Imagining Techno-Transcendence: Power and Culture in Transhumanist Imaginaries

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Abstract

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Transhumanism is an emerging subject of interest within the social sciences and this thesis is a contribution to this field of study situated at the intersection of Cultural Studies, Gender Studies and Feminist Cultural Studies of Science and Technology. I uniquely conceptualise transhumanism as imaginaries that are brought into being and materialised by discourses, practices, bodies and technologies. Transhumanist imaginaries are collective imaginings of a future that will have the technoscientific capabilities for humans to live longer through the 'enhancement' or total transcendence of their fleshy body. I argue this is not a fantasy of a genderless or post-gender future by showing how white cis abled-bodied masculinities are being re-produced and re-imagined in the production of transhumanism. This is across discourses, material-semiotic practices, science fiction narratives and visual cultures that work to bring transhumanist imaginaries into being. To do this, I trace the figure of the technological futurist - as a self-birthing ventriloquist for the technoscientific future - through sociocultural sites where transhumanist imaginaries are enacted and re-produced. Rather than considering imagining as apart from the materiality of social relations, I centre the imagination and the figural in my analysis of the body politics of transhumanism. Influenced by Leila Dawney's (2011) work on imaginaries, I combine the ideas of Benedict Spinoza's *Ethics* (1996) with Michel Foucault's *History of Sexuality: volume one* (1978) to argue imagining is an embodied, affective and socio-material practice that re-produces specific power-knowledge relations. Drawing upon genealogies of Feminist Technoscience and Trans Studies, this thesis is an examination of how patriarchal power-knowledge relations are re-produced in dominant imaginings of technoscientific futures, emphasising how privileged subjectivities are fundamental to the production of transhumanism. Using decolonial feminist thinking in dialogue with Trans Studies and Disability Studies, I expand on Haraway's *Modest Witness* (1997) to argue transhumanist imaginaries are gender, race, sexuality, class, and ableism in-the making. This thesis is a feminist sociological account of how gender relations, and other intersecting relations, are being re-produced and re-imagined within transhumanist imaginaries.

Key words: transhumanism, figurations, imaginaries, technoscience futures

Dedication

To Henry

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Declaration

I hereby declare this thesis is my own original work. It has not been submitted in substantially the same form for the award of a higher degree elsewhere.

I declare the word length of the thesis is 79,971 words and I confirm that it does not exceed the permitted maximum.

I declare in a published discussion between sociologist Dr Laura Clancy and myself for the National Centre for Research Methods we discuss our own work and ideas. This discussion followed my inclusion in the ‘Studying Elites: Innovation Forum’ in June 2022 and is titled 'Who has the power? Reflections on Elite Studies, Risk and Feminist Politics' (Hoyle and Clancy, 2023).

Foreword

Collapsing and Emerging Methods in the COVID-19 Pandemic

In this foreword, I discuss some of the methodological struggles of doing fieldwork that has a focus on understanding gender-in-the-making (Haraway, 1997). The COVID-19 pandemic significantly impacted my ability to conduct the fieldwork that I had planned to carry out at in-person events in the United States. Following the realisation of an impending lockdown I made the decision to revise my methodology and despite this pivot I believe this has enriched my thesis as I was forced to examine the potentials and limitations of methods – as well as the politics. By including this foreword, I hope to show how this earlier thinking has contributed to how I study power and culture in transhumanist imaginaries, as it was in the planning of this fieldwork that I became concerned about the notion of 'studying up.' Furthermore, I hope to contribute to the debates within the social sciences on the methodological possibilities and risks of doing partially covert observations.

Before the global outbreak of the COVID-19 virus my methodology included overt and covert participant observations at key transhumanist events in the United States. Pre-pandemic these social events ran annually with the location changing each year and resembled academic conferences with keynote speakers, panels and presentations. My hypothesis is that these key annual events are purposely designed to mimic academic conferences to legitimise transhumanist imaginaries, as well as being assemblages of socio-material relations that collectively create and limit possibilities for imagining transhumanist futures. Therefore, if these events facilitate practices that are engaged in knowledge-making and imaginings of futures, how do gender, race and age relations come to matter in the practices of imagining, noting also that the attendees are predominantly white middle-aged cis men. If the attendees are involved in collective forms of socio-material practices, how might we understand these events as sites of power and culture? As Barbara Piri and Bob Pease in their introduction to the volume *Men, Masculinities and Methodologies* (2013) argue, "White, heterosexual, class elite, and able-bodied masculinities require interrogation to enable us to understand more fully how privileged subjectivities are enacted and how that can be undone" (Piri and Pease, 2013a: 11). Similarly, Sociologists Liberty Barnes and Christin Munsch argue that a crucial aim of feminist research is to demystify the socially constructed masculinities in their most powerful forms by pulling back the curtain on men's lives and masculine institutions (Barnes and Munsch, 2015: 594-595). However, as I will discuss later,

gaining access to spaces where class privileged men engage in social practices could prove to be difficult as I am an 'outsider' in both my gender presentation and as a feminist researcher. Access in this context includes how participants might alter their behaviour in the presence of a female-presenting researcher.

Before the COVID-19 pandemic my proposed fieldwork included covert and obvert observations at these key transhumanist events. Going into the field always demands ethical considerations, but partially covert observations require explicit and robust justification because they are considered very high risk to the participants. The 'Statement of Ethics Practice' by The British Sociology Association (BSA) states,

> . . . the use of covert methods may be justified in certain circumstances. For example, difficulties arise when research participants change their behaviour because they know they are being studied. Researchers may also face problems when access to spheres of social life is closed to social scientists by powerful or secretive interests.
>
> (British Sociology Association, 2017: 5)

The BSA highlight two key principles that justify the use of covert methods 1) that the data collection could be impacted if the participants are aware that they are being observed thus altering their behaviour and 2) gaining access to otherwise closed spheres of social life or interactions because of powerful or secretive interests. Therefore, if fieldwork must be suitable to the field of study, then it is plausible to argue that if participants are either involved in social practices that reproduce power-knowledge relations or wish to keep those practices hidden - limiting access and data collection - then covert methods can be appropriately deployed if necessary ethical consideration has been given to the research design. My fieldwork would not have been entirely covert, following the conventions of sociological fieldwork the speakers and organisers would have been made aware of my presence and given the opportunity to consent to participating in the project. Notifying all event attendees of my presence as a researcher, as well as attempting to seek consent from all of them, could have seriously hindered my access to these events and the data collection. As the conference organisers and speakers are public facing, they would have been given the choice of either having anonymity or identifying themselves within my research project. Speakers at these conferences/events tend to publish and speak widely about transhumanism therefore, it is possible that rather than anonymity they would prefer to be accountable and

identifiable within my thesis. In chapter two, I discuss the potential risks of privileging certain speech within ethnographic research; as the option to not be anonymous and instead be named might have appeal, as academic citation can legitimise ideas. However, I feel it is important to note that my method of data collection did not include any audio recording devices as I believe this could have negatively impacted attendees who were unaware of my presence as a researcher. In the case of my work, I was interested in how socio-material practices bring transhumanist imaginaries into being, paying attention to gender-race-class-sexuality-and-dis/ableism in the making. This fieldwork was never realised due to the COVID-19 pandemic. However, I include these details to speak to the possibilities and limitations of overt and covert methods that are uniquely situated in 'studying up'; and when the participants are considered to have powerful or secretive interests.

