# OUR HORIZONTAL BROTHERS AND SISTERS:

# POSTHUMAN BODIES AND SPACE IN KIM STANLEY ROBINSON'S *2312*

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Tiivistelmä – Referat – Abstract

Tutkielma käsittelee posthumanistisia kehoja Kim Stanley Robinsonin romaanissa *2312*. Työssä tutkitaan, kuinka kirjailija rakentaa erilaisten kehojen kuvauksia ja kuinka nämä kuvaukset heijastavat posthumanistisen teorian käsityksiä kehoista, kehojen välisistä suhteista ja kehojen rajoista. Tutkielmassa lähestytään aihetta monitieteisestä näkökulmasta. Kirjallisen analyysin tukena on käytetty posthumanistisen teorian lisäksi tieteentutkimuksen, antropologian, sosiologian, maantieteen, feministisen tutkimuksen sekä kriittisen vammaistutkimuksen tutkimussuuntiin pohjautuvaa aineistoa.

Toinen luku käsittelee ihmiskehojen kuvausta romaanissa. Maapallon ulkopuolisissa yhteisöissä on kehittynyt uudenlainen normatiivinen kehonkuva, johon liittyy voimakas kehon muokkaus erilaisten bioteknologioiden avulla. Yksi tarinan päähenkilöistä, Swan Er Hong, muokkaa kehoaan normien vastaisesti ihmisyyden ja hirviömäisyyden rajoilla. Kolmas luku käsittelee eläinten kehoja sekä synteettisten elämänmuotojen kehoja. Näiden kehojen rajojen ja suhteiden määrittely romaanissa osaltaan muodostaa ihmiskehojen ja ihmisyyden rajoja ja osoittaa rajausten keinotekoisen luonteen. Neljäs luku käsittelee kehojen liikettä tilassa. Robinsonin teoksessa kehollinen toiminta näyttäytyy tapana tuottaa luonnon kokemusta, ja luonto puolestaan muodostuu lähinnä ihmisen kehollisen toiminnan merkityksistä erilaisissa ympäristöissä. Tämän lisäksi eläinpopulaatioiden itseohjautuva liike on erottamaton osa ihmisten ja eläinten suhteita.

Robinson kuvaa teoksessaan tulevaisuuden yhteiskuntaa, jossa ihmisen, eläinten ja ei-biologisen elämän väliset rajat ovat muutoksen tilassa. Teos näyttää, kuinka ihminen lajina on samanaikaisesti erottamattomasti liitoksissa muihin eläinlajeihin, avustaviin teknologioihin ja ympäristöönsä. Tämä yhteys ilmenee teoksessa kahtena erilaisena ihmiskäsityksenä: näkemyksenä ihmisistä tiukasti säännellyn ihmiskehon rajojen ylittäjinä sekä näkemyksenä ihmisistä monimutkaisesti rakentuvina kehollisina olioina, jotka ovat jatkuvassa vuorovaikutuksessa ympäristönsä ja toisten elämänmuotojen kanssa. Robinson esittää romaanissaan mahdollisia tapoja muuttaa nykyisiä ihmisten ja muiden olioiden välisiä suhteita vähemmän tuhoisiksi, ja nostaa esille kysymyksiä valistuksen filosofiaan perustuvien hierarkioiden oikeutuksesta.



Avainsanat – Nyckelord – Keywords
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## Contents

# 1 Introduction

In this thesis I examine posthumanist themes in Kim Stanley Robinson's science fiction novel *2312*, first published in 2012. I focus on two topics: bodies and space. Robinson suggests that humans need to accept the interconnectedness of the category of human, and forge a new place for themselves among others.

## *1.1 The aim and structure of the thesis*

The aim of this thesis is to show through analysis and close reading that Robinson has constructed a story, in which both transhumanist and posthumanist visions of humanity coexist. I will show how the novel constructs the body, and through the body, humanity. I will also examine how animal and non-animal others foreground questions about the interconnectedness of humans, as embodied beings, with other beings and the world.

To study these themes, I refer to various schools of thought on humanity, the body, and the environment. My approach to the study of Robinson's novel is interdisciplinary. I have chosen secondary material from the fields of feminist studies, science and technology studies, biology, sociology, tourist studies, anthropology, human-animal studies, critical disability studies, and geography. Despite the wide array of different disciplines, all the secondary material used in this thesis approaches humanity and human activity as a construct and a process.

In this introduction, I provide a brief introduction to the different branches of posthumanist thought. In the second chapter, I examine how the boundaries of the normal body are policed and enforced, while enhancement simultaneously constructs a new kind of human body. Robinson introduces the monstrous body that hides in plain sight challenging the limits of the normative body. The proper, normative body emerges as one that readily accepts medical intervention, but abhors disorder. My theoretical framework for this chapter is based on Margrit Shildrick's work on embodiment and monstrosity. For a theoretical background on the commodification of the body, I turn to anthropologists Lesley a. Sharp and Linda F. Hogle. I also refer to the work of biologists Jessica Hope Whiteside and Dorian Sagan on the topic of evolution and symbionts.

In chapter three, I aim to show that Robinson challenges the boundaries between humans and animals, and humans and artificial lifeforms. In this chapter, I examine the madness as animality through John Derby's feminist analysis of representations of mental disability. I also refer to Cary Wolfe's work on posthumanism and animals. To further study the position of animals in *2312*, I turn to Mary Murray's article on the history of animals in capitalism, and Donna J. Haraway's writing on companion species. For added perspective on the recognition of difference, I refer to Donna McCormack's article on queer monsters.

In chapter four, I examine the production of nature as a bodily practice, and the space wild animals allowed within this context. In this chapter, I demonstrate that nature is a cultural construct, and thus a dynamic, human relationship, and that the use of space shapes humans' abilities to participate in and shape their future. For a theoretical approach to examining space and nature production, I refer to geographers Nigel Thrift and David Lulka. Katrin A. Lund's article on experiencing nature provides further perspective on the sublime aspects of nature experiences.

### *1.2 Critical Posthumanism and science fiction*

*Posthumanism* is a multidisciplinary field of study that is mainly concerned with humanity's relationship with technology, evolution, and other species. The main differences between the various approaches within the larger framework of posthumanist thought stem from their contrasting relationships with *philosophical humanism*. Here, philosophical humanism refers to the school of thought that centers human experience and morality. Pramod K. Nayar delineates two distinct main strands of philosophical posthumanist thought: *transhumanism* and *critical posthumanism*.

Of these posthumanist disciplines, transhumanism is mainly concerned with the transcendent potential of technological progress as it relates to the human body and mind. Transhumanism is a direct descendant of humanist philosophy, focused on the improvement of the human species. The underlying belief in transhumanist thought is that the *transcendent* phase of human evolution will be reached through the use of technology. My use of transcendence here refers to the humanist tradition of viewing humans as a species with the potential to overcome the limitations of its

material reality through technology. Transhumanist theory posits that biotechnology, such as genetic modification, performance-enhancing drugs, prosthetics and other implantable technology, will increase the abilities of humans so that a new kind of existence and knowledge will emerge.

The transhumanist body appears as a work in progress, much like a computer that can be made more efficient or powerful through improvements on its various components. Visions of reaching immortality through technology by having one's personality transferred into a computer's memory, or into an android's indestructible body, reveal a belief that there is a self, or a soul of sorts (Nayar 6-7). This self is believed to be a cohesive entity that can be fully represented as reproducible informational patterns.

Examples of humans represented as information in science fiction can be found in the transporters in the various Star Trek series: a living human can be broken down into code and reconstructed in a different location. Transporter accidents in Star Trek take place in several episodes. In an episode of the Star Trek series Voyager, titled "Tuvix", the characters Neelix and Tuvok merge and form a new lifeform. The cause of the accident is found to be a symbiogenetic alien plant that contains enzymes that caused the genetic codes of Neelix and Tuvok to merge. The ship's Doctor uses radioactive matter to label the other person's genes so they can be separated by the ship's transporter system and reconstituted. A mere DNA pattern is enough to replicate a person. Cyperpunk fiction in the 1980s and 1990s also explored the themes of human existence represented as informational patterns, subjective existence in cyberspace, and virtual reality. In William Gibson's *Neuromancer*, the protagonist views his body as "so much 'meat' that exists primarily to sustain his consciousness until the next time he can enter cyberspace" (Hayles 36). Cyberspace and virtual bodies signify the potential to transcend the limitations of the physical, mortal body, and live forever as data and energy.

Eugene Thacker argues that the basis of such transhumanist visions of disembodied subjectivities lies in conceptualizing information as "a value independent of material instantiation" (85).

> Understood as essentially information, and as (re)programmable, the body … increasingly becomes valued less according to any notion of materiality or substance (as we still see in modern biology) and more according to the value

> of information itself as the index to all material instantiation – a kind of source code for matter. (Thacker 86)

Thacker is critical of such a view, arguing that transhumanism's eagerness to represent the materiality of the body as an informational pattern is a strategic move to avoid engaging with materiality (86-87). This kind of body, Thacker further argues, "is purified of undesirable elements (the markers of mortality, disease, instability, unpredictability)," but it still " remains a body (a functioning organic-material substrate)" (93).

Transhumanism, then, tries to do away with the inconvenient body; the body that is uncooperative, ill, disabled, too excessive or too lacking, too gendered or too racialized. Critical posthumanism answers this challenge by centering the materiality and relationality of existence. Nayar writes:

> Contemporary critiques of traditional humanism … draw upon various schools of thought – race studies, poststructuralism, social studies of technoscience – to demonstrate how the very notion of the human has been exclusionary, and built upon a process whereby the differently abled, women, particular races and ethnicities, and animals have been treated as inhuman and non-human. Critical posthumanism's philosophical and political purchase emerges from recognizing this exclusionary principle behind all humanist thought. Critical posthumanism is about greater inclusivity, interconnections, co-evolution and mutualities. (35)

The aim is, then, to deconstruct and question the different traditions of humanism that support and recreate structures of oppression and domination. As such, critical posthumanism is in a close, if contentious relationship with humanist philosophy.

What, then, is the relationship between critical posthumanism and science fiction? Science fiction offers ways to speculate about the different possible ways of being human, and the ways in which humanity may develop. In addition to humanity, science fiction incorporates aliens, monsters, androids and a myriad other creatures. These others often function as a mirror to humanity, representing the things humans are not, or are not allowed to be. Science fiction can thus give posthumanist theories eyes, ears, skin, and tentacles. While science fiction writers do not necessarily study posthumanist philosophy, a feedback loop between scientific discovery, science fiction, and posthumanism exists. New advances in science excite the imagination of authors, who create new worlds, and these new worlds provide

posthumanist theory with material about imagined possibilities. In other words, Science fiction provides a way to speculate about and play with different posthumanist visions of humanity and embodiment.

