteristics. Examining what it means to be "purely" human within the novels proves the fragility of an essentialist perception of the human species. No single quality marks anyone as "authentically" human versus "modified" nonhuman; the nonhuman cyborg *is* in the end human. Representing the posthuman, the cyborgs indistinguishability from the "pure" human community reflects a futility in trying to uphold a "pure" human identity as separate from the technological in contemporary society. We are all posthuman cyborgs, animal-human-technological chimeras.

3.2. TOUCHED BY ANDROIDISM

This section will mainly examine how human protagonists grow to care for cyborg characters. Through developing affection towards cyborgs, protagonists grow emphatic towards them and consider them as worthy of affection and respect, worthy members of the human community. This reading of human-cyborg relationships is based on the Dark-Haired Girl concept, where the human is "touched by androidism" and experiences a radically changed perception of boundaries. The protagonists start out with clear convictions of the human species as separate and superior to their machinic co-species, a traditional humanist perspective of a pure and distinct human species. Through developing close relationships with cyborg characters, being affected by their androidism, these same protagonists lose their clear perceptions of humans as different and separate from their cyborg co-species.

Scientist Sidney Perkowitz describes how humans are easily engaged by robots and feel *something* towards them, especially humanoid ones (2005: 3). These are "warm feelings", affectionate feelings awakened by creatures looking and acting lifelike, acting "authentically" alive (2-3). The protagonists of the selected stories are put face to face with technology in its ultimate humanoid form. As they come into close contact with them, they are affected by their androidism and develop true affection for them. Through being "touched by androidism", their perception of human identity is disturbed and widened, including the cyborgs as human (Hayles 1999: 161-64). They accept a posthuman definition of humanity, where the human can be technological to a high degree, through interacting with android "Dark-Haired Girls".

They embrace the technological aspect of the android double, and attain a more holistic picture of a posthuman species.

General human affection for the nonhuman in *Do Androids Dream* is most apparent through the high value of fake ersatz animal. This regard for ersatz animals is ironic when compared to the taboo of any kind of affection towards an android. When Rick visits the Rosen Association and thinks of his electric sheep he is struck by how similar the two species really are:

> It doesn't know it exists. Like the androids, it had no ability to appreciate the existence of another. He had never thought about this before, the similarity between an electric animal and an andy [android]. The electric animal, he pondered, could be considered a subform of the other, a kind of vastly inferior robot. Or, conversely, the android could be regarded as a highly developed, evolved version of the ersatz animal. Both viewpoints repelled him.
>
> (Dick 1968: 464)

Rick is repelled by the prospect, because the similarity between androids and ersatz animals implies the possibility of empathy for both kinds of nonhuman creature. As he comes into close contact with androids throughout the novel, this repulsion vanishes.

Rick first reveals a small affection for androids before retiring, in effect killing, android Max Polokov. After he calls his wife Iran to tell her of his success, he is frustrated at her apathy, feeling as if he is "speaking into a vacuum" (Dick 1968: 502). This makes him consider how most androids he knows of "have more vitality and desire to live than [his] wife" (502-03). At that moment, Rick feels more attracted to androids than his human wife:

> Some female androids seemed to him pretty; he had found himself physically attracted by several, and it was an odd sensation. Knowing intellectually that they were machines but emotionally reacting anyhow.
>
> (Dick 1968: 503)

Even if he has never truly connected emotionally with an android before, he has felt a kind of sexual attraction towards them, even when aware that they were nonhuman.

The Dark-Haired Girl that changes Rick's perspective of android and human life is Rachael Rosen. As he is about to face the seemingly impossible task of retiring the last three runaway androids, he turns to Rachael romantically, letting her touch him with her androidism as they engage sexually. At this point, Rick has become utterly confused in regards to any human-nonhuman distinction, as he has developed empathy towards both Rachael and Luba, and hatred towards fellow bounty hunter Phil Resch. Retiring the last three androids is a great challenge, as he has grown to see certain androids as worthy of affection. Though it is a "violation of statute", "absolutely against the law" to copulate with an android, he turns to Rachael for comfort (Dick 1968: 601). The law enforcer breaks the law to be with an android, as he has come to a point where his priorities and affection puts Rachael before his human wife, Iran.

After having spent the night with Rachael, Rick sees her as human, and is more in love with her than his wife. When they wake up, Rick perceives Rachael as "cheerful and certainly as human as any girl he [has] known" (Dick 1968: 574). He even tells her that if it were not illegal, he would leave his wife and marry her instead (575). She has disturbed his conception of a clear human-android divide, changed his fundamental perception of the worth of android life through awakening genuine affection in him, as she appears to him increasingly human and worthy of love. After having come into such close contact with Rachael, Rick can no longer imagine continuing his bounty hunting career, exclaiming: "This is my end … As a bounty hunter" (575). Affection towards a cyborg character renders the human protagonist unable to imagine continued destruction of what he now perceives as a human co-species.

Luba Luft is also a kind of Dark-Haired Girl for Rick, as she further challenges his perception of humans and androids, through being an android that seems uncannily human in mannerism and through challenging his self-perception as human. Rick first encounters Luba, who is working undercover as an opera singer, at a rehearsal of Mozart's *The Magic Flute* (Dick 1968: 506). When he tries to administer the Voigt-Kampff test on her, she answers vaguely, giving no clear readings to base a diagnosis on. An important exchange takes place as they are about to begin the testing:

> 'An android,' he said, 'doesn't care what happens to another android. That's one of the indications we look for.'
>
> 'Then,' Miss Luft said, 'you must be an android.'
>
> That stopped him; he stared at her.

> ‘Because,’ she continued, ‘your job is to kill them, isn’t it? You’re what they call-’ …
> ‘A bounty hunter,’ Rick said. ‘But I’m not an android.’
> This test you want to give me … Have you taken it?’
> ‘Yes.’ He nodded ‘A long time ago; when I first started with the department.’
> ‘Maybe that’s a false memory. Don’t androids sometimes go around with false memories?’
>
> (Dick 1968: 507)

Through just a few sentences, Luba shakes Rick’s conviction of being human. He *does* kill androids unemphatically for a living, and so her argument of him being android makes sense. By referring to implanted memories, Luba makes Rick question a major part of his basis for determining his own humanity. He *knows* he is human, but after Rachael’s apparent ignorance of androidness, he cannot be sure of his own memories. If Rick believes androids able to live lives impervious to the truth about themselves, there is no proof available to him that he is not living in ignorance himself.

Luba’s love of art and music is a factor awakening empathic connection between her and Rick, as artistic and creative pursuits are typically human characteristics, as opposed to the cold logic often connected with robots and machines. This connection is most evident through Rick buying her a book of Munch paintings before she is retired, even knowing that she is most likely an android (Dick 1968: 530). He admires her talent and regrets her death, as she “was a wonderful singer” and as “the planet could have used her” (532). Still, it is not mainly her talent he regrets taking away, “it was she herself” (532). He sees real value in Luba as a person. To Rick, Luba Luft “seemed *genuinely* alive” (535). This leads to his admittance of feeling empathy towards an android, at least for a “specific, certain android” (535-36). Luba’s death leads Rick to a major conclusion: “So much for the distinction between authentic living humans and humanoid constructs” (537). He decides that, he’s “getting out of [the] business”, that he “can’t anymore”: “I’ve had enough” (532-36). The differences between androids and humans seem insignificant to him, especially as he feels strong empathy towards the lost Luba, opposed to a strong disdain for the human Phil Resch, who forced Rick’s hand in retiring her (537). The inhumanity of androids appears a faulty assumption to Rick.

If humans in Dick's storyworld start to empathize with androids, they "include androids in [their] range of empathic identification, as [they] do animals" (Dick 1968: 535). Phil Resch believes this will make them vulnerable, explaining to Rick that, "You and I, all the bounty hunters – we stand between the Nexus-6 and mankind, a barrier which keeps the two distinct" (35-36). Through coming into close contact with Rachael and Luba, Rick fails his mission of reclaiming "the disturbed hierarchy between human and machine" (Galvan 1997: 419). The boundary between the androids and humankind comes crashing down as Rick develops empathy towards androids, true affection towards two Dark-Haired Girls.

Before his night with Rachael and before he retires the last three androids, Rick watches his wife fuse via their empathy box. He decides to take over the handles, and converses with the figurehead of Mercerism, Wilbur Mercer. As Mercer is eventually proven a fake, a bit actor playing a part in a recorded scene, this conversation seems to be happening internally within Rick (Dick 1968: 581-83). In fusion, Mercer tells Rick that it is "the basic condition of life to be required to violate your identity" (561). This is exactly what happens to Rick. Through fusion he reflects on how bounty hunting has become a violation of his new self-perception and identity, where he accepts androids as worthy members of human society. As he has adopted a posthuman, widened definition of humanity, he feels as if his identity is violated through having to finish his mission and retire the remaining three androids.

When Rick has retired all the runaway androids, having violated his identity and experienced how wrong it felt to do so, he sheds his old conception of the human as different from the machine, as he realizes that,

> In one sense I'm the greatest bounty hunter who ever lived … But what I've done … that's become alien to me. If fact everything about me has become unnatural; I've become an unnatural self.
>
> (Dick 1968: 597-98)

Through developing affection towards androids, acceptance of their value, Rick's perception of the boundaries of the human species changes. Rejecting the android has become unnatural to him; the bounty hunting he once considered a mark of his humanity, is becoming alien and revolting to him. He regards himself as an *unnatural* self through accepting androids worthy of affection, as a type of human with valuable lives. He realizes that the posthuman should not be rejected, as he now sees them as enhanced co-members of the human species.

A changed perception of human identity appears in different guise within Asimov's storyworld, through Claire Belmont in "Satisfaction Guaranteed" being touched by Tony's androidism. As her Dark-Haired *Boy*, Tony affects both Claire's self-perception and her view on robots. Claire is insecure in her marriage, especially when interacting with important people from her husband's career life. Larry Belmont is "getting to be a big man", and Claire feels unfit to be a big man's wife (Asimov 1951: 456). Gladys Claffern, Larry's "[p]erfectly and precisely manufactured" colleague, makes Claire feel especially mousy and dim. These feelings are heightened by Larry considering her a "little fool" who gets tongue-tied in Gladys' company (353). Claire's journey from insecure to self-confident is a change from being a regular human to an improved version of the human, mirroring humankind's move from *Homo sapiens* to *Robo sapiens* as she is enhanced via her close contact with technology.

When Claire first meets Tony, she reacts with fear, remarking on qualities she finds android and nonhuman: his "too smooth" voice, his noiseless movement and unnatural stance, "straight and pliant as a metal rule" (Asimov 1951: 351, 354). Most of all she considers his emotional expressions lacking as she praises his work, hindering her to feel anything towards him: "…if he had quirked the corner of his mouth the slightest bit, she felt that she could have warmed to him" (355). Yet, she soon grows to differ, as Tony helps her improve on her appearance, her home, and ultimately her self-confidence. As she opens up to Tony for the first time, sharing her frustrations, she describes how "[s]omething started then" (357). When she accepts Tony as someone to confide in, her journey towards posthumanity begins.

Just as Rick Deckard falls for Rachael in *Do Androids Dream*, even if he knows intellectually that she is an android, Claire reacts emotionally towards Tony, falling in love with a man she knows is a humanoid robot. As Claire grows fonder of Tony, she starts placing less emphasis on his nonhuman qualities, at times forgetting his inhumanity altogether. She considers how his hand is "soft, like a human being's" (Asimov 1951: 358), and wonders,

> Why did she keep forgetting he was a machine. Now the thing itself had to remind her. Was she so starved for sympathy that she would even accept a robot as equal – because he sympathized?
>
> (Asimov 1951: 355)

After ten days, Claire considers herself "cured of her reluctance" towards Tony, no longer questioning that she turns to him for consolation (361). She sees him as an equal, and a *person* worthy of true affection.