In the introduction, I will argue that I do not use the notion of identity within this thesis because how identities are constituted by transhumanism is not my central concern. Furthermore, I do not adopt the dominant framing of transhumanism as a social movement that often identifies key participants, which I argue against. Scholars and writers have taken up the term 'transhumanist' differently but here I use it to capture imaginers and imaginings of transhumanism –human and non-human, material and discursive. Transhumanists are both imagined and real, and they are always situated and localised. For this reason, I would also like to briefly trouble the notion of a *demographic* in transhumanist imaginaries. Thinking of the research subjects as a *demographic* can be beneficial when thinking through an institutional ethical framework. My 'revised' methodology still requires ethical consideration, but the progress of planning to use ethnographical methods requires a particular consideration of who the participants are, to answer questions such as "who will I be observing?". Transhumanism framed through the notion of demographic could suggest there is a population of human beings that can be bounded and lifted out to study. We could not only lose sight of the nonhuman but also become trapped in unproductive questions such as why some women hold these transhumanist imaginaries (I elaborate further in chapter two). My unease is that researching these subjects through the lens of a 'demographic' could reproduce gender and race as if they are innate characteristics extending from the sexed human body. In addition to this, it cannot be dismissed that transhumanist subjects wish to evacuate their fleshy bodies therefore, the sexed body is both temporal and on the move. I hope to make the body visible in transhumanist imaginaries without rooting it in essentialist humanist notions of sex, gender and race.

Taking influence from Karen Barad's 'Posthumanist Performativity: Toward an Understanding of How Matter Comes to Matter' (2003), I am wrestling 'transhumanist' away from a representative term inscribed onto the existing subject and instead thinking about the formation of the transhumanist subject by discursive-material practices in transhumanist imaginaries. Contrary to a fantasy of individualist disembodiment, my argument is that to inhabit the position of transhumanist is to be embedded in social-material relations. I am interested in how these relations matter in imagining transhuman futures. Indeed, this thesis finds fault in the claim that transhumanism is both post-gender and post-racial. I will show how whiteness and masculinity is fundamental to the production of transhumanist imaginaries. Adding to the "furious tradition of feminist critique" (Bassett et al., 2020: xii) that comes before me, I am attending to the gendering of technological futures constituted by transhumanist imaginaries and by centralising intersecting relations in my investigation of these imaginaries I am also centralising power and culture. How else do we understand the magic of the Wizard of Oz without pulling back the curtain[1] and peering in?

The global COVID-19 pandemic forced the cancellation of the events I had planned to visit and as such a revision to my methodology. When global travel restrictions came into place it was still unclear whether the events would move online and I had to consider the implications this could have on my data collection. At the in-person events I intended to take an overview of the attendees to gain a picture of the gender, race and age of this social group however, the format of online events could have obstructed this data collection. Furthermore, I was also interested in the non-human enactments and material artefacts that bring transhumanist imaginaries into being and engage the participants in holding imaginaries, i.e., posters, imagery, lanyards, registers, presentations etc. There is the possibility of observing 'gender-in-the-making' (Haraway, 1997) through online events hosted on platforms such as Zoom or Discord however, I am particularly interested in the social-material choreography of these events as mimicking academic conferences; for example, these events tend to be held on university premises. Furthermore, the recurrence of these in-person events over the years in different global locations is significant because of the continuity whereas the pivot to online is novel. It is my understanding these particular events have not moved online as in

[1] As reflected in the earlier statement of Barnes and Munsch that a crucial aim of feminist research is to pulling back the curtain on men's lives and masculine institutions (Barnes and Munsch, 2015: 594-595).

2024, one event took place in The Netherlands. Despite my methodology no longer including covert and overt observations at in-person events, I strongly believe this thesis remains enriched by these earlier considerations of how to study power relations in transhumanist imaginaries and this thinking is woven into the larger project. Furthermore, it opened space for conceptual and theoretical explorations that might otherwise have been limited. This thesis builds the foundations for future fieldwork. The methodological wrecking surfaced a creative avenue for exploring transhumanist imaginaries in a time of global infection and panic.

Chapter One: A Future for Men: Imagining Transhumanism

Introduction

As mentioned in the foreword, in this thesis I argue that transhumanism is not a mere idea or fantasy, but rather imaginaries that are brought into being and materialised by discourses, practices, bodies, and technologies. Transhumanist imaginaries are elaborate and mundane productions of speculative futures when science and technology will facilitate the "technological enhancement[2]" or total transcendence of the fleshy body resulting in immortality. These imaginaries are brought into being by imaginers who freeze heads in Dewars (giant thermal flasks) in Arizona, embed self-trackers under the skin, set up foundations, institutions, and organisations, attend and speak at events and conferences, publish books, record podcasts and run in election campaigns. These material-semiotic practices (i.e freezing bodies) and discourses (i.e TED Talks) work to and struggle to sustain transhumanist imaginaries and attempt to legitimise it as a technoscientific future. If, as Anne Balsamo argues, "[t]he future begins in the imagination" then an examination of transhumanism as imaginaries opens an important avenue of analysis that pays attention to the power effects of the material practices of imagining and future-making (Balsamo, 2011: 52), in all its materiality. There are multiple transhumanist imaginaries[3] but despite this multiplicity, these imaginaries are predominantly held, produced, and desired by white cis able-bodied men. This suggests something social is going on: I argue this is not only significant but fundamental to transhumanism. I make the case that when transhumanist imaginaries are brought into being, so too are relations of gender, sexuality, race, dis/ability, and class. This thesis endeavours to understand the ways in which masculinity, maleness, whiteness,

[2] As an ultimate form of ablism (Wolbring, 2012; Goodley, 2014: 23).

[3] Interestingly there are discourses and practices of cosmism and cryonics in Russia, as Richard Tutton (2020: 16) writes; The connections between Russian Cosmism and Silicon Valley are worthy of further explication as today, amongst many Silicon Valley entrepreneurs, there is similar concern with avoiding death and attaining immortality." But this requires its own examination. I am instead concerned with the production of transhumanist imaginaries situated in the West, as Campbell says, it is "very much a Western, first nation phenomenon" (Campbell, 2009: 70).

straightness, and ableism is made and remade in the production of transhumanist imaginaries.

Exit through the giftshop: encountering transhumanism

In 2017 I was a Masters student enrolled on the Feminist Media and Cultural Studies summer school at Lancaster University embarking on an essay exploring posthuman masculinities in science fiction film. In the depths of studying Gender Studies and with a fondness for reading Donna Haraway, I had decided to travel to London to visit the Robots exhibition at the Science Museum (2017). This seemed fitting since, as Haraway writes, "The Museum is a visual technology . . . and one of its products is gender" (Haraway, 1989: 54). Guided by signposts I wandered the carefully choreographed story of the robot as told by the curators of the Science Museum (2017). In the tradition of the museum, I peered into glass-fronted dioramas (Haraway, 1989). The statement of intend is "the 500-year story of humanoid robots and the artistic and scientific quest to understand what it means to be human" (Science Museum, 2023). The glass kept my fleshy corrupting[4] body from the machine bodies of the humanoids as like the taxidermy dioramas of the Natural History museums, the 'truth of man' is supposed to be discovered through the gaze (Science Museum, 2017, Haraway, 1989). Fuelled by questions about the human-machine relationship and the temptation of the gift shop I brought a book: *To be a Machine: Adventures Among Cyborgs, Utopians, Hackers, and the Futurists Solving the Modest Problem of Death* by journalist Mark O'Connell (2017). Luckily on the commuter train out of London I bagged a seat with enough arm space that I could begin reading my new book[5].

In *To be a Machine* O'Connell (2017) documents his experiences of meeting transhumanist imaginers, attending Futurist events and his visit to Alcor, a cryonics facility in Scottsdale, Arizona. Transhumanists who pursue cryonics imagine a future when they will be able to return to life as their brain is uploaded into the singularity or a body rebuilt in metal and lab-grown flesh[6]. For those who fantasise about immortality

[4] The potential risk of my corrupting touch leaving fingerprints or the possibilities of causing breakages.