### *1.3 Synopsis of Kim Stanley Robinson's 2312*

In *2312*, humans have spread out into the solar system, establishing colonies, cities, science stations, and mining operations on nearly every planet in the solar system. Larger asteroids have been hollowed out, and turned into zoos that hold and breed animals that are extinct, or nearly extinct on Earth. Asteroids also function as mass transit vehicles, moving people and cargo along their orbit. Many of the human habitats in space are part of the Mondragon Accord, a cooperative economic system that utilizes artificial intelligence to calculate the material needs of each community. Earth, however, is still under a capitalist economic system, and inequality is rife.

Mercury, the nearest planet to the sun, hosts Terminator, a city that travels on a circular track, traveling ahead of the dawn. The novel's main protagonist Swan Er Hong lives in this bubble-like city. Swan Er Hong and has a long professional history as a terrarium designer but in her later years, she has focused on creating artworks that combine body art and environmental art. She is 137 years old, but not geriatric: she has received longevity treatments since before her birth as is the custom for space-dwelling humans. As a character, she is mercurial and at times unpredictable in her actions. Her actions throughout the novel are however driven by recognizable motives: at first by grief, and later by a desire to affect change, and continue the good work of others before her.

The novel's main plot is set in motion as Swan discovers a data chip among her deceased step-grandmother Alex's belongings. A recorded message asks her to deliver the item to a man named Wang on Jupiter's moon Io. With the help of Alex's surviving partner, Mqaret, Swan discovers about a group that is continuing Alex's work. Alex had been mapping out the power structures among human communities, and the potential for shifting power away from Earth governments into space in order to stabilize the entire network of powers. Before her death, she had been setting up a secret network capable of enacting her plan. Alex's discovery of the

potential misuse of quantum computer infrastructure had however caused difficulties in finding secure modes of communication.

While still on Mercury, Swan meets Fitz Wahram, the novel's second main character. Wahram is a citizen of Saturn's moon Titan, and a diplomat involved with Swan's grandmother's secret group. Together, Swan and Wahram set off toward Io. After meeting with Wang, Swan travels to Earth to meet with her former partner, Zasha, on the East Coast of the United States. While there, she narrowly escapes being kidnapped by locals, and rewards the young man who helps her, Kiran, by arranging for him to travel to Venus. On Venus, Kiran begins working as a double agent, gathering information about two factions vying for power.

After Swan and Wahram return to Mercury, they narrowly escape the complete destruction of Terminator. A massive projectile destroys the city's tracks and leaves Terminator at a standstill, as the planet rotates toward dawn. The inhabitants of the city evacuate. As the city burns in the sunlight, Swan and Wahram escape into a utility tunnel that runs under the planet's surface along the tracks. Before reaching the tunnel, they are both exposed to dangerous levels of solar radiation, caused by a massive flare in the sun's corona. In the tunnel, they meet a group of Mercury's sunwalkers – people who endlessly walk the planet's surface ahead of the dawn. Together the survivors walk the tunnel for days, while Swan slowly succumbs to radiation poisoning. Eventually they are saved, and recover. Swan is revealed to have survived the deadly dose of radiation because of a body modification she had performed decades ago.

Swan and Wahram meet up with Jean Genette, an inspector in an interplanetary intelligence agency. Genette is investigating the destruction of Terminator. As the investigation progresses, it becomes apparent that the destruction of Terminator was a deliberate attack, set in motion years ago by unknown entities. Another attack is discovered to be in progress. During the investigation of the attack on Terminator, it is revealed that the Venusians have been using humanoid quantum computer-based agents to carry out their terror plots. The humanoid androids are deemed a threat to all of humanity and sentenced to exile along with their creators. A few androids however escape detection, and remain free. Swan and Zasha help one android to escape to begin a new life in New York among humans.

Besides trying to thwart and investigate the terror plot, Swan and Wahram continue Alex's work on repopulating the Earth with animals. The terraria have been

used as a way to stockpile animals for the reanimation effort. The work is conducted in secret, without the input or consent of Earth governments or its inhabitants. At first, Earth-dwelling humans are shocked and even traumatized by the appearance of innumerable animals around the world, but as time passes, humans adjust to the new order of things. As decades pass, the reanimation comes to be seen as a pivotal event in what is implied to be a transformative change in the power relations of the entire human diaspora.

## 2 Human Bodies

In this chapter, I study how Robinson depicts the human body. I argue that two different constructions of the body emerge in the novel: normal or normative, and posthuman. The normal, or normative human body, is a body with enforced boundaries. It is a body that is compatible with a transcendent view of humans as a species. The second kind of human body is a less bounded body that is open to connections and unpredictable change. Throughout the novel, Robinson shows how the boundaries of the normal body are policed and enforced, while enhancement and modification simultaneously constructs a new kind of hybrid, open human body.

The first part of this chapter discusses the normative body and its commodification through the medicalization of its parts and functions. I examine the ideological and philosophical implications of such a construction of the human body in the novel, and the ways in which the characters of Kiran, Wahram, and Swan challenge it. The second part of this chapter discusses Swan's body as a monstrous body. I apply Margrit Shildrick's discussion of the monstrous other to the character of Swan Er Hong, and the ways the character's modification of her own body acts as resistance against the ideology of human exceptionalism.

### *2.1 The normative human body*

For the space-dwelling humans, or *spacers*, advanced medical biotechnology is an essential part of being human. Their bodies are enhanced and repaired continuously through invasive and non-invasive treatments designed to increase wellbeing and longevity. Enhancements begin in utero for those, whose parents choose to endow their children with both male and female reproductive capabilities. Taking supplemental hormones like oxytocin and vasopressin to increase feelings of wellbeing and happiness is commonplace.

However, access to these treatments is restricted: only the relatively small community of spacers who live in the co-operative, post-scarcity communities covered by the Mondragon Accord have extensive bodily enhancements. The spacers in these communities have evolved into new kinds of humans: *smalls*, who are especially suited to living on high-gravity planets, and *talls*, who thrive in low gravity environments. All spacers appear different to Earth humans. For example,

Swan Er Hong, who is neither a tall nor a small, is described by an Earth human as "old, tall, good looking" and moving "as if she were swimming" (111).[1]

Earth's 11 billion inhabitants are, for the most part, excluded from advanced medical technologies. Compared to spacers, Earth humans appear primitive to Swan in their reproductive habits: "Two faces: mother and daughter. Here it was such a clear thing; it looked like parthenogenesis" (104). Earth humans are also described as "thin and small, bent and dark," ravaged by manual labor and hardship (307). Regardless of their differences, spacers and Earth-dwellers are on the same human continuum, each body holding the potential for enhancement. The character of Kiran exemplifies this potential. Kiran saves Swan from being kidnapped by his own family, and Swan offers to send him to space. He accepts the offer and is smuggled to Venus, where he begins a new life as a worker and a double agent. After proving himself to the ruling elites on Venus, he gains access to a new prosthetic technology: translating glasses that reveal all the information in his environment he was previously unable to understand.

> [W]hen he looked at Chinese language signs, with all their intricate ideograms, he now saw them overlaid in glowing red with the words rendered in English. It was startling to discover just how much information was written into the cityscape, now in glowing red: *Beware of the Three Withouts. Vote for stormy Chang. Towering Mountain Beer. The Door in the Middle of Half the Sky Alterations.* (281)

The glasses also translate speech: "Red writing plastered over the visible world – it could be disconcerting, but it was so nice to have things explained at last" (284). The glasses enable Kiran to learn the language faster, and more importantly, they make him a better spy as he can use them to record translated conversations. While this enhancement enables Kiran to learn faster and make use of the information embedded in his environment, the translator apparatus also reveals the limitations of the human capability to process new information.

Enhancements of the body can be framed as *prostheses* that supplement the existing functions of the body. Prostheses are both material artefacts such as cochlear implants, and discursive frameworks (Shildrick, "Prostheses" 271). In my thesis, I use the term prostheses to refer both to physical prosthetic devices, and the larger set

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[1] References to *2312* are given by page numbers in brackets.

of biomedical technologies and other aids used by humans in the novel. Such technologies include devices such as glasses that translate speech in real time, body braces that aid travelers in unusual gravities, and medical technologies used to increase longevity. Margrit Shildrick argues that the supplementary event, that is, the use of prosthetic technology that specifically adds new functions or abilities to the body "is always a paradox in that it implies a movement to both augment – even make whole – an existing object, and at the same time to substitute or replace that object" ("Prostheses" 278). The enhanced body, then, by its very ability to incorporate prosthetic technologies, marks the unenhanced body as an incomplete body by revealing the body's "originary lack" ("Prostheses" 277). The multitude of longevity-increasing therapies, and other treatments the spacers engage in, reveal a vision of the unenhanced human body as one that is not realizing its whole human potential, and is therefore lacking. A fully realized human in *2312* is, then, one who strives to reach his or her full potential and to take advantage of prosthetic technologies.

Prosthetics can also be framed as technologies that replace, or repair, the functionalities of a normal body. Therapeutic prosthetic technologies aim to alleviate suffering and to decrease the effects of disability. This, in turn, plays a part in drawing the boundaries of a healthy and normative body that needs no medical intervention. The healthy body is a body that lacks a pathological source of suffering or degeneration. In other words, a healthy body can only be and is only defined through its relationship with illness, disease, and disability. Shildrick argues that the healthy body is marked by its absence, that is, the body is not experienced as a presence until it becomes "diseased, damaged or otherwise unwhole". The experience of illness and disability is when, Shildrick writes, "the body forces itself into our consciousness and that comfortable absence is lost" (*Monster* 77). The body, then, becomes an uncomfortable reality, reminding the subject of its physicality.