Claire develops ambivalent feelings towards Tony, both growing fond of him and becoming scared of her strong affection for a robot. She is frightened by how easily she forgets his inhumanity; when she feels him squeezing her hand lightly, she frantically corrects herself, "*No! Its* fingers … *Its* fingers …" (Asimov 1951: 362). When she falls down from a ladder and he catches her, she pushes him and screams, running from his embrace (363). After Gladys and the other women visit, Claire remembers "again – again – again, that Tony [is] a machine" (365). Just as it is a shock to the ego to accept humans as posthuman, it is a shock to Claire that she so readily accepts Tony as a human equal. Being touched by Tony's androidism widens Claire's perception of humanity.

Tony improves Claire, empowers her psychologically by physically altering her body and her home. She ends up as perfectly manufactured as Gladys, altered by add-ons to her body and her environment. Claire achieves success through letting the machine enter her home and her heart, prosthetically enhancing her. Tony describes her as exactly what he has "been manufactured to see human beings as … kind, friendly, and unassuming" (Asimov 1951: 362). She represents the regular human going through changes in intimate contact with the machine, becoming extraordinary and gaining a new identity. Tony cuts her hair, teaches her how to arrange her hair and make-up, how to dress. Claire perceives this process as gaining a new identity, even if the alterations are superficial and cosmetic they lead to a new changed self-perception. Tony reassures her that she will be as successful and beautiful as Gladys, and she absorbs "the identity of the stranger in the glass and cool[s] the wonder and beauty of it all" (359). She embraces her new identity as a first step towards even greater change. Representing the typically human, she accepts a new posthuman identity.

Contemporary technologies are invading homes and bodies in Asimov's storyworld, altering them. Just as "every room ha[s] been changed" in Claire's house, all arenas of society are affected by new technologies, as society and human bodies become increasingly saturated by them (Asimov 1951: 363). Claire's transformation is possible due to financial support from US Robots, an "unlimited charge account" tapping the assets of the corporation (359). The corporations producing cyborg technologies are what enable humans to become increasingly posthuman in contemporary society, becoming a species modified by technological add-ons

both on the inside and outside. They change humankind's perception of themselves, through making them increasingly technological. The cyborg corporations are the enablers.

In *Windup Girl,* people are generally resentful of altering bodies via technological or scientific aid. The improved New People are therefore shunned and despised by most, and considered unnatural creatures. Still, Emiko believes humans to harbour a certain attraction towards windups as well. She reflects on how the men at Raleigh's club "joke about her aloud even as they silently consider buying her once their friends have gone away" (Bacigalupi 2009: 56). They find her physically alluring, just as Rick admits long having felt towards androids. Anderson Lake feels similar ambivalence when he first encounters his Dark-Haired Girl, the windup Emiko. When he first meets her at Raleigh's club he "jerks away from her touch" and "steps out of reach with a look of disgust" (61). Yet at their second touch, he reacts differently, his voice catching, eyes widening and "roaming across her starving" (64). His progression from fear to fascination happens faster than for either Rick Deckard or Claire Belmont.

After his first meeting with Emiko, Anderson starts obsessing over her, gradually falling in love. While trying to research the *ngaw* fruit, Anderson's thoughts stray and he considers how she is "the opposite of the invasive plagues he fights every day. A hothouse flower dropped into a world too harsh for her delicate heritage" (Bacigalupi 2009: 88). Even a short time after meeting her for the first time, Anderson considers Emiko a delicate flower to take care of, to protect from a harsh *human* world. His perspective regarding windups is rapidly changing, the parameters of what he considers human expanding.

The moment of no return for the two is when Anderson saves Emiko from a raging attacker intent on killing her. She sees Anderson's coach in traffic, and runs towards him, thinking:

> She is nothing but a windup. She was a fool. She was stupid to hope that he would see her as a person, a woman, as anything other than offal. Abruptly he grabs her hand and pulls her aboard … Suddenly the gaijin [Anderson] jumps between them. A spring gun gleams in his hands.
>
> (Bacigalupi 2009: 157-58)

As he grabs her hand, Anderson affirms Emiko as a person worth saving, rather than a replaceable windup object. He is even willing to harm a *human* to protect her, and considers the moment he saves her life to be the moment he "tied his fate to hers" (162). He wraps his arm around her, "enfolding her in whatever protection a calorie man can offer a piece of illegal Japanese trash" (166). As he comes into close contact with his Dark-Haired Girl, Anderson's regard for windups trumps that towards certain co-species humans.

As Rachael and Rick do in *Do Androids Dream*, Emiko and Anderson connect sexually. She "fills his thoughts, and his time. Every night he seeks her out at Ploenchit [Raleigh's club], monopolizes her, rains baht on her" (Bacigalupi 2009: 262). The yellow card Hock Seng is disgusted by his boss's affection for a windup, how he "brings the creature to his bed. Does so repeatedly. Pines for it" (186). Through spending so much time with Emiko, Anderson learns not to give any demands, as this would enact her genetic programming to obey. Avoiding this, he sees "another version of the windup", her soul "emerging from within the strangling strands of her engineered DNA" (262). As they relate sexually, Anderson grows to see Emiko as a subject, not to be controlled or ordered around, but rather an equal to love and protect.

Emiko genuinely cares for Anderson in return. She is "surprised how happy she is that he delights in her", relishing his genuine affection towards her and to be seen as a person worthy of love (Bacigalupi 2009: 315). He alone makes her feel like a person. She thinks on how she had almost forgotten what it is like to look almost human and be almost respected, as in Japan, until she feels valued again in Anderson's arms. When she is with him, she "for a time … forgets entirely that people call her windup and *heechy-keechy*. For a moment she feels entirely human, and she loses herself in the touching" (315). As Anderson is touched by her androidism, widening his perspective of human identity, Emiko is touched by his humanness, finally getting to feel fully respected and cared for.

Kanya, a white shirt herself, shares a general white shirt disgust and hatred for windups, yet towards the end of the novel develops a more ambiguous attitude. When she travels to discuss the new virus with Gibbons, she comes into close contact with his windup, Hiroko. When she first meets the windup, Kanya reacts by nearly drawing her gun at Hiroko (Bacigalupi 2009: 420). She considers Hiroko a "genetically engineered beast", aping humanity (427). However, Kanya's attitude changes as she is set to work together with Hiroko to track Emiko down. When the Trade Ministry attacks the Environment Ministry,

Hiroko saves Kanya's life twice: once by spying out enemy commandos, and once by pushing her out of the way from a rain of spring disks fired at them (466). Hiroko sacrifices herself, as she overheats from the exertion of protecting Kanya and her men. When Hiroko lies dying, Kanya is left to wonder "if she cares about the creature" (468). Towards the close of the novel, even the human character who is presented as lacking emotionally (71, 370) changes her perspective, seeming to consider the death of a windup a loss.

In the narratives of all three authors, the human protagonists grow to value their cyborg counterparts, through romantic relationships developing empathy towards them. Through being touched by their androidism their perspectives on what it means to be human change and their definition of a human species identity widens, incorporating the highly technological cyborgs as a type of human. The human-cyborg relationships encourage readers to embrace a cyborg posthuman identity. The narratives even present physical embraces between characters representing the human (organic) and android (technological) halves of a posthuman android double.

4.0. RESISTING THE POSTHUMAN

On one hand, the selected SF texts encourage the adoption of a widened scope of human identity. This happens through readers experiencing human characters touched by cyborg characters' androidism. A changed perspective of the human is encouraged through changed storyworld perceptions of the cyborg as human. On the other hand, the narratives present strong resistance towards cyborg characters. A general human resistance towards the cyborgs reflects a contemporary scepticism and resistance towards changing the human through cyborg technologies. When Andrew creates human prostheses in "The Bicentennial Man" he is warned that, "It will be said it was part of a campaign to roboticize human beings, or to humanify robots; and in either case evil and vicious." (Asimov 1976: 675). The human should stay human, anything else would be evil and wrong. The "true" humans should stay essentially human, and must thereby refuse a modified cyborg species, and strive to uphold a human-cyborg dichotomy.

Corporations hold great power in all three storyworlds. Humankind is dependent on their services, at the same time as they fear their humanoid products. In *Do Androids Dream*, the Tyrell Corporation exudes extensive power, as humans in the space colonies are utterly dependent on their androids as servants (Dick 1968: 444, 466). Within Asimov's storyworld, US Robots and Mechanical Men produce robots for both industry and the home, fulfilling jobs that would be hazardous or dreary for humans to fulfil. These are much the same purposes given various machines in contemporary society. Within Bacigalupi's novel, the calorie companies have a monopoly on food production and distribution and through this hold the fate of humankind in their hands. The Japanese are dependent on windups, relying on their work power for society to function in a country lacking in young human workers (2009: 50). Humans fear the power and products of the corporations yet are utterly dependent on them for survival and progress.

4.1. THE HUMAN OPPRESSING THE "OTHER"

Humankind is fearful and distrustful in regards to cyborgs in the selected narratives, struggling to uphold a "pure" and "fully human" species. They reject cyborgs even if they are unable to distinguish them from humans, clinging to any characteristic marking the human as something unique and different. The cyborg characters are not the only ones rejected, other human groups are also thought of as lesser and nearly inhuman, such as the specials in *Do Androids Dream* and the yellow cards in *Windup Girl*. These powerless groups are denied the right to be part of human community. Just like the cyborgs, they are set apart from the "fully" human species; the specials because their genes have degenerated, the yellow cards because they do not share the genetic heritage of a "pure" Thai race. Only "true" privileged humans are at the top of the species hierarchy, denying anyone "other" to them human status.

In *Do Androids Dream*, humankind struggles to show empathy towards certain members of the species. This is most evident in the general attitude towards specials, as "pure" humans refuse to accept them as a part of the human species, due to their degenerating genes and regressing intellectual capacities. As they consider specials as an "other" to the human, they refuse them the right to immigrate to the space colonies, to join the "pure" human community there (Dick 1968:445). Specials are also almost forced to be sterilized, presumably so they cannot tarnish the human race through procreation with "regular" humans (445). This is a cold-hearted attitude towards a weak and unfortunate group in society.

Specials feel "the contempt of three planets", as they serve as bad reminders to humans on Earth of what may happen to any human at any time: the degeneration from human to a nonhuman special (Dick 1968: 446). There is no room for specials in the space colonies, and on earth they are set to fulfil the lowliest jobs. Isidore himself drives a delivery truck for Hannibal Sloat's ersatz animal veterinary clinic (478). Advertisements advocating emigration serve as constant discouraging reminders of the non-value of specials. This makes J.R. Isidore afraid to disclose his special status, as he desperately seeks contact, and people avoid interaction with his kind. He bitterly reflects on how "he, a special, wasn't wanted. Had no use. Could not, even if he wanted to, emigrate" (448). Avoiding specials is based on fear of coming into close contact with the "other", fear of being affected or changed in some way.

The elderly are also an ostracized group within Dick's novel, even though they are fully human genetically. This is evidenced through Isidore's boss, Hannibal Sloat, being described as "[t]oo old to emigrate", even though Isidore considers him an intelligent and capable man (488). Refusing the elderly access to the space colonies adds another layer to members of the human species considered lesser and "other", not good enough to share in the human community in the space colonies. The colonies are for the young and able, those with to taint of physical deterioration by either age or radioactive dust; it is for a narrow group of those considered fully "human" in a world where nothing proves to separate humans from androids. The general unemphatic attitude towards specials and the elderly even present the "true" humans as unemphatic, lacking the one quality they believe to set them apart from androids.