[5] The Robot exhibition ticket is still the bookmark in my copy of *To be a Machine* (2017).

[6] This was a particular fantasy of the so-called father of cryonics, Robert C W Ettinger (1964; 1972).

dying presents a problem, so cryonics facilities like Alcor will cryopreserve your whole body for a minimum fee of $220,000 in life insurance, or for $80,000 they will just freeze your head (Alcor, 2024b). Suspended in the betwixt Alcor patients await a technoscientific future that will provide the "solution" to mortality when the computer will deliver a shiny new body for a second chance at life - but this time forever.

The practice of severing and freezing your head in the hope you will live forever as a machine is captivating, but what drew my attention to transhumanism is it is predominantly imagined, desired, and held by white cis men who gather together to imagine a future for themselves. "These men . . . all spoke of a future in which humans would merge with machines" (O'Connell, 2017: 7) as O'Connell writes,

> We had gathered here to contemplate a profound societal shift, a coming transfiguration of the human condition, and yet there was no ignoring the fact that we were an overwhelming male group . . . a group, composed of mainly men, arranged in tiered seating in a room in Bloomsbury, there to listen to another man talk about the future.
>
> (O'Connell, 2017: 10)

It struck me that at an event choreographed to mimic academic conferences, men who share in age, gender, race and class meet to lecture, contemplate, witness and bond over an imagined future of disembodiment. I suspected this might tell us something about the goings on of Western patriarchal culture and was, therefore, worth serious consideration in the social sciences. When we understand these events – such as this London Futurists event - as cultural sites where transhumanist imaginaries are made and when we take into consideration that the majority of attendees are white and identify as men, then it gives support to the hypothesis that bringing these imaginaries into being is also gender, race, class, and sexuality in-the-making. Situated in specific socio-cultural histories the forming of social space is reciprocal to the forming of the bodily space (Ahmed, 2000). As Sara Ahmed writes,

> . . . the forming of the boundaries of 'unmarked' bodies – bodies-at-home or bodies-in-place – has an intimate connection to the forming of social space –

> homeland. The containment of certain bodies in their skin (bodily space) is a mechanism for the containment of social space.
>
> (Ahmed, 2000: 46)

Therefore, the exclusion or expulsion of femininity, queerness, transness and Blackness reconfigures social space through configuring the apartness of the white masculine cis body (Ahmed, 2000: 46). Yet while there has been some engagement with the ideologies and philosophies of transhumanism there has been a lack of specificity on the production of patriarchal power and culture in transhumanist imaginaries – until now. Reading *To Be a Machine* (2017) was my first knowing encounter with transhumanism, knowing in the sense it became recognisable. I had unknowingly already encountered transhumanism such as at the Robot exhibition and in many other ways when I could not recognise it as such. It would not be until this thesis that I would have the adequate tools to recognise, conceptualise and intervene in transhumanist imaginaries. But it was in 2017, squeezed between commuters on a train out of London when I first opened the freezer door and it switched the light on.

Staying with the gender trouble in the weird future[7]

Transhumanist imaginer Charlie Kam has a kitsch song titled *'I am the very model of a singularitarian'* – his version of the Major General's Song (kjgumbs, 2007). It is inspired by Ray Kurzweil's singularity and the rudimentary music video shows Kam singing against a backdrop of generic stock imagery of robots and brain cells (kjgumbs, 2007). In a way Kam has a point, he is the model of a singularitarian in that he is masculine, male, able-bodied and white like the other men who invite us to believe in the transhumanist possibilities of the singularity. Sharing in relational categories of sex, gender and race is not a coincidence. Wanting to techno-transcend your fleshy body is not some essentialist quirk about white cis able-bodied men. Rather it is an indicator of the production of relations in and through transhumanism and how this excludes some bodies and fetishizes others. As Disabilities Studies Professor Dan Goodley articulates in his examination of transhumanism as ableism, "Celebrating normativity

[7] The 'weird future' is inspired by a comment made by Elon Musk during the 'Neuralink Progress Update, Summer 2020' video which I discuss in chapter four (Neuralink, 2020).

and dreaming of an enhanced life brings an inevitable downside: the idealisation of some forms of life over others" (Goodley, 2014: 25). Too often body politics is left out or side barred by authors and commentators who discuss, investigate and/or critique the subject of transhumanism. At best gender and race might be accounted for as a demographic, but not as a relation that is being re-produced. Gender, race, class and dis/ability are not "preformed category of beings" (Haraway, 1997, 28) but rather, they are relational categories that are mutually constituted through material-semiotic practices that are historically situated (Haraway, 1997: 28; Ahmed, 2000). A failure to account for power relations dislodges transhumanism from its socio-cultural and historical position. The socio-cultural and historical entanglement of technology and white masculinity that is rooted in Western patriarchal culture gets reproduced when the analysis does not engage with the gendered, sexualised and racialised body.

An exception to this is the work of Lucy Suchman (2007) and Rosi Braidotti (2013, 2019, 2024), their contributions to feminist technoscience, and how they conceptualise power and figurations is influential to my thinking within this thesis. Their work acts as a distinct feminist intervention into transhumanist imaginings of techno-transcendence by emphasising the significance of sociomaterial arrangements to human-machine relations. Braidotti consistently critiques 'trans-humanism[8]' as an extension of the "humanistic belief in the perfectibility of Man through scientific rationality" and a liberal individualist fantasy that emerges from the social imaginaries of global capitalism (Braidotti, 2013: 97; 2019: 59). *Posthuman Knowledge* (2019) is a contribution to "new ways of knowing" within the humanities, specifically about the posthuman and materiality; scholarship that Braidotti has long been dedicated to. In her earlier work *The Posthuman,* Braidotti (2013: 90-91, 113) maintains in order to craft a new vision for posthuman subjectivity the transhumanist fantasy of escaping the enfleshed self should be avoided. As should the practices of human enhancement as they deny the corporeal as a site of subjectivity. Within this thesis I respond to this argument made by Braidotti and other feminist technoscience authors such as Suchman (2007), Balsamo (1996) and Haraway (1997) by emphasising how imaginings of

[8] The stylisation of 'trans-humanism' is how it appears in Braidotti's writing, distinguishing it from posthuman as she writes, "Speculative posthuman is close to but also substantially different from trans-humanism" (Braidotti, 2019: 59).

disembodiment re-produces the logic of colonial patriarchy. Goodley as well as fellow Disability Studies scholar Fiona Campbell (2009) echos Braidotti's concern in *The Good Robot*, "about who gets to be enhanced" by transhumanism "through what means, and for what purpose" (Braidotti, 2024: 40). Goodley (2014) and Campbell (2009), both offer meaningful critiques of the transhumanist visions of human enhancement as productions of ableism. This argument is elaborated in chapter four. However, across this scholarship transhumanism is not the focal topic and it is characterised as a movement which I will later argue is analytically limiting. I hope to build upon Braidotti's critiques of transhumanism as a fantasy to escape and deny materiality by offering a new conceptual framework for examining transhumanism (Braidotti, 2013: 90-91; 2019: 60).