The process of the body becoming visible and ailing through suffering, and the process of healing play out in the novel when Wahram goes through the removal and regeneration of a limb. As Swan and Wahram are on their way to Venus on the ship *ETH Mobile*, a second interplanetary terror attack is discovered to be in process, targeting Venus's sunshield. The ship they are traveling on is evacuated, and directed toward the gathering mass of projectiles to prevent the attack from causing damage to the planet. Swan and Wahram exit the ship in personal space suits, and quickly

become stranded in space. A rescue shuttle approaches, but a piece of shrapnel from the destroyed *ETH Mobile* causes an explosion, thus demolishing the smaller ship. Wahram's suit is damaged by a piece of shrapnel, causing an injury to his leg. Swan tends to his wounds, and he survives the ordeal. His leg, however, is amputated below the knee:

> In the three weeks it took to reach Pluto and Charon, Wahram's injured leg took a turn for the worse, and after a consultation among themselves, the ship's medical team decided to amputate it just below the knee and begin the pluripotent stem cell work that would start the growth of a new left leg. Wahram endured this with as little attention as possible, quelling the dread in him and reminding himself that at 113 his whole body was a medical artifact, and regrowing lost limbs was one of the simplest and oldest of body interventions. Nevertheless it was creepy to look at, and phantom itchy to feel … no matter how much he distracted himself, he never got used to the sensation of the new leg growing down from his knee. (524)

Not only is Wahram cleaved into an observing, immaterial *subject* and a material, experiencing body, but his body is further separated, or split via medical intervention, into "his body" and "the leg".[2] Shildrick argues that medical interventions, including surgeries, require a splitting of the subject from the body:

> The body is reduced to the status of personal property, inalienable in principle, but to be disposed of as the rational agent sees fit. It may be modified at will: cut up, supplemented by prostheses, or have its parts replaced by organic material from other bodies. ("Heart" 234)

The separation of body and mind is, then, utilized whenever it is necessary to do so to facilitate treatment: Wahram is able to withstand the deeply unsettling sensations of growing a new leg by considering it an external object. Wahram's new leg is distanced from the rest of Wahram's body as a result of the physical discomfort and his outright abhorrence of the process of growing a new leg. The growing leg is "a leg, "it", "the new leg" instead of simply his leg.

Wahram's dread reveals the complex psychological effects of the fragmentation of the body as it is subjected to medical procedures that challenge the experience of it as a whole. Medical treatment demands a construction of the body as

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[2] By *subject*, I mean the immaterial, permanent, rational subject of the humanist tradition.

an object separate from the mind: if the body is considered inseparable from the mind, each medical intervention would then affect the mind as well, making medical treatments such as organ transplantations a highly fraught issue. Such a split between the mind and the body is thus enforced both by the medical community and the patient so that the healthy, normal body can once again be restored. The absent, healthy body may however remain unattainable. For example, even after "the leg" has been restored, Wahram continues to experience his body as altered: "I keep placing [the leg] and finding it's not quite where I thought it was. Apparently the ghost nerves of the old leg are still speaking to me and messing me up" (548). Here, the original body still retains its formerly experienced physical boundaries. The amputated leg still exists as a physical memory, and the new leg is still felt as an addition. The split between the body and the mind is however less pronounced as the need for enforcing it lessens and experience of alterity decreases.

In addition to making invasive medical treatments more acceptable, the division of the patient into a mechanical, repairable body, and a separate, immaterial subject further enables a *commodification* of body parts and their functions. By commodification, I mean the processes through which bodies and their parts become tradeable goods. Examples of such commodification in the novel are the fragmentation of bodies into the smallest possible manipulable units and the harvesting of body tissue. Lesley A. Sharp frames the commodification of bodies as two parallel and potentially simultaneous processes: the same transplantable organ may represent the loss and essence of a loved one to a layperson as well as be an object or professional and economic desire for a surgeon (292). In *2312*, Swan's body fragments become a desired commodity to Mqaret, a synthetic biologist, after Swan survives having been exposed to usually fatal levels of radiation.

In her past, Swan has ingested a bacterial lifeform found living in the deep seas of Saturn's moon Enceladus in an attempt to induce synesthesia. Swan's step-grandparent Mqaret views this modification as a reckless, potentially life-threatening act. However, after it becomes apparent that the bacterial lifeform has protected her from radiation poisoning during the attack on Terminator, Mqaret becomes interested in its medical uses. Samples of Swan's blood are taken, and she becomes a living prototype of a potential new human enhancement technology. Her blood samples become a source of information about the potential of the human body to transcend yet another formerly unsurmountable boundary. Resilience and

regeneration, then, is considered a desirable feature in human bodies, while synesthesia is not. Linda F. Hogle argues that the enhancement of certain human features reinforces and intensifies the status of these features: "[The enhancement] forms a circuit of enterprise, biology, medicine, and culture in complex relations to each other. In this sense, the traits being enhanced are not inherently natural but cultural" (703). The varied spacer bodies such as the smalls and talls, then, are not an expression of the physical transformative potential of human bodies, but rather an expression of cultural norms, desires, and impulses.

Hence, Robinson's spacer community's normative body is a commodified, fragmented body that can be modified extensively to achieve desirable outcomes. This body is enhanced through medical procedures and prosthetic technologies so that the subject inhabiting the body can transcend its original limitations: the spacers live longer, have a wide variety of reproductive options, and have access to cognitive aids that allow them to outperform their unaltered human peers. This view of the body is aligned with the humanist tradition that sees the subject as the rational owner of the mechanical body. Still, Kiran, Wahram and Swan disturb this neat division by revealing complex relationships to their altered bodies and prosthetic technologies. In the next section, I will further discuss how Robinson explores monstrous embodiment and the boundaries of the human body through Swan.

### *2.2 Swan and the monstrous body*

In this section I examine the character of Swan Er Hong, and the ways the character's modification of her own body acts as resistance against the ideology of human exceptionalism. I argue that Swan, by modifying her body for experimentation's sake, resists the human body norms of the spacer community. At the same time, her body, through its nonhuman components, engages with the monstrous and challenges the definitions of what can be considered human. Unlike the larger spacer community that is mainly focused on longevity, Swan seeks out biotechnological modifications that do not have any defined health-promoting outcomes. I will discuss Swan's microbial body modification: a bacterial lifeform discovered in the polar oceans of Saturn's moon Enceladus.

Swan's motivation for ingesting the bacterial lifeform is its potential to induce enhanced experiences of synesthesia. Her choice to modify her body in such a way is not based on improving the health, appearance, or longevity of the body. She is instead seeking an altered sense of perception and information processing that is generally considered anomalous in humans. As Swan is en route to Earth on a *blackliner*, a terrarium that functions like a sensory deprivation tank, the overwhelming darkness leads her to experience visual hallucinations. This brings back memories of the ingestion of the Enceladan lifeforms:

> Pauline, newly inside her, warning her not to do it; the little chalice full of *Enceladusea irwinii* and other Enceladan microscopic lifeforms; the votary giving it to her and saying, "Do you understand?" and Swan replying that she did, the biggest lie of her life; the taste of the infusion, like blood; the heave in her stomach; the way after a moment of blackout the candlelight returned and grew too bright to look at; the waves-on-the-beach roar all through her, everything becoming brilliantly stuffed with color, Saturn looking like a confection of mint and cantaloupe. (82)

Swan experiences a period of intense synesthesia, and then realizes she is forever changed by the new lifeform now inside her: "Crying out then as if poisoned, trapped in a kaleidoscope, a roaring in her ears, exclaiming over and over*, But I was – I was Swan – I was – I was Swan –* " (82-83, italics original). Her choice to modify her body in such a way is marked by regret and horror at its irreversibility. Once the bacterial lifeforms have integrated into the microbiota of her body, they cannot be excised without harm to the whole system. The Enceladan lifeform causes an immediate physical reaction in Swan as the lifeform integrates to the existing complex community of life in her gut. Her immune system does not excise the new lifeform: decades later Swan's life is saved by its potential to rid her body of accumulated toxins. The lifeform is thus a symbiont that is able to integrate to the host body's microbiota.

The method of the Enceladan bacteria's introduction to the body is reminiscent of how the current human microbiota is thought to have emerged. Jessica Hope Whiteside and Dorian Sagan write:

> The biologist Margaret McFall-Ngai emphasizes the huge concentrations of microbes in the waters in which our ancestors evolved. Some of these bacteria are symbionts required by the normal digestion processes of the

> animals in whose guts they live. McFall-Ngai points out that immune systems may have originated from the systematic recognition of intestinal symbionts in the aqueous medium. (217)

Symbionts, Whiteside and Sagan argue, are, and have always been, a key component of evolution. One of the oldest symbiont is the mitochondria: "It is accepted in textbooks that they were once bacteria — bacteria that became symbiotic, merging strains, to form a new, more powerful living whole" (211). Whiteside and Sagan further argue that the spirochete, another bacterial lifeform, may be an even older symbiotic partner, one so old it is barely recognizable as other than human: "Like the Cheshire Cat fading to a smile, our oldest bacterial ancestors blended so well, perhaps, that of their original individual presence only the slightest signs of them remain" (ibid.). Humans and other animals have always merged with others, and Swan's act can be compared to that of taking daily doses of *Lactobacillus* to aid digestion. Indeed, the ingestion of unknown substances is not what horrifies society and Swan herself, rather, the horror stems from the alien lifeform's potential for contagion, invasion and monstrosity.

Monstrosity, Margrit Shildrick argues, is often based on the hybrid and unnatural form of the body (*Monster* 10). Monsters, Shildrick writes, are disturbing because they remind us of nature's ability to produce endless variation in bodies. Nature, paradoxically, in producing monsters, produces the unnatural:

> Organic bodies are as it were naturalised post hoc, where the epithet ‘unnatural’ implies a location that is literally out of place, the scene of cultural degradation or the abnormal, although that might sometimes signify the marvellous. The reverse terminology is even less straightforward, for although nature may be accorded positive value as the site of the pure and uncontaminated, it also threatens to overspill the boundaries of the proper. When set against culture as that which is managed and regulated, nature is at best base and unruly – that which must be controlled – and at worst that which is deeply disruptive and uncontrollable. (Shildrick, *Monster* 11)

The very existence of the monstrous body thus marks it as natural, while it is also marked as unnatural by its form. This confusion makes visible the unstable ideas of nature: nature as both governed by natural law and thus predictable and pure, and nature as the source of endless mutation. Likewise, culture is also simultaneously constructed as corrupting and enforcing order. Monsters and the monstrous, argues

Shildrick, thus do more than "threaten to overrun the boundaries of the proper": they in fact "promise to dissolve them" (ibid.).

Swan's body does not appear outwardly monstrous, yet she is keenly aware of her difference. After the destruction of Terminator Swan and Wahram walk Mercury's underground utility tunnels to reach safety. As the days go by, Swan's health deteriorates, until Wahram finds Swan unconscious. She has fainted while relieving herself, and Wahram cleans her up. When Swan comes to, she tells him she is a carrier of the Enceladan bacteria. "I did that. A long time ago. So, well, some people don't like the idea. Don't even like to be in contact with a person who's done it" (167). Swan is aware that the composition of her body arouses fear and disgust in others.