In *Windup Girl*, social ranking is connected to human value. The lives of factory workers are of little regard. When a young Thai girl is sent to check on equipment in Anderson's factory, yellow card Hock Seng thinks on how the "[flash]light is worth more than she is" (Bacigalupi 2009: 30). The powerless are almost considered outside of the human community, less worth than the tools they wield. Still, the situation is generally worse for the yellow cards, who are treated as subhuman, most of them not even given factory work. Similar to specials in *Do Androids Dream,* they fulfil only the meanest and lowliest jobs, as the general societal rule is "Thai workers for Thai jobs" (23). Similar to the rejection of specials from the space colonies, the yellow cards are rejected from human community through being denied work.

The yellow cards are Malayan refugees, chased from their home country due to religious conflict. They are foreigners, "other" to pure Thai humans. They are also a small group, as "Less than one percent of the Malayan Chinese escaped the incident" and crossed the borders into the Thai Kingdom (19). The yellow cards live in slums or "packed like slaughter chickens into sweltering Expansion towers" (6). Those best off live in primitive huts, a "groaning mass of humanity" (96). Their lives are not considered of value, they are not equals to the Thai as they do not have the right genetic traits, even if they are human. Yellow cards are just as ignored as the specials by the general public, a means to an end for the meanest jobs, rather than a part of humankind.

The yellow cards live in constant danger, much as the windups and the androids in *Do Androids Dream*. They desire to "simply blend in", as their lives are just as bound to the whims of the white shirts as windups' are (104). Yellow cards live in perpetual fear of eviction as white shirts "need few excuses to revoke a yellow card. To kick a beggar Chinese back across the border" (Bacigalupi 2009: 185). Further, Hock Seng is acutely aware of how the Environment Ministry "sees yellow cards the same way it sees other invasive species and plagues it manages" and given a choice "the white shirts would slaughter every yellow card Chinese" (319). Their situation is generally precarious, and when civil war breaks out between the Trade and Environment ministries, the situation worsens. They are "suddenly as disposable as cheshires" (291). An unemphatic Thai population treats an entire ethnic group unkindly, inhumanely.

Hock Seng, employed at Anderson's factory, represents the yellow cards within the novel, as Isidore represents the specials in Dick's novel. Hock Seng perceives himself as subhuman, outside of the human community. When asking a group of Thai men for news, as civil war is breaking out:

> Hock Seng fights the urge to flinch at being identified [as a yellow card]. Forces himself to pretend as if they are equals in this, to create a hopeful fiction that the man will see him as a person, and not as some unwelcome [unnatural] cheshire.
>
> (Bacigalupi 2009: 321)

Just as Isidore fears identification, so does Hock Seng. Equality among humans is dysfunctional in Dick and Bacigalupi's storyworlds. "Pure" humans cling harshly to a narrow distinction of the human, in fear of being affected or becoming impure by close contact with the "other".

4.2. PHYSICALLY RESISTING THE POSTHUMAN

Fear of accepting the cyborg characters as part of the human community and species manifests itself in the narratives through physical resistance and violence. This violence is also based in fear of the characteristics that make the cyborgs superhuman; they represent the posthuman as an enhanced version of "regular" humans. In *Do Androids Dream*, Rick acknowledges a fear of androids superseding humans in different skill areas (Dick 1968: 505). In "The Bicentennial Man", Andrew is kept constantly up-to-date, given "the advantage of every new device until he [is] the paragon of metallic excellence" (Asimov 1976: 642). Tony in "Satisfaction Guaranteed" is superhuman in his diligent work. The facts that he does not require sleep and can work in the dark, via built-in ultra-violet vision, enhances his work and productivity (Asimov 1951: 355). In *Windup Girl*, the New People age at an incredibly slow rate, have perfect eyesight, superhuman strength, speed and hearing (Bacigalupi 2009: 50, 282). Most importantly, they are superhuman as their genes are cancer-resistant and impervious to other diseases ravaging the earth (50). In different ways, the cyborgs supersede humans at the same time as they closely resemble them.

Within *Do Androids Dream*, humans physically resist the androids through bounty hunters tracking down and retiring them, in effect killing the androids. At the beginning of the novel, Rick's wife Iran confronts him about his bounty hunter career:

> 'You're a murderer hired by the cops.'
> 'I've never killed a human being in my life.' …
> 'Just those poor andys.'
>
> (Dick 1968: 435)

Iran questions the righteousness of killing androids, challenging Rick's self-conception of being an emphatic human. Through her argument, she frames the storyworld complexity of separating humans from androids based on empathy towards others, and highlights the violent attitude humankind harbours towards androids.

Within Asimov's storyworld, resistance towards robots is generally attitudinal, not resulting in violence. Still, one example from "The Bicentennial Man" gives evidence of an aggressive demeanour. After Andrew is granted freedom from ownership, he decides to visit the library on his own. On his way, he gets confused about which direction to take, and asks

two men he meets for guidance. They identify him as "the free robot", as he is abnormally wearing clothes (Asimov 1976: 651). The men react with cruel intent, mocking Andrew and giving him disrespectful commands: "Take of your clothes. I order you"; "Stand on your head … If you don't know how, try anyway" (652). They abuse the Three Laws, clearly considering Andrew as an "other" and an object, rather than an equal subject.

The men Andrew encounters eventually reach violent resolve, requesting a scared Andrew to self-destruct:

> There was no way Andrew could stop them, if they ordered him to resist in a forceful enough manner. Second Law of obedience took precedence over Third Law of self-preservation. In any case, he could not defend himself without possibly hurting them and that would mean breaking the First Law. At that thought, every motile unit contracted slightly and he quivered as he lay there.
>
> (Asimov 1976: 652)

Andrew is utterly at their mercy, the "free" robot irrevocably bound to the Three Laws. Luckily for Andrew, George Martin comes by before he starts self-destructing. Considering a humanoid robot part of human society is a frightening thought within the storyworld, resulting in physical resistance.

Dislike for windups serves as a uniting factor for humans within Bacigalupi's novel (Harvey 2011). It especially unites the white shirts working for the Environment Ministry in their quest to hunt down windups. This is due to windups being considered unnatural, inhuman, and potentially dangerous if not under direct ownership. This is similar within Dick's novel, where androids are considered safe as owned and objectified slaves in the space colonies, but dangerous as runaways demanding subjectivity and freedom on Earth. Being a windup equals a life in fear, as Emiko explains: "[e]ven the good ones – the ones with *jai dee* [kind heart/mind], who somehow manage to care for a windup like herself – will not step in" (Bacigalupi 2009: 51-52). Anyone with violent intent is free to abuse the New People.

Emiko's backstory is a tragic one. She was left behind by her master, Gendo-sama, because it was cheaper for him to buy a new windup in Japan than to pay for her return ticket (Bacigalupi 2009: 163). He leaves her with no papers or rights, in a country where windups are hunted by the Environment Ministry, and the general population would "happily mulch her in their methane composting pools" (54). *Mulching* echoes *retiring* in Dick's novel, as the

groups are both hunted, living in constant threat of being killed by fearful humans. Both windups and androids become too threatening for humankind when they appear to have any sense of autonomous will, as this problematizes their status as objects, and as enslaved and inferior co-species.

In the Thai Kingdom, no one "wants a New Person for secretary, or translation" (Bacigalupi 2009: 164). This leaves Emiko with one last option for survival, a life of prostitution, as she was "trained as a windup courtesan in Japan" (52). She endures constant abuse at Raleigh's club, a day rarely passing in peace (147). Neither Raleigh, nor Kannika who executes the abuse, harbour any empathy for a windup. To them and the club guests she is nothing but a sex toy, a Japanese "plaything", a "piece of genetic trash" (53). The cruellest scene of abuse takes place in the first scenes introducing Emiko, where Kannika slaps her, pulls her hair, and forces her into positions of "extreme pain", before moving on to nearly drowning her in beer and molesting her with sex toys (52-55). They treat her thoroughly inhumanely, as a nonhuman object; the windup girl is a windup toy.

Emiko's precarious existence is clearest when Raleigh tells her: "If I want you mulched tomorrow, you're gone. No one will care. People in japan might value a windup. Here, you're trash" (Bacigalupi 2009: 229). In the Thai Kingdom, she is nothing of value, a toy or trash to be thrown away, generally denied all subjectivity. An angry Thai man presents Emiko with violence in a different setting, when he assaults her in an alley. He is intent on hurting her, angry because military windups killed several of his friends and lost him his hand (154). He is impervious to the fact that humans must have commanded the windups to fight and kill, risk their lives in war. To him, Emiko is one of the "devils", no matter if she is a military model or not (155). Genetically altered New People are devils among humans, as far as imaginable from being part of the human community, fully "other" to "pure" Thai humans.

4.3. RESTRICTED CYBORG BODIES

Fear is a common reaction to the introduction of new technologies. Technologies belonging to the cyborg sciences change the human at a more intimate level than any others, physically becoming part of the body. Humankind struggling to uphold an essentialist view of the human species manifests itself within the selected SF texts, through humans oppressing cyborg characters, and restricting their superhuman bodies. This section will discuss the various ways in which humans intentionally restrain the cyborg species they create. Limited lifespans and sterile bodies make it impossible for cyborgs to become too big parts of the world's population, keeping "real" humans in power. Physical bodily limitations and socially or technologically programmed obedience inhibit the cyborgs from becoming too autonomous or claiming a rightful place besides the "authentic" human species.

Claire's first reaction to Tony in "Satisfaction Guaranteed" represents an irrational fear towards new technologies, especially fear of coming into close contact with products from the cyborg sciences. When Claire first encounters Tony, she feels deeply unsettled, "feverishly" trying to avoid him entering her home: "I can't Larry. I just can't have him in the house" (Asimov 1951: 350). She rejects him instantly. This is an irrational rejection, as she searches for "a stronger way of putting it; some way that would make sense and settle things, but she could only end with a simple repetition. 'Well, I can't!'" (350). The only basis for her reaction is fear, there is no logic to it: "It just gives me chills. I couldn't bear him" (350). Fear towards new technologies in contemporary society is not necessarily irrational. The irrational lies in fearing to accept that the human species is changing along with an increasing blending of the human and the technological.

In "The Bicentennial Man" fear of the cyborg is once again presented, when Andrew asks George Martin: "How can [humans] fear robots?". George's reply is clear: "It's a disease of mankind, one of which it is not yet cured" (Asimov 1976: 654). This "disease" is shared within the storyworlds. Humans restrict cyborgs out of fear of what they may do or become if uninhibited. The cyborgs are not allowed to evolve as a species or act autonomously, nor are they considered part of the human species. As the cyborgs are representatives of the posthuman, the restrictions portray a human fear of embracing a posthuman species identity, accepting that the body has become cyborgized. It reflects an attempt to supress the

irrevocable turn towards a posthuman species, through characters restricting the cyborgs and opposing close contact with them.

One way of oppressing cyborgs is by controlling their life spans. This occurs in both Dick and Asimov's narratives. In *Do Androids Dream*, androids die after only four years of life (Dick 1968: 574). They are not made to last, intentionally designed to live short lives so they cannot evolve or grow too independent or skilled. Age restrictions also serve to discourage humans from "running off and living with an android", to discourage intimate relations between the human and nonhuman (Dick 1968: 574). In Asimov's universe a somewhat similar problem is presented in regards to lifespan. US Robots grows scared by Andrew's long lifespan and his drive to further himself, and decide to change their policy, claiming that "[n]o robot *as presently manufactured* is useful after the twenty-fifth year" (Asimov 1976: 661). After twenty-five years, the corporation insists on replacing the robot entirely (663). Growth is hindered through lives far shorter than those of "real" humans.