Transhumanism is under researched but it is emerging as a subject of interest in the social sciences, arts and humanities. This includes *The Politics and Ethics of Transhumanism* (2024) by Film and Media lecturer Alexander Thomas, *Calamity Theory: Three Critiques of Existential Risk* (2021) co-authored by Associate Professors of English, Joshua Schuster and Derek Woods and *Transhumanism as a New Social Movement: The Techno-Centred Imagination* (2020) by James Michael MacFarlane. MacFarlane's (2020) contribution is academic in its engagement with transhumanist thought and practice through the framing of it as a 'new' social movement of 'technological human enhancement advocacy' or 'THEA'. My later discussion of whether transhumanism should be analysed as a social movement offers a robust critique to MacFarlane's (2020) central thesis. He concludes with a discussion of what he characterises as "The Techno-Centred Imagination" defined as a "psychic-social-ideational entity" for he argues "THEA is a novel type of imagination which assigns primacy to science and technology" (MacFarlane, 2020: 205, 212). This shows how MacFarlane (2020) thinks about the imagination in terms of the psychological and ideological, whereas through the work of Benedict Spinoza (1996) I emphasis the imagination as an embodied, material and affective practice. This highlights how my conceptual framework and analytical approach differs from that of McFarlane (2020). Roberto Paura's essay 'Singularity believers and the new utopia of transhumanism' (2016) situates transhumanism within the 'technocratic ideology' of Silicon Valley. Drawing links between the Silicon Valley's wealthy founders and funders and their ambition to live forever in the singularity as popularised by Ray Kurzweil (Paura,

2016). Despite the framing of transhumanism as a movement, Paura also highlights the commonalities between the imaginings of the technological singularity and the Christian faith, he writes "Many transhumanists await the Singularity as some sort of "second coming"" (Paula, 2016: 27). This is not to conceptualise transhumanism as a religion, and Paula's essay includes the various critiques of this characterisation as well as drawing together the church and transhumanism (Paula, 2016: 28-29).

Arguably my thesis intersects with the work of Thomas (2024) as we both draw upon similar literature; even to the extent Thomas (2024) discusses the work of Mark O'Connell (2017). Yet our analytical, methodological and conceptual approaches to transhumanism diverge. *The Politics and Ethics of Transhumanism* (2024) is a close reading of transhumanist discourse and ideas in the context of advanced capitalism. As such Thomas (2024: 6) conceptualises transhumanism as a philosophy and sometimes as a movement that adherents to logic and values of advanced capitalism, a critique that Braidotti (2019) also makes. Whereas I conceptualise transhumanism as imaginaries paying critical attention to the re-production and re-imagining of gender, race, sexuality, dis/ableism and class. The re-production of power is recognised by Thomas (2024: 215), and he critiques "the transhumanist value of 'inclusivity'" as this cannot be achieved, for transhumanism furthers the commodifying logics of advanced capitalism (Thomas, 2024: 159). However there is no consideration of the re-production of gender, specifically masculinity and maleness, that I argue is fundamental to bringing transhumanist imaginaries into being. Similarly, *Calamity Theory* (2021) is a critical engagement with transhumanist ideas, specifically those of Nick Bostrom, to offer an alternative 'ecological-existential framework'. They narrow in on existential risk as a movement sprouted from transhumanism. The imagination is made significant in their analysis however, Schuster and Wood make distinctions between what is realistic or imaginary whereas I trouble this distinction (Schuster and Wood: 2021: 115). They are direct in their strong criticism of transhumanism and they recognise the majority of participants in the "field of existential risk" are "mostly white males from wealthy Western countries and well-funded foundations and universities" (Schuster and Wood, 2021: 8-9); as well as recognising Nick Bostrom's "class snobbery" and the elitism of technocrats such as Elon Musk (Schuster and Wood, 2021: 6, 117). Therefore, this thesis contributes to this building of research on transhumanism within the social sciences and humanities, specifically through a Feminist Technoscience and Cultural

Studies approach to examine how transhumanist imaginaries is "gender-in-the-making" (Haraway, 1991).

The production of knowledge has histories of regarding gendered, sexualised and racialised body as polluting objectivity; as culture must be denied in the spaces where the imagined masculine scientists, philosophers and technologists work (Haraway, 1991; Suchman, 2007). Yet the invisibility of whiteness and masculinity cannot account for the lack of sociological engagement with the relations of gender and race in transhumanism. To analyse and interrogate how power relations are made and remade in transhumanist imaginings of the future requires feminist and decolonising tools. It is tricky affective work to stay with the trouble (Haraway, 2016). Haraway writes that "we – all of us on Terra – live in disturbing times, mixed-up times, troubling and turbid times" and "many of us are tempted to address trouble in terms of making an imagined future safe, of stopping something from happening that looms in the future" but "staying with the trouble does not require such a relationship to times called the future" (Haraway, 2016: 1). In chapter six, I discuss the politics of orienting only and always towards the future but throughout 'staying with the trouble' informs my approach (Haraway, 2016). With impatience, Haraway disputes the common responses to the horrors of the Anthropocene and Capitalocene: the first is the "comic faith in technofixes" that technology will either rescue "its naughty but clever children" and the second is the "game-over attitude" - that it is too late to make anything better - that is enabled by futurism (Haraway, 2016: 3-4). Therefore, to borrow the interpretation from Richard Tutton, staying with the trouble "is to be 'truly present': to attend to their present moment, to address the matters that confront them and their peers today" (Tutton, 2020: 18). It is an argument for "eschewing" futurism, as Haraway writes, "There is a fine line between acknowledging the extent and seriousness of the troubles and succumbing to abstract futurism and its affect of sublime despair and its politics of sublime indifference" (Haraway, 2016: 4). At times I have found inhabiting this place uncomfortable and I have felt in a very embodied way the tensions that have emerged in writing this thesis, but the production of these material-semiotic worlds must be made visible if we have any chance of intervening in the future-yet-to-come. This is a feminist project as I take the charge set out by Haraway, that

> . . . one important route for socialist-feminist politics is through theory and practice addressed to the social relations of science and technology, including crucially the systems of myth and meanings structuring our imaginations.
>
> (Haraway, 1991: 163)

This project seeks to understand the ways in which masculinity, maleness, whiteness, straightness, ableism and class are re-made and re-imagined in the production of transhumanist imaginaries. It does so by exploring these categories as the effect of relations, rather than pre-formed entities. Hence, my method focuses on the material-semiotic and embodied practices of imagining through which relations are produced.

Is transhumanism a social movement?

It is unusual to argue, as I do, that transhumanism is better understood as imaginaries brought into being by a collective imagining of futures when science and technology will facilitate the technological "enhancement" or total transcendence of the fleshy body. Typically, transhumanism is described as a movement, ideology, and/or philosophy; across academia, science-fiction literature, journalism, news media reports and popular non-fiction. For example, in chapter six I include the Business Insider article, 'Billionaires like Elon Musk want to save civilization by having tons of genetically superior kids' (2020) in which journalist Julia Black refers to transhumanism as both a movement and a philosophy. Or even Dan Goodley, despite his sharp-edged critique of transhumanism, too refers to it as a movement (Goodley, 2014: 89). While some characteristics of social movements (i.e. collective organising) could be attributed to transhumanism, the implication that it is driven by large-scale change achieved by collective action would cast shadows over what otherwise should be made visible (Wilson, 1973). It would appear as if 'movement' has become the catch-all for collective ideas popularised in Silicon Valley, such as the two I will discuss in this thesis, effective altruism (chapter four) and pronatalism (chapter six). I will now argue that framing transhumanism as a social movement obscures our understanding of the imaginative aspect of transhumanism and therefore, limits the necessary analysis required to unpack the relationality of transhumanist imaginaries.

Sociologists Hank Johnston and Bert Klandermans argue that the fundamental quality in defining social movements is change, and this change fuels mobilisation causing a movement to grow and succeed (Johnston and Klandermans, 1995: 13). I am not arguing that transhumanists are not interested in some forms of changes – although a lack of change to the social order is articulated in these visions of the future - I am instead arguing that transhumanist imaginers do not mobilise because of change but rather that they gather together to bring into being the imagined as real through material-semiotic practices. Thomas in *The Politics and Ethics of Transhumanism* (2024) argues transhumanism is split between the "right-leaning techno-libertarian wing" and the "left-leaning techno-progressive faction" (Thomas, 2024: 3). Whereas I argue, transhumanism is not driven by political change to the social order of patriarchal capitalism and any efforts to mobilise by transhumanist political groups fail to move (Wilson, 1973; Singularity.FM, 2018; Le Dévédec, 2018; Thomas, 2024). Less concerned with whether transhumanism is or is not a proven social movement I am arguing the reproduction of power relations through embodied practices of imagining gets lost in the framing of transhumanism as a social movement.