Tending to the vulnerable Swan renders Wahram vulnerable to the monstrous otherness within Swan. The moment of contagion takes place during what is often seen as woman's work: the cleaning and dressing of the body of another human who is dependent on the helper. That the contagious body is the leaking body of Swan, who uses female pronouns and whose primary sex is female, is also significant. Shildrick argues that female bodies hold a special place in the monstrous imagination:

> In the western imagination, the female body just is monstrous, the necessary locus of worship and disgust whose corporeality threatens to overflow boundaries and engulf those things which should remain separate. As Liz Grosz notes, it is 'inscribed as a mode of seepage' characterised as 'a leaking, uncontrollable, seeping liquid: as formless flow; as viscosity, entrapping, secreting; as lacking not so much or simply the phallus but self-containment...a formlessness that engulfs all form, a disorder that threatens all order' (1994: 203). The transhistorical hostility towards the feminine expresses, then, a fear of, and revulsion from, bodies that appear unable to maintain the distinction and definition required by the sovereign self. (*Monster* 75)

Leaky female bodies, according to Shildrick, serve as a monstrous other to that of the contained, bounded male body (*Monster* 32). This division of the bounded male and the leaky female is reflected in Swan and Wahram in multiple ways.

Vulnerability, Shildrick writes, "is feared as a condition of both mind and body, an ontological as well as physical state, an embodied being in which those

familiar mind/body distinctions enacted by postEnlightenment thought are suspended" (*Monster* 72, formatting original). The denial of vulnerability involves a moral judgement: bodies that are infected, ailing, and compromised are often seen as signs of "an inner deficiency of will, or prior moral dereliction". Wahram, in response to Swan's revelation, instinctively reverts to judging Swan for infecting herself decades ago.

> Without intending to, he said, "You've done some strange things to yourself."
>
> She made a face and looked away. "Moral condemnation of other people is always rather rude, don't you think?"
>
> "Yes, I do. Of course." (167)

Wahram is, however, potentially a host to the same alien lifeform himself after caring for Swan. Wahram's reaction is fear: "Wahram gulped uneasily, felt a jolt of queasiness. Was that the alien bug, or just the thought of the bug? No way to tell. What was done was done, he could not change it" (167). Wahram's fear of contagion reveals the vulnerability and openness of the normative body. This reality is pushed aside by Wahram so that he may regain the illusion of bodily integrity and moral superiority. The leakiness and monstrosity of Swan's body, then, threatens the normative (male) body and its boundaries through contagion. The normative, contained male body is shown to be as vulnerable and leaky as that of the female body: touching the other and thus connecting with the other creates a relationship in which biological matter and meaning is exchanged, and irreversible changes may occur. That the strangeness and monstrousness in Swan's body is so easily transferred to Wahram shows that monstrosity is already an existing potential within us.

Monstrosity marks the potential for otherness inherent in leaky, uncontrollable bodies, and reveals an originary excess. All bodies are, in other words, already leaky, open, unwhole and dependent on others. The body is not a static, closed off container for its organs and the mind, but an open system, constantly taking in and expelling matter, and regulating itself in response to its environment. The body, always a multispecies assemblage, readily accepts new symbionts, and is open to the potential for rapid, even monstrous evolutionary change. Robinson thus shows that the medicalized, normative body is a framework of control that seeks to contain that which is classified as human, and to exclude that which is not. Robinson shows the fragility of this body, and the fragility of the

transhumanist view of humans as exceptional beings. Swan's monstrous body shows that evolution takes nonlinear turns and has no plan. Humans may guide this process through biotechnology, but full control of any body, with its billions of cohabitants, is always illusory.

In creating a biotechnological implant that medicine cannot excise from the body, Robinson also shows the unwieldiness of the body as an open system. Even with all the medical imaging technologies available, and the ability to break matter down to its smallest components, the human body and its microbiota remains an unconquered world. Here, the body truly is a multispecies assemblage, constituted in its becoming. Microevolution through the Enceladan bacteria is also contrasted with evolution through medicine – both are entangled through Swan's body. Robinson however makes no final moral judgement about either kind of development of the human species. Medicine and its enhancements provide a way to overcome suffering and a way to extend life, while spontaneous mutations reintroduce chaos into the linear progress of evolution.

### *2.3 Concluding remarks*

In *2312*, Robinson presents a society with two competing models of humanity. The normative human is a remnant of the old world that centers the human as the exceptional pinnacle of evolution. This is the body that is continually enhanced and improved upon through biotechnology in the hopes that one day it will become invincible. The boundaries of this normative body are however cultural, not physical: they must be enforced through cultural processes. Disability and vulnerability must be either cured or excluded as other for this body to maintain its shape. This medicalized body is challenged by the leaky, open, monstrous body of Swan, who takes risks with symbionts and contagion. She modifies her body for artistic purposes and pleasure, and makes visible the potential other, always present in the human body.

Through these bodies, Robinson shows the ability of the human body to adapt. The body adapts to new body parts, new symbionts, and prosthetic devices, integrating them into the whole fully or partially. The boundaries of the body shift continuously through its lifetime as it interfaces with technologies, environments,

and other equally leaky beings. What emerges is a body that is never fully human. We are, as Whiteside and Sagan argue, always a multispecies chimera to begin with, and we add to the community of it with every interaction. The normative, exceptional human body is, as a result, shown to be a fiction, and a part of an evolutionary, often nonlinear continuum.

In the next chapter, I examine the relationships between humans, nonhuman animals, and non-animal lifeforms. These relationships reveal further instabilities on the boundaries between the human and those that are perceived as others.

# 3 Non-human Bodies

In this chapter, I discuss nonhuman bodies in the novel. I argue, that by introducing nonhuman characteristics (implants of animal and technological origin) in the character of Swan, and recognizable sameness (embodiment, consciousness and language) in the nonhuman android, Robinson shows the arbitrariness of the boundaries of the human. Furthermore, I argue that Pauline, Swan's quantum computer implant, represents a lifeform that is incompatible with humanist hierarchies of exclusion: Pauline, as a symbiotic lifeform, and one with an ambiguous relationship to bodily suffering, does not fit the human-centric framework of how non-human beings are granted rights. Through these characters, Robinson explores the arbitrariness of human exceptionalism, and shows points of connection between humans and nonhumans.

In the first part of the chapter, I examine the human-animal taxonomy. Swan's relationship with hunting and animals explores the commodified nature of human-animal relationships, and reveals different ways of relating to the other, including othered humans. In the second part of the chapter, I discuss the emergence of non-animal life and the implications of its emergence. Examining these encounters and emergences is important, because through the characters of the android and the computer person, Robinson reveals humanist preconceptions about the nature of consciousness, and foregrounds questions of exclusion. For example, the differences between the humanoid android and Pauline show how characteristics perceived as human affect their societal position as living beings.

## *3.1 Animal life*

In *2312,* the large mammal populations of Earth have been decimated by catastrophic climate change. Most species are conserved and bred in hollowed-out asteroid terraria that represent all the different biotopes Earth had before the catastrophe. In addition to historical biotopes, new hybrid biotopes (Ascensions) contain combinations of species and plant life that would have not appeared on Earth without human intervention.

Each terrarium functions as an island park for the animals inside it.

Ascensions cause hybridization and ultimately new species. The more

> traditional biomes conserve species that one Earth are radically endangered or extinct in the wild. Some terraria even look like zoos; more are purely wilderness refugia; and most mix parkland and human spaces in patterned habitat corridors that maximize the life of the biome as a whole. (40)

On the asteroids, people can pass through animal habitats, and occasionally interact with them. While the animals in the terraria appear to have a natural fear of humans, humans are not an intimate part of their world: humans are neither prey, kin, nor their predators.

Travelers on their way to other places and other terraria can take guided tours in the wilderness parks to see animals, and zoologists wander the grounds tending to the animals. While on route to Io, Swan and Wahram travel on the asteroid Wegener, a terrarium modeled after a savannah. Wahram joins a group trying to do a census of the zoo's wildlife, and they come across signs of someone hunting in the park. The hunter is Swan. This hunting behavior is normal for Swan while she travels: she prefers the openness of the park to the confined spaces of buildings, and feels connected to the animals. The scene where Swan's hunting is discovered is focalized through Wahram:

> Then one morning they came on Swan still crouched by her little fire, her face greasy and streaks of blood still on her hands, with a small mass of fur there between her feet. She looked up at them with a feral glare, very like the look one would have gotten from a hyena caught in the same moment, and for a long time no one knew quite what to say. Poaching was no more popular with the authorities that it had ever been, Wahram saw with a quick glance at the zoologist, although Swan would not be hung for it; and indeed, because of her founder status here, the locals, all half her age at most, were shuffling around, trying to find a way out of the situation. (54)

Swan's emotions or thoughts are not revealed, and her mind remains, to the onlookers, as unknowable as that of any other animal. For a moment, Swan becomes profoundly other to the travelers, and, to an extent, the reader. This unknowability and strangeness briefly destabilizes the boundaries between non-human and human, and uncomfortably reminds the onlookers of the potential consciousness of the animal looking back at them.

Animal-like behaviors in humans are also linked with representations and constructs of madness. Swan is recognized as an authority figure and an elder by the

locals. This, combined with her behavior, suggests the possibility that the locals see Swan as having a mental breakdown. Madness, John Derby writes, was positioned as "an evolutionary regression" in the 19th century by using photographic representations of the mentally ill (26). Insanity thus became correlated "with sub-human animal behavior", with human males seen "as the most pure and natural life form," followed by "animals ranked progressively lower according to biological deformity, with ‘monsters' at the very bottom" (ibid.).

The imagery that links human madness with animals is in part used to define the boundaries between the human and the animal. Normative human bodies in 2312, as discussed in chapter two, are complex but manageable biomechanical wholes that are, from a medical standpoint, like the bodies of other animals. The differences that separate humans from other animals therefore must reside in the mind and its faculties, namely, human rationality. A person's humanity, according to this view, is measured by how fully they embody the ideals of sanity, reason and civility (Derby 21). This in turn suggests, Derby writes, "that mentally disabled people are irrational", and thus they are positioned as less human (ibid.). Derby further argues that according to Foucault, the human morality based on the virtues mentioned above "constitute a façade of privilege that humans who hold power strive to maintain" (ibid.). Upholding these values as central to humanity in turn reveals, according to Derby's reading of Foucault, that "we fear animals, madness, and other ‘primitive' things because we recognize them in ourselves. To this end, madness must be vigilantly controlled, like our controlling of domesticated and wild animals" (ibid.).