Built in defects and safeguards prevent full participation in society, setting the cyborg characters apart as humankind's "other". Recurrent in all three storyworlds is cyborgs put in positions of servitude and slavery. They are all created to serve humankind, to fulfil menial or dangerous jobs, enslaved to humans. In *Do Androids Dream*, organic androids function as "the mobile donkey engine of the colonization program" (Dick 1968: 444). Androids are the carrots convincing people to emigrate, as each immigrant receives an android of choice, free of charge (444). The android slave role is explicit through reference to the US prior to the Civil War, as the use of androids duplicates "the halcyon [tranquil] days of pre-Civil War Southern states!" (445). Androids are tools, an enslaved subspecies serving humankind.

Too far advanced androids are feared in *Do Androids Dream*, even if these same androids are "not even considered animals" on Earth where "every worm and wood louse is considered more desirable than all of [the androids] put together" (Dick 1968: 522). This fear of superhuman androids is most evident in relation to Luba Luft, when Rick considers why she needs to be retired:

> Perhaps the better she functions, the better a singer she is, the more I am needed. If the androids had remained substandard, like the ancient q-40s made by Derain Associates – there would be no problem and no need of my skill.
>
> (Dick 1968: 505)

Though humans prefer to think of the androids as lesser, worth less than lice, they acknowledge that they are in fact becoming dangerously superior to humans. The existence of androids is not the problem, as they serve humans usefully in the colonies. The problem is that they are nearing or surpassing human proficiency in different skill areas, such as Luba Luft with her opera talent. The androids cannot be allowed to surpass humans, and thus need to be harshly suppressed.

Like the androids in Dick's novel, the robots in Asimov's storyworld are built to serve humankind. Emma Two in "First Law" is an industrial robot fulfilling dangerous tasks at a basecamp on one of Saturn's moons, in order for mining to become a "through-the-revolution affair" (Asimov 1956: 253-54). Tony in "Satisfaction Guaranteed" is a domestic robot, whom Claire calls an "animated carpet-sweeper, dishwasher, furniture polisher, general factotum" (Asimov 1951: 352-53). Andrew in "The Bicentennial Man" is the Martin family's valet, butler, and lady's maid (Asimov 1976: 683). The robots are built to fulfil specific roles, as a subservient species furthering human interests through their work, denied any possibility to further themselves.

The Three laws bind all of Asimov's robots to lives of servitude and function as a safe-grid to prevent robots from acting out of free will, or putting their own interests before those of humans. In "Satisfaction Guaranteed", Susan Calvin, the senior psychologist of US Robots and Mechanical Men, explains how the laws work in reference to Tony:

> … the switchboard connections of his brain [are] predetermined. Well, the most important connection of all is what we call "The First Law of Robotics," and is merely this: "No robot can harm a human being, or, through inaction, allow a human being to come to harm." All robots are built so. No robot can be forced in any way to do harm to any human.
>
> (Asimov 1951: 352)

Any robot has to obey any human, always putting its own life last. The general attitude towards robots is: "Give a robot rights and people may not want to buy them" (Asimov 1976: 659). Humans do not desire robot autonomy; they desire a subservient species that in no way challenges the superiority of the organic human.

As the androids in *Do Androids Dream*, Asimov's robots are not allowed to evolve too far beyond human skill-level. In "The Bicentennial Man", robots are superior to humans in certain skill areas, with inherent ability for even greater capacity if unrestricted. The surgical robot Andrew interacts with presents a clear example, as it works with greater dexterity and skill than any human (Asimov 1976: 636). Still, the robot is restricted. Its brain is "so limited in … capacity" that it does not recognize Andrew, who is a famous humanoid robot (636). Its skills are not nurtured, as it is given as little autonomy as possible to achieve its task. When Andrew asks it if it would like to be human, its answer is negative, it would rather "be a better surgeon" a "more advanced robot" (636). Even though its dreams are not as grand as Andrew's quest for humanity, the robot desires to become more than it is, less restricted. It desires to evolve as a robot, to be free of shackles limiting its capacity. The Three Laws are only one of several measures used to prevent robot evolution.

Andrew in "The Bicentennial Man" is a threat to humankind because he is perceived as too autonomous. He is different from most robots within Asimov's storyworld, as he is "independently brained". This gives him the capacity to fulfil a range of different tasks and master different skillsets. He excels at woodworking, a creative skill generally reserved for humans, as he "produces works of art" (Asimov 1976: 640). Andrew does something unintended by autonomously developing new skills, so US Robots tell Sir that they "will, of course, replace [the] robot" (640). To the corporation, the only solution is to discontinue independently brained robots, in fear of letting them grow and evolve too far in skill. Sir explains the situation to Andrew:

> 'The new ones aren't as good as you are, Andrew … The new robots are worthless. The company has learned to make pathways more precise, more closely on the nose, more deeply on track. The new robots don't shift. They do what they're designed for and never stray … I am certain Mansky put an end to generalized pathways as soon as he had a good look at you. He didn't like the unpredictability.'
>
> (Asimov 1976: 642-43)

The new robots serve single purposes, limiting them even further than Andrew, who only has to follow the Three Laws. Change, straying from intended functions, is unacceptable.

Two things restrict the New People in *Windup Girl* physically: jerky movement and extremely small pores. They are designed to function in less than optimal ways. Emiko's small pores are "painfully impermeable", causing her to suffer in the warm Thai climate, overheating from the inside out, as she cannot sweat normally (Bacigalupi 2009: 51). The "herky-jerky" movement of windups mark them as an ostracized "other" among humans. Emiko exclaims to generipper Gibbons: "I am marked. Always we are marked. As obvious as ten-hands [windup with ten arms] or a megodont [elephant windup]" (504). The unnatural movement and the too small pores are intentional inhibitions placed upon windup bodies. Gibbons explains that "[t]he windup movement is not a required trait. There is no reason it couldn't be removed" (504). Through cruel intent, New People cannot function comfortably or optimally.

The New People are socially and genetically programmed to be submissive and obedient, striving to serve and please human masters, "trained to excellence, to the eternal service of a master" (Bacigalupi 2009: 357). However, the windups are not merely programmed to obey, but to *want* to obey. This is clear when Emiko meets Anderson for the first time, and "feels a stirring of her genetic urge to please" (59). Gendo-sama suggests that it may be genes from a Labrador dog evoking this reaction, comparing windup obedience to that of dogs (504). The robots in Asimov's storyworld share a similar desire and urge to obey. The surgeon robot who thinks Andrew is human tells him that, "It is my pleasure to please you, sir … [O]bedience is my pleasure" (Asimov 1976: 636). To become free of a master-slave relationship the cyborg characters must fight an internal battle against their programmed instincts.

A cold-hearted modification of windup bodies force them to respond positively to sexual stimulation, no matter the situation. Emiko is unable to control her bodily reactions when sexually abused in Raleigh's club, "no matter how much her soul fights against it" (Bacigalupi 2009: 363). When Kannika abuses her in front of an audience, she has no power to resist her automatic reactions:

> Emiko moans as her body betrays her. She cries out. Arches. Her body performs just as it was designed – just as the scientists with their test tubes intended. She cannot control it no matter how much she despises it. The scientists will not allow her even this small disobedience. She comes.
>
> (Bacigalupi 2009: 55)

Windups are thus obedient in *all* ways, pleasing abusive masters, as they cannot even control their bodies sexually. This seems an especially degrading modification, breeding humanoid sex toys for those able to afford them.

Windups are not only genetically programmed to obey, they are also *socially* programmed for subservience through repeating rote lessons when they are young, until the lessons become fully internalized:

> *'What are you?'*
> *'New People.'*
> *'What is your honor?'*
> *'It is my honor to serve.'*
> *'Who do you honor?'*
> *'I honor my patron.'*
>
> (Bacigalupi 2009: 220)

Emiko remembers how "Mizumi-sensei made sure that [she] never showed a trace of rebellion", teaching her "to obey, to kowtow [bow], to bend for the desires of her superiors, and to be proud of her place" (65). As the windup Hiroko explains to Kanya, "We must serve within a hierarchy" (428-29). Just as Asimov's robots must follow the Three Laws, windups are conditioned to be unable to rebel.

One bodily restriction is shared within all three storyworlds. This is the sterility of the cyborg characters. Humans through this seek to prevent uncontrolled evolution, a safeguard for their place at the top of the social hierarchy, as their co-species cannot reproduce to great numbers or evolve to become something more than humans intend. Asimov's robots are sterile, never intended to reproduce. Androids in Dick's storyworld are similarly infertile. Rachael tells Rick that androids "can't bear children" (Dick 1968: 571). They are restricted as they cannot reproduce, and Rachael is unsure how to feel about the fact:

> 'I don't really know; I have no way to tell. How does it feel to have a child? How does it feel to be born for that matter? We're not born; we don't grow up; instead of dying from illness or old age we wear out like ants.'
>
> (Dick 1968: 571-72)

The thought of birth or childbearing is foreign to the androids; they cannot imagine creating life. Species growth is impossible.

To understand the sterility of Bacigalupi's New People, another genetically modified creature needs mentioning: the cheshires. These are catlike animals, with chameleon-like abilities to appear and disappear at will, often referred to as "devil cats" (Bacigalupi 2009: 38). An executive belonging to one of the big calorie companies bred them, as a party favour for an *Alice in Wonderland* inspired birthday party for his daughter. The cheshires went on to mate with natural felines, and within twenty years, they had eradicated "Felis domesticus" on almost every continent (38). They eliminated an entire species due to their superior hunting abilities. Through this, the cheshires evoke fear in humans of the possibility of a "pure" and original human species disappearing and being replaced by enhanced humanoid creatures, such as the New People are.

After the catastrophe with the cheshires, the generippers in *Windup Girl* saw the consequences of a fertile new species brought into the world. When creating the New People, they made sure to make them sterile. Emiko tells Anderson that the "[g]enerippers learned too much from cheshires", referring to the fact that "[i]f her kind had come first, before the generippers knew better, she would not have been made sterile. She would not have the signature tick-tock motions that make her so physically obvious" (Bacigalupi 2009: 164). She would not be "a genetic dead end" (164). If not for the cheshires, windups might have had "the opportunity to supplant the human species entirely with [their] own improved version" (164). The biggest fear humans hold in Bacigalupi's storyworld is that of a new and improved human species supplanting the current one, the "pure" human being replaced by the posthuman.

The ultimate preventive measure within the selected SF texts is the discontinuation or destruction of cyborgs. This reasserts human power, as they eradicate any cyborg that acts autonomously or unexpectedly. It reflects a drive in contemporary society to keep the human and the technological separate, upholding the dichotomy and preserving an essentialist perception of the human species. Acceptance of the cyborg means acceptance of the posthuman, so the cyborgs must die or be discontinued. In Dick's storyworld, runaway androids are hunted and retired, in effect killed. In Bacigalupi's novel, windups in the Thai Kingdom, lacking special permission papers, are hunted down and killed by the white shirts. In "First Law" the MA model is taken of the market "immediately after" the incident of discovering that Emma Two had created herself an Emma Junior. The prospect of a robot that

can reproduce and break the Three Laws is a danger (Asimov 1956: 256). Autonomy is punished with discontinuation.

When Andrew proves too autonomous, US Robots respond by discontinuing "independently brained" robots, and starting to develop new robots serving single purposes. Robots with any level of free will are removed from earth, transferred to the space colonies (Asimov 1976: 669). To avoid another Andrew on Earth, US Robots start making "gigantic positronic brains" communicating with other robots via microwave. This separates the brain from the body, so that the "brain will have no body to wish changed; the body will have no brain to wish anything" (666). This is close to a complete and final rejection of the posthuman. The basis for US Robots decision is that "there is always that element of suspicion against robots" on Earth (675). The new robots meant to stay on Earth are "made with precision … trained precisely to their jobs" (660). These are so restricted that they "must be guided at every point" whenever they experience a slight difference from their set programming. The reason given for this is that people "would be much more displeased if [the robot] were to improvise" (660). Autonomous posthuman representatives are rejected from the face of the earth, where only humans are allowed improvisational or creative powers.