Political scientist, Cyrus Ernesto Zirakzade's (2007), understands social movements as political phenomena with three "overlapping yet distinguishable characteristics" which are;

- a group of people who not only challenge but make demands on authorities and intend on making significant changes to the social order.
- This group of people who engage in political activity have a "broad range of social backgrounds," that Zirakzade (2007: 4) calls "nonelite." Usually, they are underrepresented in political systems and "lack political clout, social prestige and enormous wealth" (ibid, 2007: 4).
- The tactics used are by social movements are confrontational and disruptive, such as "occupying buildings, boycotting businesses, and blockading streets" (Zirakzade, 2007: 5). Activism that bends the legal code (ibid, 2007: 5).

Transhumanism does not fit comfortably within these characteristics of social movements. Reflecting on earlier models of social movements scholars Robin Cohen and Shirin M. Rai (2000b:4) argue that the phenomena that is expressed as a 'social movement' requires a working understanding, rather than watertight definition, nonetheless I find that applying a lens of social movement to transhumanism would

obscure the analysis. Still, if we put transhumanism into direct comparison to Zirakzade's (2007) definition of what tactics are used by social movements to confront and disrupt such as protests or occupying buildings, these tactics are either not used by transhumanists or any attempts to use them fails. In 2017, controversial transhumanist Zoltan Istvan, most known for running in the 2016 presidential campaign, co-opted the symbol of protest for self-publicity only to add to the mass of literature and imagery he produces on himself, by himself (Istvan, 2013; 2017). Or to put it even more explicitly, public-facing transhumanist imaginers and transhumanist organisations do not lack clout or wealth (Stewart, Goldstein and Silver-Greenberg, 2019; Robinson, 2020), and the social background of 'participants' does not vary. In fact, I would argue that most recognisable transhumanists (such as Elon Musk and Nick Bostrom) can be considered as elites. I am suspicious that there has been a penchant to interpret all collectives as social movements. Cohen and Rai (2000b) speculate that the notion of 'social movements' has dropped in and out of fashion in sociology and political science as a response to the unrealistic demands placed on it by some scholars (ibid, 2000b: 1). They refer to Wilson's (1973) argument that there is an over-reach to include nudists, youth groups, guerrilla organisations and beat literature under the rubric of social movements (despite his statement that flat-earthers and like could be described as such) (Cohen and Rai, 2000b: 1; Wilson, 1973). While I can recognise that social movements as organised social systems where individuals can negotiate new social realities for themselves may be applicable to transhumanism, to analyse it as a social movement that centralises 'change' could save transhumanism from the analytical scrutiny that it deserves.

My very reasoning for troubling the relentless framing of transhumanism as a social movement is that it casts an unnecessarily flattering light on a group of white men who are investing in a fantasy of their own immortality. Moreover, transhumanism as a social movement, risks diluting the analysis of how power relations are reproduced and reimagined in transhumanism imaginaries. Investigating transhumanism as a movement does not account for the significance of the imaginative aspect of transhumanism, for this vision of a technoscientific future is brought into being by bodies that imagine through encounters with other bodies and technologies (Hudson, 2020; Dawney, 2011; Ahmed, 2000). The rumoured frozen body of Walt Disney beneath the Pirates of the Caribbean ride at Disneyland Florida exemplifies how the imagination in all its registers (fantasy, mythological and ideological) is significant to

transhumanism (Haraway and Goodeve, 2000: 77-78). For the factual – whether Disney is frozen or not – is not necessary to sustain the mythological and fantastical imaginings that he is suspended within his own Disney wonderland. Transhumanism has circumvented the complex analytic approach I believe is required to illuminate how these collective imaginings of a technoscientific future takes hold, stabilises, mutates, leaks and is resisted. It is only through conceptualising transhumanism as imaginaries that we can have a chance of understanding the social relations that are reproduced and reimagined in these material-semiotic worlds.

Understanding transhumanism as imaginaries: an interdisciplinary approach

This thesis is situated at the intersection of Cultural Studies, Gender Studies and Feminist Cultural Studies of Science and Technology. The choices in concepts, theory, material and literature are all intentional and part of crafting a feminist sociological account of transhumanist imaginaries. Chapter two is an exploration of the methodological struggles and possibilities of studying power and culture in transhumanism imaginaries. I discuss the feminist politics of doing research that seeks to understand the social relations between white, class privileged, able-bodied cis men that imagine a future for themselves. Through this discussion, I trouble the notion of 'studying up' and I ask what is at stake when studying power. Through Bruno Latour's *Down to Earth* (2018) I bring together Science and Technology Studies (STS) and Elite Studies[9] and question whether transhumanists can be considered as elites. Informed by the work on figurations by Donna Haraway (1997), Rosi Braidotti (2019), Sara Ahmed (2000), Lucy Suchman (2007) and Claudia Castañeda (2002), I explain my rationale for using a figurative methodology which informs my research questions. Chapter two contributes to interdisciplinary methods of studying power and debates within Elite Studies and the social sciences.

My use of imaginaries is one indicator of how I take an interdisciplinary approach as imaginaries as a conceptual framework is undisciplined. With that said, I am clearly influenced by Feminist Technoscience and Feminist Cultural Studies of Science and Technology. As Science and Technology Studies (STS) scholars, Maureen

[9] There is renewed interest in Elite Studies across sociology, history, journalism, politics and anthropology.

McNeil, Michael Arribas-Ayloon, Joan Haran, Adrian MacKenzie and Richard Tutton note, there is no unified understanding or use of the concept of imaginaries but there is a general shift in STS towards research on imaginaries; recognising that they "are necessarily social in some way" and they draw attention to future-making practices (McNeil et al., 2017: 435, 438, 457; Tutton, 2018). In her argument for the use of imaginaries, Professor of STS Shelia Jasanoff, describes 'sociotechnical imaginaries' as a voyaging concept as it enables theorising across disciplinary boundaries taking in otherwise neglected social thought and practice (Jasanoff, 2015b: 321). She writes,

> Just as imagination liberates the mind to rise beyond the constraints of the possible, so too the lens of sociotechnical imaginaries enables us, as analysts, to look for patterns and juxtapositions that cut across the conventional grid lines of disciplines.
>
> (Jasanoff, 2015b: 321)

It is in chapter three that I bring together some of the defining work on imaginaries across different disciplines and I discuss what is distinct in the use of imaginaries in STS. This is a non-exhaustive comparative study that includes, but is not limited to, the work of Charles Taylor (2002), Benedict Anderson's *Imagined Communities* (2006) and sociotechnical imaginaries as conceptualised by Shelia Jasanoff and Sang-Hyun Kim (2009). I put this work into dialogue to find the possibilities and limitations in how imaginaries have been conceptualised in order to construct a productive framework for understanding transhumanism. This is informed by the work of Richard Tutton (2018, 2020), and medical sociologists Nicky Hudson (2020) and Leila Dawney (2011), to account for the imagination as an embodied, affective and socio-material practice that is attentive to imaginings of technological futures.

Through close comparative readings, chapter three builds upon this account of the imagination as embodied. Influenced by the approach to imaginaries by Leila Dawney, I too I read philosopher Benedict's Spinoza *Ethics* (1996) with Michel Foucault's *History of Sexuality: volume one* (1978). I then bring together the work of Sara Ahmed (2000) and C. R. Snorton's *Black on Both Sides* (2017) to extend Foucault's (2003) writings on the discourse of flesh. I build an understanding of the imagination not apart from social relations but fundamental to their re-production as the imagination materialises in power-knowledge relations and through and in encounters. I

situate this in its historical and cultural place, specifically the Anglo-American histories of gynaecology and chattel slavery. In order to make use of imaginaries, it requires an understanding of the imagination as an embodied, affective and socio-material practice. Therefore, I characterise chapter three as the theoretical and conceptual backbone to this thesis.