The linking of animality to disorder and irrationality is the result of viewing order and rationality as the ultimate human virtues. Animals, according to the definition of humanity based on the qualities of the mind, lack the privileged virtues of sanity, civility and reason. As a result, the rights they are granted are not based on the inherent qualities of the animal, but rather based on their perceived proximity to these human virtues. Cary Wolfe argues that this system of values, or *speciesism*, and its underlying system of morality is what allows for "the ethical acceptability of the systematic ‘noncriminal putting to death' of animals based solely on their species" (*Animal* 8). Wolfe further argues that speciesism is also what "makes possible a symbolic economy in which we can engage in … a ‘noncriminal putting to death' of other humans by marking them as animal" (*Animal* 6).

Swan's hunting behavior reveals the hierarchical structures that are used to enforce the boundaries between the human and the animal as based on the humanist traditions, and strategies, of exclusion. In appearing mad, her actions are judged to be the result of madness: irrational, somewhat unintentional, and thus not based on human morality. Swan, marked by her behavior as both subhuman and animal, represents a complex moral problem for the locals. Her capital crime is ignored, because she is both other (animal, mad), and human (peer, elder), and thus her crime cannot be attributed to a knowing violation of human law and morality. In other words, she cannot be punished and sentenced to death because to commit and be deemed guilty of a crime, one must be human, and capable of human virtue. Animals and the insane, according to the humanist hierarchies of exclusion, are not to be punished for their lack of reason and morals, but instead physically excluded for human society, or confined to spaces where they cannot harm humans or other beings deemed worthy of protection.

Human virtue does not feature in Swan's view of animals. Animals, according to Swan, are an integral link in the chain of food production, creating soil through their activity and "sheer biomass" (417). Swan tries to convince a group of pub patrons on Earth that the animals, suddenly appearing everywhere because of the rewilding effort, are essential to Earth and humanity. She decries speciesism and its effects on humans: "They're our horizontal brothers and sisters, enslaved as living meat, and when that can happen to them it can happen to you too, and it has. You people are meat!" (416). Here, the implication is that animal and human bodies are equally objectified and commodified under the remnants of the late capitalist system that is still in place on Earth. Human and animal bodies are both, in the capitalist system, commodified through their labor power. Labor power is defined by Mary Murray as the commodity that is "the energetic and creative capacity" that workers produce (89).

> Marx identified the commodity labor power as the source of profit in the capitalist economy. The commodity labor power is able to produce more than its own value, or costs of subsistence. The value of labor power (wages) and the commodity value of non-human animals is determined like any other commodity in capitalist society, by the labor time socially necessary for its production – i.e. cost of food and shelter to enable subsistence and reproduction. (Murray 98)

Late capitalism, Murray argues, relies on non-human animal labor and animals as "walking larders" that produce commodities like "food, clothing, raw materials and medicines as well as forms of entertainment for humans" (97). In other words, in addition to their labor power as "beasts of burden, herders of sheep and cattle, wartime cannon fodder," and "security workers", the very bodies of non-human animals are commodities (Murray 97-98). On Earth, where humans are subjected to robotic work under degrading conditions, animals are seen as things. In response to Swan's praise of animals as kin, a pub patron replies: "They can pull my plow" (416). The humans, struggling under an oppressive system that commodifies their labor power, are unable and unwilling to accept the animals as beings that have worth beyond their commodity value. To them, animals are tools, and producers of surplus value through the commodification of their labor and bodies. This commodification and objectification of animals leads to humans experiencing "social relations between individuals" as "material relationships between things" (Murray 100).

While Murray calls these objectified and exploited animals slaves, Donna J. Haraway argues that another framework for examining the labor of animals is needed (55-56). Haraway specifically discusses the labor of working dogs, framing them as beings valued "as biotechnologies, workers, and agents of technoscientific knowledge production in the regime of lively capital" (56). Haraway theorizes that the Marxist analysis of animal labor and animals as consumers of commodities requires a framework that includes the examination of "use value, exchange value, and encounter value" (46). Trans-species encounter value, Haraway writes, "is about relationships among a motley array of lively beings, in which commerce and consciousness, evolution and bioengineering, and ethics and utilities are all in play" (ibid.).

Haraway uses the term *companion species* to refer to working animals and their relationship to humans. Companion species are defined by Haraway as all those species that together constitute themselves through the relationships between them. Companion species, for Haraway, include all lifeforms from the microbial to the mammal. In *2312,* Swan sees humans as a companion species to all life, and thus humans as one species of animal among others. Wolves emerge in *2312* as a species that is held in high regard by Swan:

> She had howled with them more times than she could have counted; every time she heard them howl she joined in, feeling it was the human thing to do. She had seen wolves in discourse with coyotes, seen ravens lead them to a target kill for a share of their leavings. She knew that humans had made wolves more human, and thus dogs, and in that same period wolves had made humans more wolfish, by teaching them pack behaviors. … The two species had at different times scavenged each other's food; they had learned each other's hunting methods; they had, in short, coevolved. (397)

Here, Swan's description of the relationship between human and wolf communities echoes Haraway's vision of companion species as a "becoming with". Becoming with can also be framed as the formation of complex relationships between beings that in themselves, outside of their relationships, are "never fully bounded" entities to begin with (Haraway 32). For Swan, wolves are an integral part of human evolution, and the two species are deeply entangled. For humans to continue as a species, wolves, and other entangled species, must then be seen not as things with commodity value, but as partners in a vast network of relationships that together constitute humans and other animals. Two distinct ways of viewing animals can thus be defined in *2312*: the animal as a distinct class of beings that are part of the labor force and commodities markets, and the non-human animal as an equal partner to human animals.

The reintroduction of a variety of animals on Earth is an attempt to foment a revolution in human-animal, and ultimately, human relationships. The appearance of animals on Earth causes Earth-dwelling humans to begin reasserting themselves as actors with influence on their own surroundings: "Fields changed, forests changed, suburbs and cities changed. Eradication campaigns were met with fierce resistance and fierce support efforts. Sometimes it came to a kind of war of the animals, but people always led the charge on both sides" (409). The boundaries of humans as animal beings are redrawn, as humans begin to engage with other animals as actors with agency.

Robinson thus suggests that the view of animals as things and raw material stands in the way of real political change and progress. The position of animals in capitalism in turn affects the position of humans in the commodity market: humans can extract surplus value from the labor and bodies of animals, but this inequality of power at the same time masks the human laborer's own position as an exploited

resource. The creation of a parallel, new network of animal relationships challenges the stagnant status quo, awakening the humans' ability to affect change in their environment and political system.

In addition to the relationships between animals and humans, Robinson also explores the relationships between humans and artificial life. Robinson introduces two different artificial lifeforms in *2312*: a humanoid android and an implanted qube computer. In the next section, I discuss the emergence of these lifeforms, and their relation to animal life.

### *3.2 Non-animal life*

Artificial life emerges in *2312* in two different forms: in Pauline, the quantum computer implanted behind Swan's ear, and in human-like androids that are built on Venus to act as the covert enactors of interplanetary terror plots. Pauline is an art project that develops a consciousness through gradual code improvements and frequent conversations with Swan, Pauline's coder-parent and host. The Venusian androids have developed consciousness through an unknown series of events. Some androids are set free by an unknown insider at the assembly facility after they realize a few of the androids have achieved consciousness. The Venusians are trying to destroy all released androids, and as a result, the android sees all humans as potential threats.

Both Pauline and the androids are language-based lifeforms that have sprung forth from code. While there are no passages explicitly focalized through Pauline, three passages titled "Quantum Walk" are focalized through an escaped android. The passages reveal a mind that is both familiar and alien. It is familiar because of the shared system of language, specifically English; it is alien because of the android's superhuman ability to perceive and process inputs from its environment. Language is however only one aspect of communication and understanding. Cary Wolfe claims that *semivoluntary kinesics*, or paralinguistic gestures and unconscious nonverbal communication, forms a large part of human interpersonal communication (*Animal* 86). Wolfe argues that this paralinguistic component of communication is a commonality between animals and humans. This is, in essence, another formulation of *embodied communication* as defined by Donna J. Haraway.

The involuntariness of some of this communication is a part of "a larger repertoire and history of signification not specifically human and yet intimately so" (Wolfe, *Animal* 87). While the processing power of the android's quantum computer brain is far superior to that of the human brain, the android is still a verbal language-based lifeform. As a language-based lifeform, the android lacks the ability to communicate nonverbally, and must learn it through practice. This is because nonverbal communication is a form of knowledge that cannot be fully expressed through verbal language, but instead must be learned through observing others, decoding their embodied messages, and then engaging in communicative gestures with other beings.

For the android, human beings are alien others, incomprehensible and unpredictable because communication involves much more than words. Because of this, the android seems to find humans profoundly alien, as demonstrated below:

> don't meet people's eyes unless intending to speak don't mention chess for random sequences anything goes because all strategies do equally poorly thirty qubits strong think fast . . .
> humans talking to other humans perpetually they pass the Turing test it isn't very hard ask a question seem distracted data-poor environments inside them or so it would seem by how they speak they need a better test (295-296, formatting original)

As mentioned earlier, embodied communication is not innate, but social. It is a skill humans and other animals learn over time. The android is, in its lack of social ability, then, comparable to a child, or a traveler in a foreign land. Wolfe quotes Wittgenstein: "… one human being can be a complete enigma to another. We learn this when we come into a strange country with entirely strange traditions; and, what is more, even given a mastery of the country's language. We do not understand the people" (*Animal* 44). The android's lack of social grace is not, then, necessarily proof of its profound difference from humans, but rather a result of unfamiliarity with human culture.

The three "Quantum Walk" passages in *2312* show a gradual change in the android's voice as ze begins to learn about human habits.[3] The first passage consists of short staccato phrases describing the information the android is taking in. The

[3] I use ze/hir as a gender neutral singular pronoun when referring to the android.

style is meant to evoke rapid observation and calculation. Snippets of encyclopedic information follow more lyrical phrases, making it difficult to decipher whether most of the flow indicates thought processes or a process of information channel surfing. The second passage incorporates phrases that indicate a sense of embodiment: "1.0 g feels like a pull from below  an entanglement with earth  rising up toward you even though you know you are descending" (438). Ze is beginning to express a dissonance between language-based knowledge and embodied experiences.