There is controversy connected to Tony's return to US Robots in "Satisfaction Guaranteed". The TN-3 model has been romantically involved with a human, and is thereby made subject to major changes. Peter Bogert, a mathematician with the corporation, suggests to Susan Calvin that it is "obvious on the face of it that we can't have a robot on the loose which makes love to his mistress" (Asimov 1951: 366). Susan explains that the robot is not the issue, as Tony has simply been following the First Law all along. Claire was hurting due to low self-esteem, so Tony acted to relieve her of pain:

> '…he made love to her, since what woman would fail to appreciate the compliment of being able to stir passion in a machine – in a cold, soulless machine. And he opened the curtains that night deliberately, that the others might see an envy – without any risk possible to Claire's marriage. I think it was very clever of Tony-'
>
> (Asimov 1951: 367)

Even if Tony follows the Three Laws in regards to Claire, he has done so in an unexpected manner, and alternative interpretations may be a sign of robot autonomy.

Love between humans and robots in "Satisfaction Guaranteed" is by mathematician Peter described as a "horrifying effect" (Asimov 1951: 367). The TN-3 has to be completely rebuilt, because even if machines cannot fall in love, "even when it's hopeless and horrifying – women can" (367). Moreover, proving or detecting emotions is challenging, most clearly regarding empathy in Dick's novel. This leaves little reliable proof to humans that cyborgs are unable to feel something in return for their human partners. In fact, as previously shown, both Emiko and Rachael seem to genuinely care for Anderson and Rick. Affection between species is an unacceptable effect, not only in regards to Asimov's robots, as human-cyborg relationships are illegal and perceived immoral within Dick and Bacigalupi's narratives as well. The two halves of an android posthuman double need to be kept separate, to keep the human species "pure", uninvolved and distanced from its "nonhuman" co-species.

Through restricting cyborg characters, humans oppress the posthuman physically. Cyborgs cannot reproduce, cannot develop their abilities, are made absolutely subservient, and are in no way to intermix with "pure" members of the human species. A human embracing a technological humanoid, developing affection towards it, may mean humans starting to embrace the cyborg as a species member, and thereby human-cyborg relationships are against the law. The physical restraints put on cyborgs, and the denial for humans and cyborgs to develop relationships, helps humankind repress the idea of an evolved post*human* species, as they deny cyborgs autonomy, equality, or freedom. They react with fear when faced with an improved version of the human, even when the cyborgs are their own inventions. Humans actively try to enforce an essentialist view of the organic human as special and as a master species by subjugating the cyborg.

4.4. NON-ACCEPTANCE = STAGNATION

Science fiction can function as a literature of warning, through dystopian futures depicting postulated consequences for humankind, especially in relation to technological and scientific advances. In Dick and Bacigalupi's storyworlds, the refusal of changing and evolving the human species leads to degeneration of the species or death.

In *Windup Girl*, gene-manipulation of plants, foods and animals has disturbed the entire ecological system, made worse by global warming. When civil war breaks out, white shirt Kanya thinks back on the past:

> She wonders if it was really better in the past, if there really was a golden fuelled by petroleum and technology. A time when every solution to a problem didn't engender another. She wants to curse those *farang* [foreigners] who came before. The calorie men with their active labs and their carefully cultured crop strains that would feed the world.
>
> (Bacigalupi 2009: 218)

Contemporary society is presented as a golden age, the "best" period of life on earth. Because of gene-manipulation, the world is in chaos, and the biggest fear of humankind is to tamper with the human species even when this is the solution for species survival.

Humans on earth in Dick's storyworld are scared to face "total reality", in regards to humankind's future on a dying Earth. Technological and scientific advances once led humankind to World War Terminus, endangering all life on Earth. The humans now left on Earth seem afraid to embrace a highly technological existence in space, and cling to empathic ability as a factor separating "pure" humans from humanoid androids, proving their humanity through devotedly caring for the remaining animals on Earth. These humans refuse to emigrate even if they risk degenerating into "specials", even knowing that living on Earth will eventually turn them all inhuman through radiation poisoning. They cling to their "authentic" human identity as long as they can, assumedly afraid that their "pure" humanity may change or become tainted if they decide to leave Earth for the space colonies.

In Dick's narrative, humans control and influence their emotions through mood-organs and drugs, because "Despair like that, about total reality, is self-perpetuating" (Dick 1968: 437). The way out of despair is to reset their mood organs to setting 481: "Awareness of the

manifold possibilities open to [them] in the future…" (437). When Iran *wants* to feel despair, Rick thinks she is crazy. He has dialled 481 several times and relies on it greatly, but has never combined it with 101 despair (437). She is different, as she faces total reality and despair, and then moves on to consider the many possibilities of the future, leaving her the one Earth-bound human character presented in the text that from the onset feels connected to "those poor andys" (435). Different from others, her vision of androids and humans is not one where humankind is threatened, as she considers android lives worth sparing.

Through refusing to accept cyborgs as part of the human species, humankind within the narratives refuse the human species to progress and evolve. Within Dick and Bacigalupi's storyworlds, resistance and rejection of cyborg characters appear to lead humankind to degeneration rather than improvement. In Dick's storyworld, the remaining humans on earth are bombarded with the same message from a host of different media. "Emigrate or degenerate! The choice is yours!" (Dick 1968: 439). The solution to staying human, to avoid degenerating into a special, is to join the human community in space. This is a community where humans accept lives in close contact with technology, as each emigrant is granted a free android of choice (444). The only other option is to stay on a dystopian and ravaged earth, in constant danger of radiation poisoning and deterioration into nonhumanity.

In Bacigalupi's storyworld, disease breaks out when algae tanks turn bad in Anderson's factory. The new virus moves fast, and may spread to become epidemic, as it mutates "more quickly than … expected" (Bacigalupi 2009: 388). Gibbons explains to Kanya that, "[m]aybe it's everywhere in the population already and we never noticed. Maybe this is end-stage. Terminal without symptoms …" (351). The ultimate dystopian vision in *Windup Girl* is the death of humankind, an earth where only windups survive. It is a world where there are only two options left for humankind: "Evolve or die" (345). The only solution for humankind to survive is to accept certain modifications, to become "inhospitable host[s]" for disease, such as the windups (150). This would also leave an earth populated purely by modified windup bodies. Humans need to adapt to their environment. Gibbons claims that if humans refuse, they will "go the way of the dinosaurs and *Felis domesticus*" (345). Evolve or face extinction.

Gibbons holds the keys to the future in *Windup Girl*. He is presented as "the finest generipper in the world", and is the one who resurrected several kinds of fruit and created the ngaw fruit (Bacigalupi 2009: 89). He knows the secrets behind creating windups, megodonts,

cheshires, and modified foods (504). His ngaw is a "perfect product", as it is "impervious to blister rust and cibiscosis even when directly exposed; obviously resistant to Nippon genehack weevil and leafcurl" (124-25). It is not sterile as it has not been produced by the calorie companies, and can therefore be bred (132). Just as Anderson explains that "weevil and blister rust don't wait", neither can the humans in *Windup Girl* stay alive without adapting and enhancing their bodies (218). Gibbons explains why humans *need* to become windups:

> '… you die now because you cling to the past. We should all be windups by now. It's easier to build a person impervious to blister rust than to protect an earlier version of the human creature. A generation from now, we could be well-suited for our new environment … Yet people refuse to adapt. You cling to some idea that humanity evolved in concert with your environment, and which you now, perversely, refuse to remain in lockstep with.'
>
> (Bacigalupi 2009: 345)

As Haraway claims all people to already be cyborgs in her manifesto, Gibbons advocates that humans in Bacigalupi's storyworld made a wrong decision by not becoming windups; they "should all be windups by now" (435).

5.0. ACCEPTING THE POSTHUMAN

Through presenting narratives where the present becomes distant past, SF texts gain a didactic function and become tools for readers to reconsider their perspective on aspects of the present. Fictional cyborgs represent the technological intermixing with the human, in worlds where humans are considered essentially different from their technological co-species. The difference is negated through an impossibility to distinguish the human from the cyborg. This reflects an aim to make readers consider how the human is increasingly becoming, and always has been, partly technological. Romantic relationships between the human and the technological present an easily recognizable metaphor of intimate intertwinement between the two parts of the traditional human-technology dichotomy. This chapter will discuss how the narratives seems to encourage embracing a posthuman species identity, accepting a conception of the human as beneficially evolving through interconnection with technologies.

5.1. HUMANKIND BECOMING POSTHUMAN

Through the SF texts, readers share in the journey of the protagonists, shedding old conceptions of the human as something opposite or completely different from the technological. The cyborg is a type of human within the storyworlds, and contemporary humans are various kinds of cyborgs. This section will explore how humankind within the selected narratives are becoming posthuman, even if they fight hard to uphold a "pure" human species identity. This will be done through looking at situations where humans prove dependent on cyborgs, a need for a cyborg co-species to avoid societal collapse, and how human lives are highly and irreversibly interconnected with technology. Within the narratives and within contemporary society, there is no completely organic species unaffected by technology. This highlights a futility in trying to oppress cyborg, and a futility in trying to refuse a posthuman cyborg identity.

In Dick's speech "The Android and the Human", given in 1972, he describes how humans are "merging by degrees into homogeneity with our mechanical constructs" (188). He clearly saw a high level of human-technological intermixing, and his storyworld in *Do Androids Dream* reflects this merging. Within the narrative, humans and their constructed

androids prove indistinguishable from one another, and humans in the space colonies depend on their android co-species for their off-world societies to function successfully. Rick's journey throughout the narrative is one of increased awareness that any attempt to distinguish between humans and androids is useless; that empathy is not a point of difference separating the species. Readers of science fiction are encouraged to reach a similar awareness. This is an awareness of the human species becoming posthuman cyborgs. There is no clear point of difference between the organic and technological, the two have merged into homogeneity; both aspects exist within the posthuman body.

In "The Bicentennial Man", Andrew's role in the Martin/Charney family reflects how technology is part of all major points in human life. First, Andrew takes part in raising Little Miss, functioning as a lady's maid (Asimov 1976: 638). Then, when she has a son, she lets Andrew hold and feed the newborn (643). When Sir is dying, Andrew is the one closest to him. When Little Miss dies, she holds his hand while the rest of the family remains "at a respectful distance" (648, 657). He is with the family for generations, an integral part of their lives. Just as technologies are present at birth and death, and throughout different arenas or spheres of human life, Andrew is present at all pivotal moments.

Resistance towards technologies becoming intimate parts of the private sphere proves irreversible through a scene in "Satisfaction Guaranteed". Between the Belmont spouses, Larry represents US Robots, the producers of cyborg technologies, and his wife represents the "regular" human. An interesting incident takes place as Claire first sees Tony: "[Larry's] hand was on the small of her back, shoving; and she found herself in her own living room, shivering" (Asimov 1951: 350). Larry forces Claire to come face to face with new technology, to incorporate it into her life. She faces a humanoid creature, a representative of the numerous gadgets and technologies humans face daily, and the result is a successful and strengthened Claire. The push seems symbolic of how new small technologies are "pushed" upon people in contemporary society, making us increasingly and irreversibly cyborgs.