In her solo work, Professor of Feminist Cultural Studies Maureen McNeil identifies five different Anglo-American interdisciplinary approaches of Cultural Studies of Science and Technology (McNeil, 2007: 3). Imaginaries feature in the fifth approach: Feminist Science Fiction Studies. The interest in science fiction in Cultural Studies of Science and Technology is indicative of the attention feminists pay to affect - pleasure, fears, anxieties and desires – and the concept of imaginaries enables a consideration of the affect of technoscience (McNeil, 2007: 24; McNeil et al., 2017: 457). In this thesis, the attention paid to science fiction narratives and the visual culture of sci-fi is because of this understanding that it is a "repository" of imaginaries (Jasanoff, 2015b: 337) and this is true of transhumanist imaginaries. For as Haraway articulates, "[Science fiction] is a territory of contested cultural reproduction in high-technology worlds" (Haraway, 1989: 5) and "Both science and popular culture are intricately woven of fact and fiction" (Haraway, 1989: 3). Take for example, the renowned science fiction novel *Frankenstein* (2012) by Mary Shelley, originally published in 1818. Helpfully, in his book *Narratives of Technology*, Professor of Languages, Literatures, and Culture, J.M van der Laan argues, the significance of the story of *Frankenstein* (Shelley, 2012) does not reside in the reality of Frankenstein's monster, neither in the accuracy of the science or in the anticipation of technoscientific breakthroughs Shelley imagines (van der Laan, 2016: 173). Rather it resides in the figurative, he writes, "Her figuration of the man of science who knows no bounds, has no conscience, and makes a monster is here what matters most" (van der Laan, 2016: 173). In a similar vein, this thesis is not concerned with the accuracy of the technoscience predictions of transhumanism, rather my concern is how the technological futurist figure is an effect of making predictions in transhumanist imaginaries. For as I will discuss in chapter four, predicting the technological future is part of the mythmaking cultures of technoscience. From this culture emerges the tech futurist hero as a ventriloquist for the 'coming' technoscientific future. I argue, what matters most is not the accuracy of these predictions, but rather the making of the tech

futurist figure as it can tell us more about how transhumanist imaginaries come into being and take hold.

Chapter four, then, is a conceptualisation and analysis of the figurations of the tech futurist in transhumanist imaginaries. To craft an understanding of the tech futurist figure, and situate it in its sociocultural and historical position, required an extensive discussion of the making and encountering of figurations in the cultures of technoscience since Robert Boyle's scientific method. As such it is the longest empirical chapter of the thesis. I read Donna Haraway's *Modest Witness* (1997) and Maureen McNeil's (2007) scientific heroes to discuss how the production of "what counts as knowledge" and the experimental method is "gender-in-the-making" and how in these practices and discourses figurations emerges. To understand where this thesis is situated and to make sense of what I am researching and therefore, arguing, requires a return to Robert Boyle's scientific method (Haraway, 1997). I regard this as return to the fundamental scholarship of the "experimental way of life" and "modest witnessing" (Haraway, 1997) from the subdisciplines of what was once known as the Social Studies of Science or the Philosophy of Science in the nineteen nineties. This builds the foundation to understanding the figurations of the tech futurist and my thesis argument as a whole. It is in this chapter I begin the work of tracing the tech-futurist figure and argue it is a reconfiguration of Boyle's 'modest witness' (Haraway, 1997) and Maureen McNeil's 'scientific hero' (2007). In order to make sense of why men gather together to imagine transhumanism requires a return to the 'public laboratory' of the Scientific Revolution (Haraway, 1997). I then use this thinking to examine how transhumanist imaginaries, in discourse, narratives and visual culture, are inflected with the gendered, racialised and ableist tech-futurist figure. To unpack this I analyse specific visualisations and narratives that are mediated future-making practices; this includes Ray Kurzweil's TED Talk 'The accelerating power of technology' (2005a); the book *Immortality, Inc: Renegade Science, Silicon Valley Billions, and the Quest to Live Forever* by Chip Walter (2020) and how the Future of Humanity Institute founder Nick Bostrom is figured in the New Yorker profile, 'THE DOOMSDAY 'INVENTION: *Will artificial intelligence bring us utopia or destruction?*' By Raffi Khatchadourian (2015). I bring these materials together to show how they mutually legitimise each other, exemplify the social bonds between men who imagine transhumanism and how the tech futurist figure is an effect of bringing transhumanist imaginaries into being. As I will

also show in this in chapter, through the work of David A. Kirby (2003, 2009), “virtual witnessing technologies” enthuse audiences to affirm imaginings of the technoscientific future as plausible realities. Therefore, I make visible how social relations are made and re-made in practices of witnessing and imagining.

In chapter five I attend to imaginings of being transgender and transsexuality in the popular British science fiction television series *Years and Years* (2019) and the novel *Frankissstein* (2019) that I argue work to bring into being transhumanist imaginaries through the disavowal of transsexuality. I am attentive to how it could be claimed these science-fiction imaginings of transhumanist futures are political progressive as they are produced by gay and lesbian cis creators who regard themselves as allies to the rights of trans people. Jeanette Winterson identifies as non-binary and Russell T Davies is forthright in his support of trans people to self-determinate. However, I believe analysis of these narratives aid an important and urgent understanding of the gender politics and panic in transhumanist imaginaries, as I situate these imaginings in the context of the TERF wars and “British matters of sex” (Hines, 2020; Pearce, Erikainen and Vincent, 2020, Butler, 2024). As I will discuss in chapter six, Zöe Sofia (1984) sharpened analysis shows that the toxicity of neo-conservative politics is a polluted undercurrent of science fiction iconography. Thus, characterising the narratives I analysis in chapter five as “outside” of transhumanism would limit the examination of how imaginaries are interrupted or stabilised within wider culture imaginaries. Afterall, transhumanist imaginaries have leaky boundaries. This thesis challenges the assumption transhumanism is consequentially trans and as a result transhumanist futures are post-gender or genderless. This critique comes into clear view in chapter five. The materials I analyse in this chapter, includes the ‘coming out’ narrative in the BBC series *Years and Years* (‘Episode 1’: 2019), the depictions of sexual activity in Jeannette Winterson’s *Frankissstein* (2019) and Martine Rothblatt's essay ‘Mind is Deeper Than Matter: Transgenderism, Transhumanism, and the Freedom of Form’ (2013) read in adjacent to her book *Transhumanism to Transgender* (2011). I argue these imaginings appropriate the ‘wrong-body’ narrative to make sense of transhumanism to a cis audience but by doing so they erasure the materiality, specificity and multiplicity of being trans. I argue these imaginings craft a racialised figuration of transsexuality only for it to be ultimately denied - leaving the overdeterminist white masculine subject in place.

In chapter six, I discuss imaginings of the motherless man that are situated in the clerical culture of Western Christianity and the histories of technological reproduction. I draw connections between these sociocultural histories and reproductive politics of pronatalism in transhumanist imaginaries. I discuss the implications of cutting imaginings of technological reproduction off from the histories of chattel slavery and eugenics. By bringing together the visualisation technologies that make the 'public foetus' possible, and science fiction visual culture, I show how the womb is displaced and the computer emerges as a symbol of masculinist fertility. Thus, this chapter challenges the notion that uploading to a computer is a fantasy of disembodiment by arguing instead uploading is a masculine self-birthing fantasy. I expose the gender relations of the socio-material practices of cryonics - freezing (legally) dead bodies and heads in the hope of a technoscience future when they will be rebirth by uploading into machines. Through analysis of *Altered Carbon* (2018), *Robocop* (2014) and *Demolition Man* (1993) I discuss how this imagining of rebirthing of man through technology is a trope in science fiction film and television. I expand this analysis to discuss the visualisation of uploading in the first episode of the television series *Upload* ('Welcome to Upload', 2020), and bring it together with Han Moravec's *Mind Children* (1988) to muse on the implications of this imagining to audiences of white male fans.