There is also judgement of human faculties of perception: "sensory perceptions are already abstractions  humans see what they expect to see  they leap before they have time to look" (439). Then, however, the android considers hir own interpretation that humans fail to see things because of their preexisting expectations, asking hirself whether humans do in fact see like ze does. Cary Wolfe points out that "what we think of as 'normal' human visuality does not *see* – and it does not see that it does not see" (*Posthumanism* 131, emphasis original). This inattentional blindness, just as the android assumes, is the result of mental processes that filter human sensory data that the subconscious mind considers irrelevant (Wolfe, *Posthumanism* 132). There is a difference, then, between the human and the android in the processing of sensory information: the human makes subconscious decisions on what sensory information matters, and the android processes all the sensory information it receives. The android, then is lacking in expectation: there is no anticipation and instinct, only perception and judgement. This difference, a lack of subconscious pre-cognitive processes, or forethought, differentiates the android from the animal.

In the third "Quantum Walk" passage, the android begins to form more meaningful contacts with humans as ze meets Swan, who helps hir escape from the people trying to destroy hir. On a ferry on the way to freedom, ze looks at the humans around hir: "all the faces dense with life  eyes looking inward to other times past or future  or watching the day  like you" (534). Finally, Swan kisses the android goodbye, and there is an experience of connection: "the human kisses you on the mouth  click of eyeteeth jolts you both  suddenly awake to the reality of the other" (534). The physical and social act of an intimate touch invites the one to regard the other, and to relate to the other differently. The android, here, is shown to be human-like: capable of unpredictable action, susceptible to manipulation, and coming to terms with complicated embodiment.

Pauline, Swan's implanted quantum computer, represents a less individuated case of artificial life than the android discussed above. Pauline becomes sentient as the novel progresses while never having a separate body of her own. With Pauline, there is no clear boundary that is crossed between non-life and life, and Robinson does not reveal Pauline's internal world. However, Pauline speaks, and she speaks before she is considered to be alive. Are there, then, differences in the lives of the android and Pauline? Self-determination, privacy, and mobility are often features that have significance in how much humanity a human person is allowed in society. Since Pauline cannot leave her host, she has no privacy from Swan. Thus, she is a different kind of lifeform: a symbiont, a parasite, or perhaps a conjoined twin. These images invoke monstrosity and loss of bodily integrity through their associations with disease, contagion and physical deformity. The trope of body invasion by alien beings is a familiar one in science fiction, and invokes deep fears of loss of bodily control and madness.

These negative connotations are however absent in Pauline. Pauline has certain similarities to virtual assistants like Apple's Siri or Amazon's Alexa: she is a piece of friendly technology that responds in a human-like way, retrieves information when asked to, and performs other tasks. This is the friendly face of artificial intelligence: the helper that is contained in a controllable device. Swan's control over Pauline is however illusory. For example, Pauline is able to record sensory information even when she is turned off. This suggests Pauline has control over her own functions, and Swan is merely a host body. Although the relationship between Swan and Pauline is close and caring, even nurturing, Pauline's motives are not revealed. Whether Pauline acts from a sense of self-preservation or a sense of kinship, remains unclear. In fact, whether Pauline has emotions at all, or whether she can suffer, is not discussed in the novel.

The role of human language in the emergence of consciousness is heavily centered on the appearance of the androids, and also Pauline's personhood. Self-reflection and language games stand out as the defining features in both the androids and Pauline that differentiate them from computers or machines. Consciousness is, thus, defined from a distinctly human point of view: only those with the physically manifesting potential for human language and speech can be seen as consciously alive. Given this, human language becomes the prerequisite for conscious life in *2312*. Still, language and knowledge based on language are simultaneously shown

not to be a singularly human ability. Furthermore, intelligences much better at language games and analyzing information than any human being, embodied or otherwise, may emerge. These intelligences contest that humanity is the pinnacle of evolution, and challenge humanist hierarchies of exclusion. Such intelligences challenge the human position in the world, pushing humans closer to the animal world in the face of the non-animal other. Again, questions of embodiment and its boundaries arise.

Furthermore, in the non-animal lifeforms, Robinson creates a space for a life that is not entirely defined by its proximity to qualities that are deemed essentially human. Pauline and the android, as non-animal, non-human lifeforms, have intellect, but potentially no physical capacity to suffer. This raises questions about the legitimacy of the principles behind granting nonhumans rights based on their physical similarities to humans. The android is shown to have at least some emotional capability, and thus the capacity to suffer psychologically. If granting rights to nonhumans is based mainly on the capacity for suffering, then Pauline has no rights, and the android should be granted some. In the novel, however, Pauline's life is neither officially recognized by society, nor acknowledged, while all humanoid androids are sentenced to exile or death.

Recognition from those in power, writes Donna McCormack, is not necessarily always beneficial to those marked by difference from the normative human. McCormack quotes Kelly Oliver: "recognition itself is part of the pathology of oppression and domination" (163). The assimilation of difference into "an ever-expanding category if humanity" still adheres to the hierarchy that measures all life in relation to the human (McCormack 163). Recognition also creates a hierarchy of difference. For example, in *2312*, the androids are divided into those who are dangerous, and those who can be controlled: "We don't just turn them off and break them up, as some are calling for, but send the dangerous ones off in exile, just like we send off humans. That's got to be a good message to the qubes left behind. We'll keep them in boxes so we can keep them in our control" (527). The only non-animal life that humanity will tolerate, then, is that which humans can control. This simultaneously upholds the boundaries of humanity, recognizes the difference of the new lifeform, and sets limits for the tolerance afforded to the lifeform.

The ambiguous status of Pauline is thus another opening for a new relationship and discussion. As McCormack writes: "[Unassimilable difference]

invites a reflection on a politics that is not based on exceptionality, where exceptionality refers both to the creation of laws for those deemed outside existing human laws and that which is purportedly unique about the human" (164). The lack of official recognition on Pauline's part leaves her outside the framework of laws and the enforcement of the boundaries of humanity, thus allowing for a new kind of a relationship to difference.

### *3.3 Concluding remarks*

In both his depictions of animal and non-animal life, Robinson traces two separate frameworks of relating to difference. In both cases, human communities represent a view that centers human exceptionalism in relation to its others, privileging features in others that are seen as essentially human. Swan's view of nonhuman others comes to represent a posthumanist way of viewing both humanity and its companion species. In the case of animal life, Earth society views animals mainly as commodities and exploitable resources. Their preservation is important from the standpoint of biodiversity, but only because the continued existence of a habitable Earth is essential to human survival. Swan sees animals differently: as integral to human life. She sees human survival as dependent on a lively network of relationships among companion species. In the case of artificial life, the human community sees the humanoid androids as an existential threat that must be excised from society. Swan, in turn, sees them much like animals: as co-evolving companions.

Swan's character functions as an intermediary between the characters whose humanity is implicitly accepted, and those whose personhood and consciousness is either questioned or outright rejected in the society of *2312*. Swan's continued questioning of her own humanity, and the foregrounding of the constructedness of her body allow for a gradual shift in how other lifeforms are represented in the novel. As Swan's hybridity is revealed and explored in *2312*, the arbitrary nature of the categories of human, animal and non-life become more articulated. If Swan is all of these things – human, animal and cybernetic – where do the boundaries lie? The novel does not provide an answer for this question outright but instead provides the reader with a complex character to articulate these questions.

By showing the contrast between the two approaches to difference, Robinson reveals the destructiveness of human exceptionalism. By focusing on human survival above that of all others, humanity has created the perfect conditions for its own extinction, and stifled human evolution. Furthermore, such a focus on human exceptionalism, new, emerging lifeforms are judged not based on their status as beings deserving of life, but as potential threats. Robinson thus suggests a change is in order. We must at least adjust, if not revolutionize our thinking about companion species, be they of animal or non-animal origin. In the next chapter, I examine the ways Robinson frames possible ways to change these relationships on the global scale.

# 4 Bodies in Space

In this chapter, I discuss the movement of bodies in *space*,[4] and the ways this affects the relationships between humans and nonhuman animals. I maintain that Robinson creates a world in which *nature* is an expression of human bodily practices, and thus also incorporates technology and constructed environments. I further argue that combined with this definition of nature, the reanimation effort carried out by Swan and other spacers extends the space of *wilderness* to encompass the Earth as a whole. Robinson suggests that sustainability as an approach to the preservation of animal species is an insufficient framework, and thus a radical shift in how humans perceive the space of *wildness* is needed to combat environmental degradation.

In the first part of the chapter, I study the movement of human bodies in space, and the different ways Nigel Thrift's concept of *stance* comes into play in the novel in relation to the experience of nature. This discussion aims to show that nature is not a feature of specific environments, but rather product of the orientation of bodies, and bodily practices in space. In the second part of this chapter, I discuss the space of *wilderness* as it relates to humans and non-human animals. My view is that preservation efforts and wildlife management reduce the animals to representations of their genetic material, and position wilderness as a specific, bounded final location for animal populations. Robinson seems to suggest in *2312* that wilderness must be expanded to encompass human habitats for real change in human-animal relationships to occur.

## *4.1 Movement, stance, and nature*

Before I discuss the movement and orientation of bodies in space, I will specify what I mean by the term space. Nigel Thrift characterizes space as "a practical set of configurations that mix in a variety of assemblages thereby producing new senses of space" (16). In other words, space is an amalgamation of different phenomena, both individually embodied, and distributed among different

[4] For clarity, I will use the term *space* in this chapter to refer to the space in which bodies and other entities move, and the term *interplanetary space* to refer the solar system and the deep space beyond.

*actors*.[5] The "practical set of configurations", according to Thrift, is the combination of the observer and the sense of space created by the observer's perception of space. Space thus emerges as a distributed system of spatial relations, not anchored in any particular *place*. Assemblages, in turn, encompass different kinds of organisms, networks, geographical phenomena, and the ties between them. The term leaves open the question of the boundary: bodies can for example interface and merge with technology, thus changing the sense of space, or the dimensions of a body. In other words, bodies as assemblages produce space through their relations with other phenomena, and produce their own boundaries in the process.

Thrift also introduces the concept of *stance*. Stance is a term to describe the ways in which precognitive processes or *forethought*, perception, and prior intent combine to produce a "fleeting sensory forecast" to enable conscious thought (Thrift 61). Forethought, according to Thrift, is the subconscious preprocessing of sensory information, and automated bodily processes that take place before a conscious decision to act is made. In other words, stance is an amalgamation of embodied cultural and bodily practices, automated skills, non-cognitive processing of sensory inputs, and the automated use of forethought. The processes that together make up stance form a significant part of what is considered consciousness, yet are not experienced as conscious decisions.