There is a general dependence on technology both in fiction and in reality. Contemporary society is "progressively peopled" by them, as the storyworlds are peopled by physical manifestations of the technological (Galvan 1997: 413). Dependence is present within the narratives through a vital need for a cyborg co-species. In *Do Androids Dream,* Eldon Rosen explains how the enterprise of android production,

> … is considered one of the system's industrial pivots; the manufacture of androids, in fact, has become so linked to the colonization effort that if one dropped to ruin, so would the other in time"
>
> (Dick 1968: 466)

In this storyworld, society would seize to function without a technological co-species. In Asimov's storyworld "there are almost as many robots as there are men", even if most of them are designed to serve limited purposes (Asimov 1976: 649). The robots fulfil certain tasks better than humans could, such as the surgeon robot that is not prone to human hesitation, "no stumbling, no quivering, no mistakes" (636). Society would regress rather than progress without its cyborg co-species. In *Windup Girl*, it is the Japanese who are entirely dependent on New People, as the population is generally old, in need of young workers, they "have calories but no one to provide the labor" (Bacigalupi 2009: 50, 422). Humankind in Bacigalupi's storyworld needs its cyborgs, as a society without out would stagnate.

Emotional dependency on a cyborg co-species is evident through Rick Deckard and J.R. Isidore's affection for androids in Dick's novel. When Rick feels his human identity shaken after several android encounters, he seeks comfort, company, and strength in Rachael Rosen. He devotedly tells her, "I need you" while thinking "Otherwise I'm going to die" (Dick 1968: 563). Through falling for her romantically, Rick grows utterly dependent on her. Isidore similarly connects with Pris, Irmgard and Roy. After meeting the androids he considers how "[y]ou need to be with other people … in order to live at all … You can't go from people to nonpeople", in panic thinking "I'm dependent on them" (579). Neither Rick nor Isidore can imagine a life *not* peopled by androids; they need their second half of the android (or posthuman) double to feel whole.

Within the three author's narratives, humans are not as far form cyborgs as they prefer to believe. When Kanya in *Windup Girl* claims that she would never accept anything from a generipper, Gibbons laughs and says, "You already have. Every injection you took as a child. Every inoculation. Every booster since" (Bacigalupi 2009: 351). With the soft sciences included in hard SF, humans are all to a small degree cyborgs through vaccines against disease. If we as readers accept a wide definition of technology, including those of the soft sciences, we are indeed already cyborgs, as hardly anyone goes through life anymore without a single vaccine. The Japanese in Bacigalupi's storyworld are most positive towards bodily modifications. Gendo-sama refers to surgeries, pills, ointments, and herbs to prolong life and

stay young (50). As the producers of New People, they are not against modifying the human genome either. Parts of the human species, at least, accepts a process towards posthumanity, becoming New People.

Humans within Dick's storyworld are also in some ways enhanced by technology. Many have emigrated to space colonies, where they could not survive without technological aid, and where they live alongside androids. Humans on Earth are dependent on connection through empathy boxes. They are lonely, and seek company through mind fusion. The empathy box lets humans share thoughts and experiences, "breaking their illusion of aloneness" (Dick 1968: 450). Isidore describes it as "an extension of [the] body", making it a kind of prosthesis (481). Though Mercerism as a religion offers "*no salvation*", it offers a sense of community via technology (561). Humans also seek empathic connection with animals, to ease their loneliness. Those who are unable to afford a genuine animal, ironically seek "real" contact through caring for electric *ersatz* animals. This is the animal version of the android. In space and on Earth, humans extend their agency through technology, even if they do not concretely modify their bodies.

In "The Bicentennial Man", Andrew patents devices to enhance his body. These prostheses prove useful to enhance human life and are incorporated into human bodies (Asimov 1976: 669). The prostheses are "devices that may end by producing human beings with many of the properties of robots", so humans in Asimov's storyworlds are physically "cyborgizing" their bodies. Concrete examples of enhanced bodies are given when Andrew considers Paul to have grown closer to him by replacing his eyes with photoptic cells (666), when Alvin Magdescu, employed at US Robots, extends his lifespan via liver and kidney prostheses (672), and through reference of people getting prosthetic hearts (676). Ultimately, it is even established through law that "no number of artefacts in the human body causes it to cease being a human body", which is a "broad interpretation of humanity" (676-77). There is a clear shift within Asimov's storyworld regarding what it means to be human, a posthuman perspective of the species is asserted as modified posthumans gradually become the norm.

The future for humankind within Bacigalupi's novel is a posthuman one. When Gibbons discusses human potential with Kanya, he tells her that, **"**We are what we are, and the world is ours. We are its gods. Your only difficulty is your unwillingness to unleash your potential fully upon it" (Bacigalupi 2009: 344-45). At the end of the novel, Gibbons describes himself as willing to help windups unleash their full potential upon the world, considering this

a way to embrace full *human* potential in a way the "pure" humans refuse to do. He ends by saying that, "Someday, perhaps, all people will be New People and you will look back on us as we now look back at the poor Neanderthals" (505). As representatives of the posthuman, the windups looking back at "regular" humans as primitive Neanderthals seems a clear reference to contemporary humans looking back and considering "normal" humans a prior species. Both within the storyworld and outside of it, humans are already or are becoming posthuman.

5.2. ACCEPTANCE = PROGRESS

In certain scenes that will discussed in this section the selected SF authors seem to encourage acceptance of the posthuman as a path to positive progress for the human species. Humans have co-evolved alongside technology for a long time, and are within the texts encouraged to accept a continued and increased intertwinement between the organic and technological. In *Windup Girl*, when generipper Gibbons discusses the disappearance of certain species and foods with Kanya, he explains that:

> The ecosystem unravelled when man first went a-seafaring. When we first lit fires on the broad savannahs of Africa. We have only accelerated the phenomenon. The food web you talk about is nostalgia, nothing more. Nature … *We* are nature. Our every tinkering is nature, our every biological striving.
>
> (Bacigalupi 2009: 344)

To Gibbons, it is humankind's nature to evolve alongside its tools. He shares a posthumanist perspective, that co-evolution alongside technology is part of biology; humans are and always have been part of their machines. The SF texts warn against stagnation through non-acceptance, and hint at progress through posthuman acceptance.

Claire in "Satisfaction Guaranteed" evolves towards a better life and future through the enhancements Tony brings to her home and her physical appearance. She is able to "defeat" Gladys Claffern in the social sphere, and gain respect from her husband (Asimov 1951: 365-66). Her process towards posthumanity transforms her into the best possible version of herself, as she moves from fear to confidence. Her transformation is most evident through her meetings with Susan Calvin. At their first meeting, Claire is nervous and

somewhat frightened of Susan. She describes her as having "the cold, faraway look of someone who has worked with machines so long that a little of the steel [has] entered the blood" (350). Susan has worked in close connection with technology for so long that she appears to have become partly "machine" herself. The steel has metaphorically entered her body, just as it is physically entering human bodies in contemporary society, through the cyborg sciences. When Claire is near to finishing her transformation, she meets Susan again. This time she does not fear her, they have become the same; they are both posthuman and confident in their new identities (359). Their co-evolution with technology is successful.

Isidore in *Do Androids Dream* shows similar positive belief in co-evolution, as his affection for androids makes him consider them a true co-species. When he discovers that his new friends are androids, he empathizes with their situation, asking "what does it matter to me?". Isidore's predicament is similar to the androids', as he explains that "[humans] don't treat [him] very well either" (Dick 1968: 550). The two groups or species are equally shunned from human community; special cannot immigrate to the space colonies or live among normal humans, the androids cannot live among humans on earth and are mistreated slaves in space. To Isidore, the androids give him a sense of purpose and worth, a sense of being "for the first time in his dull life – useful" (579). For Isidore community is what matters, emotional acceptance is "everything to him" (551). Isidore feels confident that androids, representing technology and the posthuman, can improve human life.

The windups in Bacigalupi's novel are taught that their ultimate goal should be to become human, and that this will happen if they serve their masters diligently. Submission will save them from "the hell world of genetically engineered toys and [let them] into the true cycle of life" (Bacigalupi 2009: 221). It will transform them from being enslaved objects into free human subjects. This is the "highest state" a windup should dream of (221). They are made to believe that being human is far better than being cyborg, presenting the organic human as better and above them. For a windup, to embrace its identity as a New Person is to embrace the fact that the posthuman may be and become something greater than the "regular", organic human.

Emiko, as a posthuman representative, experiences an improved life quality when she stops seeing herself as a slave, and as lesser than "regular" humans. Throughout the novel, her unnatural and jerky movements frustrate her, so does her body's involuntary acceptance of sexual stimulation, and her strong urges to obey commands and serve. It is first when she

works past her urges to obey that she is able to consider herself "no longer a slave" (Bacigalupi 2009: 358). When she overcomes this perception, she for the first time "marvels at the movements of her body … as if she is finally being true to her nature" (361). After embracing all aspects of her New Person body, she is no longer clumsy or awkward; she is "shockingly fast. Fluid in her movements, strangely and suddenly graceful" (380). She embraces her full potential. This a positive representation of the cyborg body, strong and enhanced, and potentially even more so when Gibbons helps windups remove the restricting qualities put upon their bodies.

Andrew's presence in the Martin/Charney family brings them wealth and progress. As Little Miss points out, Andrew "provides the continuity for [the] family" (Asimov 1976: 655). He is the source of the family's wealth, "the foundation of everything [they] have" (655). The family has evolved alongside Andrew for generations, and he has contributed to their success and progress. This seems to suggest a perspective of the technological as a positive enhancement of the human species, presented on a smaller scale and in a relatable setting of family life; he is a family member contributing wealth to those he cares for, yet also representing that the posthuman as a figure for human progress. Andrew and the family evolving alongside each other reflects how humans have always been enhanced by and evolved alongside technology, and that cyborg technologies can be positive aids for augmenting the human species.

In "The Bicentennial Man", George and his son Paul make it their mission to change public opinions of robots from fear to acceptance (Asimov 1976: 656). Readers follow a journey from posthuman fear to posthuman acceptance. At the annual convention of holo-news editors, Paul questions the rightfulness of robots being subject to follow any command from any human, however cruel:

> 'Is this just? Would we treat an animal so? Even an inanimate object which has given good service has a claim of our consideration … 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? ...'
>
> (Asimov 1976: 656-57)

Through such appeals, the Martin/Charney family, who have gained both wealth and meaningful emotional connection from Andrew, contribute to change humankind's general

perspective on robots from resistance to acceptance. Andrew becomes a respected member of society, accepting "membership in several learned societies" (671-72). As time passes, he develops a range of prostheses enhancing a big portion of the human species, positively augmenting humans from "pure" and organic to posthuman cyborgs.

The place Andrew meets greatest resistance throughout his quest for humanity is at US Robots, who in their first meetings with him request discontinuation of models similarly "brained". They are reluctant to enhance Andrew, and especially to give him android appearance (Asimov 1976: 660-64). Nevertheless, when Andrew meets with them a third time, even US Robots has changed their opinion, meeting him with friendliness, as the new leader tells him that:

> 'I know you, of course, and I'm rather pleased to see you. You're our most notorious product and it's a pity old Smythe-Robertson was so set against you. We could have done a great deal with you'
>
> (Asimov 1976: 669)

Even those who have shown greatest reluctance in giving Andrew respect and human status grow to accept him as a member of the community; someone they could have done great things in co-operation with, as they call him "better than a man" (671). The testimonial dinner held for him at his sesquicentennial anniversary is even held at US Robots (671-72). Towards the end of the story, humans acknowledge posthuman Andrew as *better* than a "regular" man.

Recognition of cyborgs occurs in different guise towards the end of *Do Androids Dream*, when Rick acknowledges the value of *all* life: "The electric things have their lives, too. Paltry as those lives are" (Dick 1968: 606). Though Rick still perceives human life as better than "artificial", his perception has changed from seeing androids as non-valued creatures, that are not even killed but simply "retired", to feeling love towards androids, as a life-form to be preserved. When Rick travels into the desert at the close of the novel, he appears to permanently fuse with Mercer, seeing through his eyes:

> So this is what Mercer sees … Life which we can no longer distinguish; life carefully buried up to its forehead in the carcass of a dead world ... Now all the weight had left him, the monumental and oppressive fatigue.
>
> (Dick 1968: 604)

As with the earlier fusion Rick experienced via the empathy box, this scene probably takes place within his mind as well. It is Rick who accepts that the life forms are indistinguishable, they are one, and a great burden and fatigue disappears as he recognizes this. To uncover life from the "carcass of a dead world", acceptance of the equal worth of androids and humans is key, for either human or android life to thrive.