The thesis concludes with a way out of the singularity by emphasising the salience of my conceptual and theoretical approaches to transhumanism that centralise the reproduction of social relations, thereby undoing the notion of a singular transcendental universal subject. In the conclusion I also focus on the key arguments and contributions of this thesis and emphasise my unique conceptualisation of transhumanism as imaginaries. I also reflect on the limitations of this project and consider the possibilities of future research before concluding the discussion with a brief consideration of the feminist and queer politics and potentials of future-making.

Chapter Two: Studying Transhumanism: Power, Masculinity and Imaginative Figurations

Introduction

This chapter is an in-depth exploration into my methodological approach and the feminist politics of knowledge making. As I argue in the thesis introduction, transhumanism is most frequently described as a social movement, however this is analytically limiting (and inappropriate), rather I argue that transhumanism is better understood as imaginaries that are brought into being by specific material-semiotic practices, discourses, bodies and technologies. Transhumanist imaginaries are collective imaginings of futures when science and technology will facilitate technological bodily enhancements or the full technological transcendence of the fleshy body in the hope of achieving immortality. The most-visible bearers of the transhumanist imaginaries, that is, those who hold it, desire it, perform it and stabilise it, those who call themselves 'transhumanist,' are predominately white, middle to upper earners, identify as cis gendered men, around or above the age of thirty[10], present as able-bodied, and are either British, European or American citizens[11]. While there are imaginers who are not white men this does not dilute the significance that transhumanist imaginaries are held mainly by a group of subjects who share in gender, race and class positions. This requires further scrutiny as it suggests that the production and practices of transhumanist imaginaries are also a doing of specific gender, class, sexuality and race relations. To be explicit, this thesis is an investigation into the re-production and re-imagining of whiteness, masculinity, and ableism in transhumanist imaginaries and hence it is positioned at the intersections of Gender Studies, Feminist Technoscience and Cultural Studies of Science and Technology.

[10] Transhumanist imaginaries imagine a future where aging is defeated, so age is significant; see transhumanist Aubrey de Grey's TED Talk 'A roadmap to end aging' (2005) as an example.

[11] There are of course exceptions to this, and I do not wish to make those who do not embody these specific characteristics invisible but by-and-large white class privileged able-bodied cis men make up the majority of those who bear these imaginaries, especially those who are public facing. Such as individuals who host transhumanist events, invest in or work at institutions, companies or organisations with transhumanist interests or produce content to be consumed and witnessed by a public audience for example TED Talks, podcasts and books.

My thesis is concerned with how bringing these imaginaries into being re-produces and re-imagines power relations, and how 'gender-in-the-making' (Haraway, 1997) is fundamental to the enactment of transhumanist imaginaries. My project is an intrusion into the future-making practices of transhumanism as I take feminism with me on my voyage into the future of Man[12]. Within this chapter I will wrestle with the ethical challenges of researching transhumanism by discussing social research that aims to look at power, therefore, I will also question if the framing of 'studying up' is useful to this thesis. It was in the planning for fieldwork at in-person events and conferences that I became concerned about the notion of 'studying up' and I have continued this concern in this chapter by examining what it means to study power and culture in transhumanist imaginaries. The thesis foreword is a dedicated discussion of how the COVID-19 pandemic impacted my ability to conduct fieldwork. By discussing the methodological nuances and tensions of researching transhumanist imaginaries I hope to add to the current renewed exploration of methodologies for Elite Studies and studying power, as well as to conversations about interdisciplinary methods for sociologically studying the future. I will begin the chapter with a discussion of my chosen methodology and my use of the figurative as a methodological tool.

Figurations as a methodological tool for navigating the re-productions of transhumanist imaginaries

Building upon the traditions of Feminist Technoscience and Feminist Culture Studies of Science and Technology, I use a figurative methodology (Haraway, 1997; Suchman, 2007; Braidotti, 2019; Castañeda, 2002; McNeil, 2007). My methodological approach uses the tech-futurist figure as a "navigational tool" (Braidotti, 2019: 2) to examine the visualisations, narratives and material-semiotic practices that are at work to produce and sustain transhumanist imaginaries across different cultural sites. I am using a figurative methodology because it offers unique, generative, and critical tools to examine the production of power and culture in transhumanist imaginaries. This is a contribution to the ways in which Feminist Cultural Studies of Science and Technology

[12] The use of 'man' is purposeful here as I mean the humanist notion of Man as the universal subject. I do not mean man is the sense of a placeholder for 'human' or 'homosapien.'

examines the re-production of sex, gender, sexuality, race and dis/ableism in imaginaries and their future-making practices. The conceptualisation of cultural imaginaries offers a generative way of attending to the processes and practices of futuring (Anderson, 2006; Jasanoff, 2015; McNeil et, al., 2016; Taylor, 2002). Drawing upon Feminist Technoscience and Science and Technology Studies, I argue the work on imaginaries, as Richard Tutton notes, offers a "conceptual language in which to do the sociology of the future that problematizes established onto-epistemological distinctions between what is imagined and what is real" (Tutton, 2017: 480). Tutton (2017) is influenced by Karen Barad's foregrounding argument of how matter comes to matter, that "the relationship between the material and the discursive is one of mutual entailment" (Barad, 2003: 822). As such Tutton argues for sociologists to move away from representationist or performative terms and to an understanding of the future as enacted through material-semiotic practices (Tutton, 2017: 485). Important to my analysis is the work of Donna Haraway, who, as Richard Tutton notes, troubles the distinction between real and figural and argues that to bring the future-present[13] into being requires imaginative figurations loaded with metaphor, visual images and stories (Tutton, 2017: 489). Transhumanist imaginaries pull the future into the present through narratives, storytelling, visualisations and material-semiotic practices and this is made possible through enactments of the "technological futurist" figure. As I will elaborate in chapter four, the nomenclature "tech futurist" connotes how this figuration is a semiotic ventriloquist for the imagined technoscientific future. A figure that is an effect of the future-present, a congealing of human and machine relations both imagined and real; as cultural analysis of the discourse, materials and practices of transhumanism is also an analysis of how humans and machine relations are figured in transhumanist imaginaries (Haraway, 1997; Castañeda, 2002; Suchman, 2007).

In this thesis, I show how the tech-futurist figure is culturally and historically situated, congealing meanings, knowledges, practices, and power (Castañeda, 2002). By tracing the tech-futurist figure through sociocultural sites where transhumanist imaginaries are enacted and produced, I ground the figural in social relations, and this I argue, is an analysis of power because of the historical situatedness of these relations (Ahmed, 2000; 8-9). My use of figuration is largely informed by Claudia Castañeda's

[13] Future-present meaning how the future is conceived in the present.

conceptualisation of the figural in *Figurations: Childs, Bodies, Worlds* (2002), Donna Haraway's *Modest Witness* (1997), Maureen McNeil's scientific heroes (2017), Sara Ahmed's (2000) figure of the stranger and the ways in which Lucy Suchman (2007) examines how the figure of the human is materialized in AI and robot technologies. Castañeda conceptualises figuration as a relation between material and the semiotic that ". . . makes it possible to describe in detail the process by which a concept or entity is given particular form – how it is figured – in ways that speak to the makings of worlds" (Castañeda, 2002: 3). Therefore, a figure is the effect of specific material-semiotic practices (Castañeda, 2002: 5). As Castañeda argues, describing the relation between figuration and material-semiotic worlds, is also to situate practices and their associated power "not only in discursive domains, but also in time and space" (Castañeda, 2002: 5). Moreover, Suchman reminds us that the effects of figurations are political, in that they can either reinscribe or challenge existing social orderings (Suchman, 2007: 227-228). The tech-futurist figure, I argue, is a conductive metaphor circulating and being constituted inside and outside of transhumanist imaginaries, it is familiar and performative, but always becoming; it is also how transhumanist imaginaries take hold and stabilise.