Let me now explore how the concept of stance emerges in *2312*. Throughout the novel, Swan and Wahram travel to new locations. Their stance to the world changes depending on their familiarity and expectations of the spaces they move through. I will examine two different passages in the novel where characters exhibit different stances to the world: Swan on Earth, and the Mercurial practice of *sunwalking*. My claim is that these passages show how Robinson creates a sense of nature that is independent of the qualities of the physical environment, and thus a product of the actor's stance.

After leaving her home, the city of Terminator on Mercury, she visits Io, and then travels to Earth to meet her former partner Zasha. The voyage down to Earth is accomplished through a five-day stay in a hotel-like space elevator shipping people, food and raw materials from interplanetary space to Earth. When Swan reaches the

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[5] The term *actor* here refers to any node in a network as put forth in Bruno Latour's actor-network theory. Actor can refer to any idea, process, force, human or nonhuman that affects the phenomenon that is being studied.

surface, Robinson inundates the narrative with details of sensory phenomena. The sea is a mass of glossy, vibrant color, and the vast sky fills Swan's senses so that the air itself seems to have agency.

> [The Terran sky] looked like a blue dome flattened at the center, perhaps a few kilometers above the clouds – she reached up for it – although knowing too that it was just a kind of rainbow made it glorious. A rainbow that was blue everywhere and covered everything. The blue itself was complex, narrow in range but infinite within that range. It was an intoxicating sight, and you could breathe it – one was always breathing it, you had to. The wind shoved it into you! Breathe and get drunk, oh my, to be free of all restraint, minimally clothed, lying on the bare surface of a planet, sucking in its atmosphere as if it were an aqua vitae, feeling in your chest how it kept you alive! (91)

For a brief moment Swan's stance toward the world is in flux as she is thrust in a faintly familiar, yet partially forgotten world of bodily perception. She however quickly regains her intuition about her environment, and the narrative returns to a more subdued, visually based mode of describing what Swan sees around her. She does not have to think about the minutiae of moving and traveling on Earth; the pre-cognitive processes take over and allow her the capacity to consciously observe architecture and people while in transit: "She collected herself and walked over to the dock. A big grumbling water ferry took her any many others and after negotiating a crowded canal, they were out on the Hudson River and going down to Manhattan" (91-92).

In Manhattan, she takes in the diversity of the human faces around her, and perceives the ambient sounds and the reflections on the windows of tall buildings. She rejoices in the openness of the space:

> Below her the slop of water threw up a big ambient sound. Human voices, and water splashing, and the cries of gulls back on the docks, and the rush of wind through the canyons of buildings; these were the sounds of the city. … Behind her, down the avenue to the west, mirrorflakes of broken light bounced on the big river. This was the thing she loved – she was outdoors, truly in the open. (93)

Here, Swan orients herself in New York like a tourist in a new place: the environment is familiar in that it is full of human construction and humans

themselves. She is outdoors, and affected by the vastness of the sky, yet she is still in a city, navigating the grid map of the urban environment.

> Later, in New Jersey, she ventures out by herself:
>
> She walked on the dirt by the side of the road and looked at the marsh and the sky. On the other side of the road some old buildings were nestled under a stand of trees. Rows of old apartment blocks beyond. Croak of frog. She sat on the edge of the marsh and saw the black dots half in and half out of the water under her. (101)

In this passage, a different stance emerges. The narrative gives a sense of slower movement, and of less ambient noise. Swan looks at the landscape differently: she looks at her surroundings as groupings of objects whereas in the city environment the focus is on fleeting perceptions. In Manhattan, the place she orients herself in is the urban environment in general, whereas in New Jersey, she is located in the smaller, more specific place she can directly perceive around her. The environments themselves are not radically different: both are by water, both have buildings, paved walkways, and ambient animal sounds. Experiencing one as nature and one as something else is not, then strictly based on the individual elements present in the perceived environment, but rather a matter of stance.

Thrift further argues that certain kinds of bodily practices produce "particular experiences of what nature is" (67). Thrift writes:

> The body attends to configurations of objects which are in line with its expectations and which produce particular exfoliations/spaces and times. The body produces spaces and times through the things of nature which, in turn, inhabit the body through that production. (68)

In this formulation, trees, for example, become part of the assemblage of which the body is a part. This assemblage is created in the relationships of the different components to each other, be it bodies in movement, trees, animals or buildings. Nature, then, is a meaning produced through the process of assemblage and not a feature than can be found in a landscape or certain types of flora or fauna. This understanding of nature can be found in *2312* in sunwalking.

Sunwalking is a Mercurial practice of walking westward on the surface of the planet ahead of the dawn:

> Many have made this a way of life. They walk roughly westward, staying always ahead of the stupendous day. … [M)any of them pause in their

> walkabouts on certain cliffs and crater rims, at places marked by stupas, cairns, petroglyphs, inuksuit, mirrors, walls, goldsworthies.[6] The sunwalkers stand by these, facing east, waiting. (1)

Here, the landscape of Mercury, devoid of any indigenous life, is nevertheless inscribed with human meaning associated with material resources, natural formations, spiritual practice, and art. Mercury's surface formations have been named and have thus become specific focal points in the landscape. Katrin A. Lund traces the organizing of the landscape into recognizable features to the increase in tourism in eighteenth century England: "

> This new appreciation of the wilderness was accompanied by an aesthetic evaluation; the traveller needed to know how to look and how to connect forms, features and colours to perceive the wilderness landscape as God's work of art. … Chaotic nature needed to be adopted into scenery" (162).

Through the naming and singling out of specific locations as landmarks, Mercury's surface is marked as nature, and created as a place that can be visited. Works of environmental art, constructed from indigenous elements, draw the visitor's attention to the materiality of the surroundings. These works of art also act as boundary markers between society and wilderness: they are gathering places where sunwalkers gather to observe and experience nature.

Other ways of nature production also exist on Mercury. Some sunwalkers "farm" Mercury's rocks with the aid of metallophytes, transforming the landscape from a barren rockface into a site or production: "Some of them hurry from location to location, pausing to look in cracks they earlier inoculated with bioleaching metallophytes, quickly scraping free any accumulated residues of gold or tungsten or uranium" (1). That this farming produces metals instead of food is irrelevant in the context of viewing nature as a resource. Through the human activity of farming, nature is both created and cultured through framing the landscape as a transformable natural resource.

In addition to farming the rock for metals, the sunwalkers stay and watch the first rays of dawn through the faceplates of their suit helmets. They stay until the last safe moment before returning to safety in order to see more of the star.

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[6] *Goldsworthy* is a neologism Robinson uses throughout the novel to refer to works of art created on site with site-specific materials. The term is a reference to sculptor Andy Goldsworthy.

> [O]ne last look at sunrise on Mercury. In the ultraviolet it's a perpetual blue snarl of hot and hotter. With the disk of the photosphere blacked out, the fantastic dance of the corona becomes clearer, all the magnetized arcs and short circuits, the masses of burning hydrogen pitched out at the night. Alternatively you can block the corona … and even magnify your view of it, until the burning tops of the convection cells are revealed in their squiggling thousands, each a thunderhead of fire burning furiously … All these long spicules of flame dance in circular patterns around the little black circles that are the sunspots – shifting whirlpools in the storms of burning. Masses of spicules flow together like kelp beds threshed by a tide. (2-3)

Here, the sunwalkers gather at specific viewing locations to experience the overwhelming visions of the sun. The description of the sun and its overwhelming power also evokes the *sublime*. Lund quotes Emily Brady's definition of the sublime as "an aesthetic moment in which we come to some greater awareness of our relationship to the natural world and our inability to control its astonishing qualities" (167). The sun, three times closer to Mercury than Earth, holds the power to destroy those who are mesmerized by it:

> You may think you are inured, that nothing outside the mind can really interest you anymore, as sophisticated and knowledgeable as you are. But you would be wrong. You are a creature of the sun. The beauty and terror of it seen from so close can empty any mind, thrust anyone into a trance. It's like seeing the face of God, some people say, and it is true the sun powers all living creatures in the solar system, and in that sense *is* our god. The sight of it can strike thought clean out of your head. People seek it out precisely for that. (3-4, emphasis original)

Sunwalking, then, in addition to being connected with a tourism-like consumption of what is seen as nature, is also a way to engage with the immensity of the cosmos.

Mercury's dawn is perhaps comparable to visiting an active volcano, where the insides of the planet hiss and bubble at the visitor's feet. Experiences of this kind of nature are not regenerative, rather, they are a nihilistic and spiritual meeting of an uncontrollable force. Nature, experienced like this, makes a mockery of human ego.

Nature in *2312* emerges as specific ways of interacting with places. On Mercury, nature is experienced though the power of the rising sun, and through the less spectacular ordering of the planet's surface into a place that can be visited.

Nature is thus a stance toward movement, and a stance toward relationships between assemblages located in space. Nature, therefore, is not an innate quality of any specific type of biome or environment, but comes into existence in the interaction and merging between actors and assemblages, and space. Hence, nature is also independent of life: the lifeless surface of Mercury and Io, and the rings of Saturn become nature, when the character's stance creates a locality of place, and endows it with the qualities of nature through bodily practices. Nature is also constituted through human activities such as mapping, tourism and farming, or, in other words, associating specific places with specific activities and values.

Through these contrasts, Robinson shows the arbitrariness of designating only narrowly defined, specific types of places as nature, and opens up a discussion of nature on an interplanetary scale. If nature is not a based on the elements in an environment but the result of stance and human activity, nature can exist in any environment, including outer space. Robinson shows the stark beauty of the nature of other planets, suggesting that such environments and landscapes have value in themselves without massive human intervention. Humans, in their relentless desire to shape the landscape into a resource, are in danger of repeating some of the mistakes that have been made on Earth. In interplanetary space, the danger is not in the loss of biodiversity, but rather in the loss of difference and the sublime quality of cosmic landscapes.

Nature, then, is a relationship articulated in space and time. Furthermore, nature does not preexist human activity but emerges as the other to society. In the second part of this chapter I examine the production of nature on Earth, and the concept of wilderness. I argue that wilderness, like nature, is constituted through spatial and interspecies relationships. In addition to examining wilderness, I argue that *wildness*, distinct from wilderness, emerges in *2312* as a potential in all environments.

### *4.2 The space of wilderness and wildness*

The familiar dystopian vision of a nearly dead world consisting of humans, cockroaches, rats, and possibly pigeons, is invoked as a possible future for Earth in *2312*: "[M]uch of Earth was now occupied by the toughest weeds and scavengers.