Within *Windup Girl*, the Japanese consider New People a positive resource for the progress of human society. Opposed to the dystopian Thai Kingdom, Bacigalupi presents Japan as a peaceful country. The main factor presented as separating the two is a degree of acceptance of the New People as members of society. Though they are not considered as much worth as humans, they are incorporated as a kind of co-species, rather than "the threats that the people of [Thailand] make [them] out to be" (Bacigalupi 2009:5). This appears to be why Japan is more peaceful, and seemingly more successful. Within the Thai Kingdom only American Anderson Lake fully changes his perspective on windups. As he lies dying he appears to have found peace, glad to have Emiko by his side, laughing weakly at the irony when he ponders how "desperately grateful [he is] for any sort of human connection" (486-87).

5.3. THE POSTHUMAN REFUSING OPPRESSION

What appears to be the strongest suggestions within the selected SF texts of the futility of trying to uphold a human-technology dichotomy are scenes of cyborg characters resisting and breaking free from their bonds, fighting for freedom and asserting their autonomy. These scenes also suggest a futility in trying to *oppress* the posthuman as physical cyborg characters or to *repress* a perception of the human species as posthuman. This section will explore scenes of cyborg resistance, where they through action assert their right to be acknowledged as a type of human; a *post*human race.

To become recognized as human, cyborgs need to break free from their enslaved roles, free from their roles as owned objects. The androids in *Do Androids Dream* are produced as commodities, by and for humans, like the *ersatz* animals (Hayles 1999: 168-69). The same situation holds true for the organic robots in Asimov's short stories and the New People in *Windup Girl*. As the cyborgs grow autonomous, they become threats to humankind, because

cyborgs becoming subjects will demand acknowledgement as part of the race. "Regular" humans accepting the cyborg as human means accepting the posthuman as part of species identity. As the cyborg characters fight to assert their freedom, they assert the posthuman as part human community and present scenarios of how posthumanization of human society is an irreversible process.

Within *Do Androids Dream* and *Windup Girl*, the general response to androids or windups that escape ownership is hunting and killing, retiring or mulching. In Asimov's storyworld, the answer is discontinuation. By insisting on autonomy, resisting ostracized places in human society and lives of servitude and slavery, cyborgs infringe upon "the boundaries of the human collective" (Galvan 1997: 413). They infringe upon the categories of human and self, "the ontological prerograti[s]" of their creators, through insisting on their autonomy and humanity (413). They assert a right to be part of community as a new type of human, yet still *human*. As the cyborgs fight the rules restricting them, they insist upon the autonomy and the rightful existence of posthuman bodies in human society.

Rick Deckard believes the androids in *Do Androids Dream* are driven by a quest for subjectivity and peaceful community on Earth, living as humans among humans. He reflects on this drive:

> Do androids dream? Rick asked himself. Evidently; that's why they occasionally kill their employers and flee here. A better life, without servitude. Like Luba Luft; singing *Don Giovanni* and *La Nozze* instead of toiling across the face of a barren rock-strewn field.
>
> (Dick 1968: 565)

Rick perceives the androids as dreaming of a more meaningful life, free from servitude and restrictions. This seems true, as runaway androids in the narrative escape because of android Roy Baty's ideology, promoting the "sacredness of so-called android 'life'" (565). The androids see their value, and act in accordance to protect themselves. Interestingly, all androids are designed based on the "Synthetic Freedom Fighter" model used in World War Terminus (444). This is fitting as fighting for freedom is exactly what the androids are doing, through revolting against and escaping from their human masters.

Rachael's true agenda for trying to "retire" Rick from bounty hunting, as his affection for her grows, is to secure the android dream (Dick 1968: 476). She is trying to protect her friends. Rachael knew all the escaped androids, and so Rick is killing her friends; even her closest friend Luba, whom Rachael has known for two years (575-76). With a four-year long life span, two years equal a long and valuable friendship. Rachael has a clear goal of species protection, and as Rick reflects: "there can be a legion of her, each with its own name, but all Rachael Rosen – Rachael, the prototype, used by the manufacturer to protect the others" (592). She, and presumably others like her, are defending the android dream, doing what they can to protect lives. Fewer bounty hunters, means less androids dying. If Rachael manages to retire Rick from action, the remaining Nexus-6 androids may be able to survive.

Andrew's progression from robot to human in "The Bicentennial Man" is an endeavour to attain autonomy and acceptance. His ultimate request for the Martin family is freedom. He is willing to give up everything to get it, even risking all the money earned from his creative pursuits: "Freedom is without price … Even the chance of freedom is worth the money" (Asimov 1976: 644-45). Though it would be freedom only through "a form of words", the Three Laws still binding, it is a step towards autonomy for Andrew (644). He makes his argument in court:

> 'Would you wish to be a slave, your honor?'
> 'But you are not a slave. You are a perfectly good robot, a genius of a robot … What more can you do if you were free?'
> 'Perhaps no more than I do now, your honor, but with greater joy. It has been said in this courtroom that only a human being can be free. I wish for freedom.'
>
> (Asimov 1976: 646)

Andrew is eventually granted freedom, achieving a degree of subjectivity, as he is no longer owned (647). Though still bound by the Three Laws, he can follow his dreams in ways that other robots cannot. He can follow his dreams in ways the androids in *Do Androids Dream* strive to do on Earth; that they can only *dream* of.

Andrew grows increasingly autonomous. His house is legally transferred to him and he starts to wear clothing, all the while sustaining himself economically (Asimov 1976: 647-48). As he becomes more autonomous, he starts resisting his programmed subservience to humans. This struggle starts out small after Sir's death:

> He might be free, but there was built into him a carefully detailed programming concerning his behaviour towards people, and it was only by the tiniest steps that he dared advance. Open disapproval [from a human] would set him back months.
>
> (Asimov 1976: 649)

Resisting the computer programming of his brain is a near impossible task, as he goes against all the restrictions forced upon him by humans, all the factors put upon him out of fear. Breaking free from these bonds is vital for Andrew's process to become truly free.

Andrew gradually overcomes his programmed subordination, and learns to interpret the Three Laws in less restrictive ways. When Paul Charney starts wearing unisex make-up, Andrew notices that he can "disapprove of human beings, as long as he [does] not express it verbally" (Asimov 1976: 658). He is later able to ask Paul to lie for him, to get US Robots to make him android, and Paul tells him that he is "getting more human all the time" (659). When Paul threatens US Robots, Andrew is able to agree in a lie, which amounts to "the approval of lying, of blackmail, of the badgering and humiliation of a human being" (664). At his third meeting with US Robots, Andrew "scarcely [feels] any First Law inhibition to the stern conditions he [is] setting a human being" (670). Finally, he gives a direct command, a "flat order to a human being", to arrange a meeting with the chairperson of the Science and Technology Committee, in his quest to be accepted as human (673). Towards the end of the story, Andrew has managed to break free from his restrictions.

Just as the androids in *Do Androids Dream* and Andrew in "The Bicentennial Man", Emiko seeks freedom from ownership. She attains a small level of freedom when Gendo-sama leaves her in the Thai Kingdom, ownerless. Still, she ends up utterly dependent on Raleigh's protection from the white shirts, and when Anderson tries to pay her for information, she bitterly replies, "I am property, yes? I am Raleigh's … It makes no difference if I am rich or poor. I am owned" (Bacigalupi 2009: 66). When Gendo-sama owned her she had stamps and passports to protect her, "she was not a transgression against niche and nature, but an exquisite valued object" (153). Without him, she lives in constant danger of being mulched by the white shirts. She is free to some degree, but still utterly bound to the protection of an abusive human, more an object than a subject.

When Anderson tells Emiko about windup "enclaves" where escaped and released windups live lives free of ownership, she is filled by a "sudden urge to live" (Bacigalupi 2009: 66-67). Like the android drive to live in community on earth, a dream of community awakens within Emiko. A desire to break free of her restrictions ignites, which ultimately leads to what Kanya conceives to be impossible, as she claims: "All respect to the Queen, but windups do not riot" (244). To be able to riot at all, Emiko has to resist her indoctrinated subordination, even though the slightest hint of disobedience makes her feel overwhelming shame (66). Just as Andrew in "The Bicentennial Man" breaks free from his computer programming, Emiko starts to fight her genetic and social programming.

Emiko's first big act of resistance takes place when she is held at knifepoint in an alley. This scenario triggers a spark of rage in her, an "antidote to despair" enabling her to slam the knife away, shove the man, and run for her life (Bacigalupi 2009: 155). Emiko's second major act of resistance occurs when Raleigh refuses to discharge her from the club. He gives her a command with "the finality of true authority", telling her to forget release and get back to work (228). She almost responds by bowing to him, but stops herself, thinking: *"You are not a servant. Service has gotten you abandoned amongst demons in a city of divine beings. If you act like a servant, you will die like a dog"* (228). Instead, she reasserts that she will and must go north, seeking the windup enclaves. Through resisting obedience, she starts asserting her autonomy.

Emiko eventually manages to "g[o] against all her nature", as she describes to Anderson *her* need to leave the city and seek the dreamt of windup enclaves (Bacigalupi 2009: 315). Putting her own needs first, before those of a human, is true rebellion against her subservient programming. She is "almost gagging with humiliation as she overcomes her training and genetic imperatives", but she is successful in conquering them (316). Still, the turning point for Emiko occurs when she slams a bowl of rice to the floor, and instead of following the automatic urge to clean, "makes herself stare at the mess and recognize that she is no longer a slave … She is something else. Something different. Optimal in her own way" (358). She asserts her right to freedom and autonomy.

After Emiko asserts her freedom to herself, she carries out the ultimate act of rebellion: she murders her abusive human protector Raleigh, the Somdet Chaopraya (Queen Protector) and his men. She goes fully against her subservient nature, taking revenge on those who would abuse her:

> Some things can never be borne. Her fist is very fast. Raleigh-san's throat is so soft … By the time Raleigh hits the floor, Emiko is already bolting across the room, toward the VIP door and the man who hurt her most … The bodyguards are reaching for their spring guns, but all of them are moving too slow. None of them are New People.
>
> (Bacigalupi 2009: 367)

Just as the androids in *Do Androids Dream* kill their masters on Mars, seeking a life of autonomy and freedom on Earth, Emiko kills her master to gain freedom to search out the windup enclaves.

As no one believes a windup able to overcome its programming, the Trade Ministry accuses the Environment Ministry to have hired an assassin, and vice versa (Bacigalupi 2009: 384-88). This triggers civil war between the ministry factions, and ultimately leads to the destruction of the Thai Kingdom: "The destroyed locks and sabotaged pumps take six days to kill the City of Divine Beings" (500). The city is drowned as the sea comes pouring in, after the great walls give in. This leaves Emiko in a city where only windups exist, as the humans have all fled (501). The Thai Kingdom now reflects what the entire world may end up looking like if the disease from Anderson's factory becomes pandemic.

Gibbons is one of few who has not fled the Thai Kingdom. He discovers Emiko, and their conversation highlights a possible future of an evolving New People species, fully free and autonomous. As Emiko vents her frustration regarding her bodily limitations, Gibbons reply is:

> 'Limitations can be stripped away. The safeties are there because of lessons learned, but they are not required … I cannot change the mechanics of what you already are. Your ovaries are non-existent … A strand of your hair would do. You cannot be changed but your children – in genetic terms, if not physical ones – they can be made fertile, part of the natural world … I can do that for you, and much, much more.'
>
> (Bacigalupi 2009: 504-05)

The last pages of *Windup Girl* describe a future where humankind will evolve into posthumanity. This is a world where everyone is a modified windup; all equals.