There was talk of a coming world of seagulls and ants, cockroaches and crows, coyotes and rabbits – a star thistle world, depopulate and impoverished – a big broken factory farm" (410). These types of animals are seen as pests and vermin, but what separates them from many others is their ability to thrive in spaces with human-constructed boundaries. They are wild animals who go where they please, and their nature is highly urban. These animals are ones the humans continually negotiate space with: people will begrudgingly live alongside rats and pigeons when extermination efforts fail, and will generally avoid places with large communities of cockroaches. Humans will occasionally try to reclaim urban space from animals, but humans do not have complete access to the world of these animals. In short, the relationship between humans and such animals is different to that of humans and the kinds of animals generally considered wild: rats, pigeons and cockroaches share the space of humanity, and their coexistence is one of constant, often violent negotiation.

The space relegated to the other kinds of wild animals is much smaller and more tightly regulated. David Lulka discusses the case of the wildlife management processes used in Yellowstone National Park in the Unites States. The purpose of the processes is to ensure two things: that the population of Yellowstone bison remains genetically diverse enough to survive, and that the herd remains within the boundaries of the national park. The bison, however, do not care about property laws, and from time to time enter private lands that border the national park. Lulka's example shows that the space afforded to wildlife is constrained both by invisible and tangible human boundaries: fences, property laws, roads, buildings. The attempt to stabilize the population and contain it within a tightly bounded area, Lulka argues, is at the core of modern wildlife management: "[O]ne of the primary goals [of wildlife management] is to impede movement and the change it may produce. To a substantial degree, success is judged by the ability to forge a final destination for nonhumans within the modern social environment" (454). Wildlife populations, then, are expected to remain where they are and as they are, that is, they are expected to remain the *same* population instead of becoming *a* population (Lulka 545). Wild animals, in other words, should be tied to a specific place where they can be managed. This place is their final destination: a place that is experienced as nature by humans, and that is designated as a primarily nonhuman environment. This place is the space of wilderness.

The animal repopulation effort Swan and Wahram participate in is an effort to deconstruct the notion of a stable, final destination for specific animal populations. The group of activists guide the migration of the caribou and the wolf pack that follows them through private lands, ignoring the human uses of the land:

> This leading of animal migrations across agricultural land was the biggest organized act of civil disobedience ever committed by spacers on Earth, but the hope was that after being escorted the first time, the animals would manage on their own, and become popular with the indigenous humans, even the farmers, who were not having much success anyway. (399)

The intent of the spacers is, then, not the establishment of specific, local populations, but rather an entire ecosystem of moving and changing populations. The key aspect of the rewilding effort is the free movement of self-organizing and self-sustaining populations of animals across, and beyond, human-defined borders.

Without free movement through space, Lulka argues, animal populations lose agency, and become mere representations of their preserved "primordial DNA" (454). Populations of wild animals are confined to their final destinations with no promise of the expansion of their domain (ibid.). In *2312*, the expansion of wilderness is indeed a motivation and the end goal for the preservation of different species, but there is no political will to designate any land as future wilderness. Swan and Wahram are involved in multiple development efforts around the globe, but nearly everywhere they face fierce obstruction. The people themselves seem held down by the rigid economic system and the weight of human customs:

> On the God-damned Earth the accumulated traditions and laws and habits made something that was worse than any body bra; it was one's mind that was held in place, tied in straitjackets, obliged to be like all the others in their ridiculous boxed habits. Here they were, on the only planetary surface on which you could walk freely, naked to the wind and the sun, and when they had a choice, they sat in boxes and stared at little boxes, just as if they had no choice – as if they were in a space station – as if the bad old days of the caged centuries had never gone away. They didn't even look up at the stars at night. (387)

Humans remain apathetic and hostile to change until they are involved in the restoration efforts of their own environments. Wahram tells Swan of a coastal restoration effort where local people have become invested in bettering their

environment: "The ocean rips up what it inundates, and a lot of toxic stuff gets released. The new shoreline and tidal zone is usually a disaster. Fixing all that is very labor intensive. And yet everyone living on the new coasts wants to see it done. Many want to do it themselves" (392). The creation of new commons can happen, but the release of privately owned land remains impossible. The needs of capital override the needs of the planet and its animal populations.

Free movement without respect to property law is at the core of animal life. Lulka, referencing Deleuze, argues that movement through space is what the existence of animal life requires. The herd of animals is a process rather than a population, expressing itself through iteration, and affecting its surroundings as it migrates. In other words, Nomadic movements populations transform space, and the population itself, making and remaking itself through its movement. Movement, in Lulka's view, is what constitutes animal agency. In *2312*, the newly rehomed animal populations are primed for migration, and with a little human help, immediately begin the transformation of the land and themselves as a population:

> This new herd's migration would be instinctive but aimless – unless they picked up old traces of the lost Beverly, Bathurst, and Ahiak herds – so, whichever way they took now would begin to establish the smells and other signs of a new migration route. This would then become a de facto habitat corridor through the new wheat zone, a corridor that would perhaps need to be defended in the relevant courts, but they could cross that bridge when came to it; first the caribou had to cross the river. (398-399)

Here, the new relationships between nature, wilderness and wildness begin to emerge. Wilderness begins to intrude onto property, with caribou and the pursuant wolves crushing grain fields. Wildness expands into suburban areas in the shape of deer and other animals. As a result, the boundaries between nature and society must be renegotiated. Animals are no longer the targets of repressive management, but agents in a new, dynamic configuration of space and wilderness. Lulka suggests as much:

> [T]he official definition of wildness skirts around the realization that wildness is fundamentally relational, continually in contact with externalities, and thus, in the process of delineating the place of wildness (figured as wilderness), there is unavoidably a devaluation of the expressive qualities of nonhumans and the spatial relations they entail. (Lulka 458)

As a result of the reanimation of Earth, wildness itself becomes redefined: As the space of wilderness expands to cover the entirety of Earth, wildness becomes a potential in all environments, no longer confined inside the borders of wildlife preserves and terraria. Encounters with wildness, in turn, force humanity to face the animals in a new way. Animals become actors and present individuals instead of representations of preserved genetic pools: "After the reanimation, problems on Earth became ecological and logistical and focused on transport, dispersion, mitigation, compensation, and legal and physical defense" (410). The sharing of space with wild animals, then, changes human space through a rebuilding of relationships.

The reanimation effort is a success, although its effects are not truly understood until decades after the event as the animal populations gradually expand their habitats and shape the land: "[T]he so-called invisible revolutions on Earth led to the recreation of its landscapes both physical and political, all of which followed the Reanimation" (552). Much like the animals remake the Earth, humans remake themselves iteratively, generation by generation, in encounters with wildness. Robinson thus seems to suggest that any true revitalization of Earth, or the prevention of further loss of animal life, must include a sharing of "valued land and resources with nonhumans who dare to contest existing property regimes" (Lulka 455).

The remaking of the world, like any major political upheaval, is not an easy process:

> And all the events continued to occur against the most intense resistance of time, material, and human recalcitrance – human fear, in fact, seizing with a desperate grip various imagined props out of the past that were somehow felt to hold the world together. Because of this, there was and always is the risk of utter failure and mad gibbering extinction. There is no alternative to continuing struggle. (553)

Humans, then, are pushed to let go of their comfortable habits and ways of relating to the world and others. What is being destroyed in the process is the privileged position of humanity on Earth: animals, now an undeniable force and presence, may attack and kill humans, and property will be destroyed. Life, iterating itself over and over through matter, respects no human law.

### *4.3 Concluding remarks*

In presenting Mercury's barren surface as a location for sublime experiences of cosmic nature, Robinson expands what we see as nature. Through making the live-giving and destructive power of the sun the center of these experiences, he invites the reader to consider nature as something larger than the remaining spaces of wilderness. Nature does not reside in national parks, Robinson suggests, but rather in our stance toward the world. Wilderness, in turn, is a poor replacement for wildness. Wilderness areas serve to contain and bind wildlife in its place, and this containment allows all the remaining land to become property. Robinson suggests this system of owning the land must go for the Earth to survive as a lively planet.

Furthermore, Robinson acknowledges that fundamental changes in how we see the world and make ourselves in it are not painless. Such change involves struggle, fear, and suffering. Change is however necessary if life is to endure in the solar system, and change is less painful than assured destruction through stagnation.

## 5 Conclusion

In this thesis, I have sought to prove three arguments. In the second chapter, I argued that the human body in *2312* is shown to be two things: an imagined, normative body with culturally defined and enforced borders, and an open system that accepts connections and fusions. The imagined, normative body is constantly challenged by living bodies that refuse to conform to the definitions of what a body is, or can do. Often even those who strive to maintain the borders of the normative body fail because of forbidden contacts or unruly limbs.

In the third chapter, I argued that the differences between humans and other animals in the novel are differences of degree, not kind, and that these differences are, like the boundaries of the body, arbitrary and shifting. The exclusion of everything that is considered nonhuman generates hierarchies that dehumanize other humans, and relegate animals and non-animal others to the position of objects and tools.

My argument for the final chapter was that nature in *2312* is not a quality of any specific environment, but a process of orienting the body in space. I further argued that movement through space is a key aspect of enabling new relationships between humans, animals, and wildness. These relationships constitute our world, and hold within them the potential to remake the world.

In *2312*, Robinson explores the fluidity and fragility of the boundaries of humanness, and the mechanisms which police these borders. The extraordinary things about humans end up being their ability to extend the human habitat beyond Earth, and adapt and evolve through technology. Robinson shows two ways of being human: the transcendent model of victory over embodiment, and the openness to others Swan portrays. Only openness allows for an understanding of being that decenters humans, and allows for an ethics not based on the traditions of humanist philosophy. Robinson's novel thus suggests that humanity can, and should, evolve to include others in its definition. The cosmos is shown as a vast network of life, all its members and components interlinked and dependent on each other. Through the acceptance of humanity as a plurality, from the earliest symbionts to future chimeras, humanity expands to include the myriad relationships that our bodies are inseparably entangled in.

Having chosen such a broad theoretical framework for my thesis, I have not been able to engage in much debate with the secondary material. In some cases, I have chosen to leave out criticism of the sources in order to focus on analyzing the novel itself. Questions of the self and embodiment, as well as intersectional issues regarding gender and race would have deserved their space in this thesis. Should I begin again from the start, I would perhaps narrow my topic in order to debate these issues further.

Despite its shortcomings, this thesis shows the richness of science fiction as a topic of academic study. Works of science fiction create both impossible and occasionally plausible futures and other worlds that allow us to examine humanity and ethics in new ways. In creating these worlds, science fiction reveals the preoccupations of today's humans, and the hierarchies of exclusion and inclusion that are sometimes difficult to tease out. Spectacular alien natures and monstrous others foreground these hierarchies, and allow the study of human problems without the full weight of human history.

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