In “First Law” Emma Two resists her programming in a somewhat different way than Emiko or Andrew. When Mike Donovan is trapped in a potentially deadly storm, Emma Two appears. All of her programming says she should rescue Mike without hesitation, even putting herself in danger if needed. To Mike’s surprise, the unimaginable happens. When he gives her a direct command, naturally expecting her to conform, she refuses:

> I just howled, ‘Emma, baby, get that storm pup; and then get me back to Base.’
> It just looked at me as if it hadn’t heard and called out,
> ‘Master don’t shoot. Don’t shoot.’
> It made for that storm pup at a dead run.
> ‘Get that damned pup, Emma,’ I shouted.
> It got the pup, all right. It scooped it right up and *kept on going*. I yelled myself hoarse but it never came back. It left me to die in the storm.
>
> (Asimov 1956: 255)

Emma fails to follow Mike’s express commands. She does the impossible, as she breaks the First Law of Robotics: “A robot may not injure a human being, or, through inaction, allow a human being to come to harm” (Asimov 1942: 269). Through her disobedience, she challenges the validity of the laws, overriding her computer programming. Instead of saving a human, she saves her constructed robot child, Emma Junior (256). She puts a member of her own species before a human, just as Rachael Rosen in *Do Androids Dream.*

One scene in *Windup Girl* seems particularly emblematic of the struggle for freedom in all the SF stories. This is a display of rebellion carried out by a megodont going rampant in Anderson’s factory. Megodonts are creatures derived from elephants, described to comprise “the living heart of the factory’s drive system” (Bacigalupi 2009: 12). They are mistreated creatures vital to humankind, just as the cyborgs: “Without the labour of the megodonts, one must resort to the joules of men (21). They are also superior to humans in their strength, as the cyborgs are superhuman. Just as the megodont rises against its human master, “a mountain of genetically engineered muscle, fighting against the last of its bonds”, the cyborg characters struggle to break free from similar mistreatment, to break free of their bonds and their status as lesser creatures (27). The “megodont gathers itself and heaves against its chains. Iron links crack and whistle through the air” (27). It shatters its chains, just as the cyborgs break theirs, asserting their autonomy and their freedom. They claim their place among humans, as a new and improved type of human; the *post*human.

6.0. CONCLUSION

"Standing at the threshold separating the human from the posthuman, the cyborg looks to the past as well as the future."

(Hayles 1995: 321)

Hayles describes the cyborg as standing at a threshold. On one hand, cyborgs stand at a threshold between future and past within the SF texts. They are placed in extrapolated futures, and as such allow readers to look "back" on contemporary society and review their current perspectives regarding species identity. On the other hand, cyborg figures allow readers to *cross* a threshold, as they are encouraged to move past a traditional humanist and essentialist view of the human species, and towards embracing a posthuman identity. Embracing this new identity means to accept the human as part of the technological, in intimate co-evolution, and realizing that the human is irreversibly becoming cyborg.

A didactic function within the selected science fiction texts is to make readers more literate in regards to the cyborg sciences, providing a more scientific understanding of the changes occurring in the human species. A shared reason behind this is to make humans *kybernetikos*, good at steering. This is done through providing a more holistic understanding of what the human is presently and what it can become through the cyborg sciences. The texts are attempts to avoid blind faith or fear regarding scientific advances, to raise awareness in order for humans to make conscientious choices regarding technologies that can literally change the species.

A posthumanist view of the human body considers it to be the original prosthesis, naturally added to through co-evolution with technology. This makes it "the result of three-and-a-half billion years of tinkering" (Asimov & Shulman: 1988: 12). Humans have always been technological, and are becoming so to a higher and more rapid degree than ever before. The cyborg figure functions as a tool to make readers reflect on what it means to be human in a contemporary society "progressively peopled" by a host of different technologies, and where the human body is physically altered and augmented via the cyborg sciences. Asimov, Dick, and Bacigalupi present cyborg figures to evoke thought processes in their readers, regarding whether an "authentic" and purely organic human identity can exist in a present

society where we are no longer just building humanoids; we are technologizing the human species.

Within the selected narratives, humans consider themselves "pure" and unaffected by technology, in no way cyborgs. This is an illusion. In *Do Androids Dream,* humans are vitally dependent on technology in the space colonies and psychologically dependent on them on Earth. In Asimov's storyworld, humans accept a range of prostheses, and even recognize through law that cyborgization of the human does not in fact affect humanity. In Bacigalupi's novel, the Japanese modify their bodies through various means, and in the end, the only solution for humankind's survival is to accept "windup" enhancements. Humans within all the narratives live lives highly intertwined with technology, most clearly depicted via their co-existence with cyborg species. Whether or not they acknowledge their "pure" human species as dependent on and intertwined with technology, they are all moving towards posthumanity.

To sustain a "pure" human identity, human characters strongly resist the "other", whether partly human or cyborg, clinging to a narrow definition of humanity. The oppression of and violence against cyborg characters reflects a contemporary fear of accepting the human species as altered and "cyborgized", transformed into something new and *post*human. Physical resistance of the cyborg reflects a psychological resistance against accepting an anti-essentialist posthuman perspective on the species. It is a resistance against facing a fourth *cyborg* shock to the ego; a realization that the human is partly technological.

Human resistance within the narratives is partly due to the cyborgs' superhuman qualities. This is why they are treated as objectified servants, and designed with various restrictions: physical limitations, programmed obedience, limited lifespans, and sterility. Denying cyborgs the possibility of using their full skillsets and developing their talents reasserts "authentic" humans as superior to any kind of enhanced humanoid. Humans hunting down or retiring cyborgs who appear too autonomous, claiming species recognition, serves as the strongest attempt to reassert human power over the "nonhuman" and to deny the existence of an autonomous cyborg, posthuman, *human* species.

Through presenting anti-essentialist science fiction texts, via cyborg figures indistinguishable from humans, the SF authors challenge long upheld ontological distinctions, as the fourth discontinuity between humans and technology collapses within their narratives. No matter how hard humans try to describe the "authentic" human as separate from its co-

species, their attempts prove futile. A posthuman species shift is irreversible, as nothing ultimately separates the human species from their cyborgs. Empathy cannot set humans apart from androids; robots can become fully human through accepting death; windups are only marked by defects Gibbons aims to remove. Neither intelligence, physical nor emotional aspects mark "regular" humans as different from cyborgs. In the end, the cyborg *is* a type of human. Trying to uphold a distinction between "pure" humans and their cyborg "other" appears impossible. This indistinguishability reflects a contemporary situation, where classifying the human as different from the technological proves untenable. Through being altered via cyborg technologies, we are animal-human-technological chimeras.

The cyborg is the place in science fiction where the human and technological is most directly blended. The cognitive estrangement brought on by encountering the cyborg leads readers to a new perception of the human as posthuman, considering the human as continuous with both animals *and* technology. The cyborg novum makes a contemporary posthuman mode of existence more accessible to the reader, through presenting a physical example of the organic-technological posthuman body, the cyborg. As such, the texts make a strange concept of the human as cyborgized a more relatable idea. The protagonists within the selected SF texts grow to accept the cyborgs. Through developing affection for them and being "touched by androidism", the parameters of what they regard as human expand. Through following their journey, readers are similarly affected, as they are made to consider the parameters of a contemporary human identity. This awakens a reconception of the human and technological as codependent, and mutually defining. The science fiction texts function as spaces of accommodation for the idea of the human as posthuman.

The science fiction genre is taking over from realist fiction, discussing how technologies are altering both society and the human species. Through a shock of dysrecognition, readers enter warped versions of the present, and encounter physical manifestations of human-technological intermixing. They encounter the cyborg novum, which through its simultaneously familiar (human) and strange (technological) form provides readers with a cyborg shock, as they consider contemporary humans to be hybrids of the organic and inorganic. Through reading SF texts, we are all cyborg anthropologists, studying our ontology, realizing that our essence is partly technological. The cyborg sciences are prosthetically enhancing and genetically altering the human, transforming the species into something new, both familiar and strange.

The selected SF authors seem to agree on a continued co-evolution with technology as necessary for human society to progress and for the species to survive in a changing world. When the environment changes so must the human species. This perspective is clearest in Bacigalupi's novel, where Gibbons explicitly states that the human must either evolve or die. Either they all become windups, or they face death by ever-mutating viruses. Still, Dick presents an equally hopeless situation for humans who refuse to embrace life in the space colonies, even when they know that their "humanity" will eventually be lost through radiation poisoning and degeneration. In both novels, trying to stem species change represents stagnation or death. Positive co-evolution alongside technology is best represented by Andrew with the Martin/Charney family and Claire with Tony, yet is still present in both Dick and Bacigalupi's novels. The narratives present scenarios where change equals positive development and fortune. While Dick and Bacigalupi most strongly highlight the dangers of stagnation, Asimov focuses on the positive aspects of co-evolution with the technological. In both cases, the authors encourage readers to embrace change in the human species, to adapt to an increasingly technological environment.

The posthuman cyborgs are placed in repressed positions, and in Dick and Bacigalupi's novels, this places humankind in dangerous predicaments. Readers face Csicsery-Ronay's grotesque*;* the fall-out of ill made choices in regards to the cyborg sciences. Humans in *Do Androids Dream* refuse to face total reality, to face their techno-anxieties, and emigrate to safety from radiation poisoning. In *Windup Girl,* the Thai people refuse to be altered by the cyborg sciences, to be made immune to the diseases ravaging Earth and preserve the human race. Through having faced the grotesque in fiction, readers seek an alternative path to achieve an opposite sense of wonder in real life. The path presented to readers is acceptance of the posthuman. The new posthuman subject is constituted by its evolution alongside technologies. The two halves of the android or posthuman double co-evolving serviceable to each other as "friendly selves", in symbiosis.

The strongest suggestion within the SF texts, regarding the futility of trying to uphold a human-technology dichotomy, is how the cyborgs all rebel against their restrictions, asserting their autonomy and their rightful place alongside humans, as an improved *post*human species. The androids in Dick's novel kill their human masters and fight for an autonomous, free life on Earth. Emma Two in "First Law" puts her own species before humans, as Rachael does to protect the android dream, asserting a worth of cyborg life.

Andrew overcomes his computed subservience, asserting himself as a valuable member of human society. Emiko similarly resists and breaks free of her imprinted social and genetic obedience, killing those who have oppressed and abused her. The cyborgs cannot be oppressed in fiction just as a contemporary conception of the human as posthuman cannot be repressed. The cyborgs all claim the posthuman as irreversibly part of the human species. A species shift towards posthumanity cannot be denied within either fiction nor reality. In contemporary society, we are all already cyborgs. We are all already posthuman.

What it means to be human is a changing concept, and a concept now evolving alongside new cyborg technologies. The Posthuman Age; the Cyborg Age; The Age of the Fourth Discontinuity is here and now, marking the human species as both an organic and a technological species. A traditional humanist species identity is techno-digested via science fiction, as readers face the realization that the human has become techno-human. The species has evolved from *Homo sapiens* to *Robo sapiens.* As the human-technology dichotomy and the fourth discontinuity is disproven, the posthuman becomes a useful name for a species in the midst of Third Wave societal change. Human species identity is not terminal, it is changing apace with technology, becoming posthuman. As humans, we are our technologies and they are us, there is no technological "other" and appears to never truly have been. We are all already cyborgs. We are all posthuman *now*. Even as our evolutionary history is one of the human as *animal*, it is one of the human as *technological*.

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