Examining transhumanist imaginaries with a figurative methodology disrupts the notion of transhumanist as an identity; as Haraway argues, figures are not literal and self-identical and not always representational but rather tropic that invoke meaning and practices (Haraway, 1997:11; Suchman, 2007: 227). Moreover, "Figurations are performative images that can be inhabited" (Haraway, 1997: 179). The larger ambition of this thesis is to use the tech-futurist figure as a methodological tool to render visible which bodies can inhabit this figuration and which worlds are brought into being (Castañeda, 2002; Haraway, 1997; Ahmed, 2000). I am curious about the relationship between material-semiotic practices that bring figurations into being and the imagination as embodied and material practice and what this can tell us about sex, gender, race, ableism and sexuality (Ahmed, 2000; Braidotti, 2019). For example, we might ask how is the overdetermined white masculine human subject who imagines transhumanism concealed by a fetishised figure of the tech futurist? Using Marxist theory, Sara Ahmed's in *Strange Encounters* (2000), suggests fetishism of figures is the process of fetishisation that involves the displacement of social relations and the transformation of fantasies into figures as such functions to conceal labour and forms of

difference (Ahmed, 2000: 5, 9). She writes, "What is at stake is the 'cutting off' of figures from the social and material relations which over-determine their existence, and the consequent perception that such figures have a 'life of their own'" (Ahmed, 2000: 5)? Analysis that pays attention to the social and material relations ground the figural in its socio-material place. By asking how masculine white cis able bodies come to be imagined as occupying the transhumanist future, the imagined space of the singularity or a colony on Mars, and how this might mark out other bodies as trespasser of that future. In *Space Invaders: Race, Gender and Bodies Out of Place* Nimal Puwar writes,

> Some bodies are deemed as having the right to belong, while others are marked out as trespassers, who are, in accordance with how both spaces and bodies are imagined (politically, historically and conceptually), circumscribed as being 'out of place'.
>
> (Puwar, 2004: 8)

Therefore, I question what bodies can inhabit the tech-futurist figure to contribute to an understanding of the relationship between subjectivity, figurations and imaginaries in technoscience future. This, I argue, is the neglected body politics of transhumanism.

Research questions and case studies

This thesis asks,

- How are transhumanist imaginaries also sex, gender, race, class, sexuality and ableism in-the-making?
- In what ways are transhumanist imaginaries, in discourse, narratives, media, visual images and science fiction inflected by the gendered and racialised figuration of the tech-futurist figure?

To answer these questions, I use a methodological approach of tracing figurations of the tech futurist through multiple sociocultural sites. To do this requires methodological techniques attuned to discourse and visual analysis, cultural processes and material-semiotic practices that give the technological futurist form, how it is figured and how it is an effect of transhumanist world-making (Castañeda, 2002: 3). By employing a

figural approach I trace tropes, symbols, syntaxes through narratives, visual images and storytelling while considering how these are practices of mythmaking, imagining and virtual witnessing. I am paying critical attention to the relationship between the construction of figurations and transhumanist imaginaries to understand the discursive production and semiotic-material practices of "gender-in-the-making" (Haraway, 1997: 35). . I am informed by the work of Professor Maureen McNeil who suggests in order to analyse how hero figures are produced as cultural signifiers is to first identify the cultural site where these figures are encountered (McNeil, 2007: 28, 35). The sociocultural sites where transhumanist imaginaries are re-produced and re-imagined through practices and discourses are in and across; non-fiction, science fiction, conferences, academia, private universities, journalism, news media, social media, crypto currency, technologies, robotics, cyborgs, rockets, biohacking, cryonic facilitates, Disneyland, podcasts, manifestos, exhibitions, TED Talks, YouTube, films, television series and documentaries. I acknowledge that because there is an exhaustive number of cultural sites where transhumanist imaginaries are in re-production, and therefore, an abundance of material, it is an impossible task for my project to be in all these places at once. This is the very 'nature' of imaginaries, making the imagined real is a monotonous and often mundane production of discourses and socio-material practices across time and space (Castañeda, 2002, Haraway, 1997). My interest is the very mundanity of making the intangible material through social practices, narratives, visualisations and discourses, and the relations – gender, race, class, sexuality, ableism - that are being re-made in bringing transhumanist imaginaries into being. Exemplifying the diverse and varying cultural sites where transhumanist imaginaries are re-produced, my material includes science-fiction literature, non-fiction literature, journalism, essays, websites, television programmes, films, TED Talks, a Youtube video, visual images, academic papers and books.

Through the developmentary stages of research I took a cultural studies approach by collecting materials where the enactment and making of transhumanist imaginaries is recognisable. As informed by the work of Maureen McNeil, who writes,

> The use of the term case study is a way of registering self-consciousness about interpretative processes and a concern about investigating detailed cultural processes whilst giving attention to broad cultural patterns.

(McNeil, 2007: 42)

This reflects how the case studies of this thesis emerged through my investigation of transhumanism that was conscious of how transhumanism is encountered and imagined across different material forms and cultural locations (McNeil, 2007). Therefore, in selecting the case study material I considered 1) cultural locations where figurations of the tech futurist are encountered 2) discourses, narratives, visualisations and practices that imagine and signify transhumanism, 3) how these materials exist in relation to one another (such as common themes, patterns and similarities) 4) the popularity and/or phenomena of this material or 5) the neglection of this material (that might be considered 'low' culture) in other studies on transhumanism. I closely read this material through a Feminist Technoscience and Cultural Studies perspective, and as such I was able to identify common themes such as heroism, essentialism, rebirth, disembodiment and perfectionism. Based upon my analysis, the material is grouped thematically and bound together by the chapter walls of my thesis. These themes are brought into relationship through an emphasis on how transhumanist imaginaries are brought into being in the discursive domain, in narratives, in visualisations and through social practices of witnessing, fantasising and imaginings. Each chapter contains case studies[14] and I use methods of comparative research and discourse and visual analysis, paying critical attention to semiotics, visual culture and narrative practice (Haraway, 1997: 35), with a focus on how gender, race, ableism and sexuality is re-made and re-imagined. I trace common patterns and practices through a range of cultural sites where transhumanism imaginaries are made or sustained focusing on how transhumanism, as an imagining of futural technoscience is given cultural meaning and potentially legitimised as a possible future.

The materials I analyse in chapter four include mediated visualisations, the practices of witnessing and imagining and sociocultural sites where figurations of the tech futurist hero are encountered. I chose materials that have either considerable viewership or readership. My reasoning for selecting the Youtube video of Neuralink 2020 Progress Update is informed by the work on imaginaries in Science and Technology Studies that highlights how witnessing technological performances creates

[14] An elaboration of each chapter of the thesis is in chapter one.

a sense of belonging, are staged to persuade the audience, they engender affect and brings imaginaries into being (Jasanoff, 2015; Richard Tutton, 2020). The video 'Neuralink 2020 Progress Update' is delivered by Neuralink founder and public-facing transhumanist Elon Musk and I am concerned with how Musk becomes a heroic tech futurist figure through these mediated encounters and human-machine relations. The video it is publicly available on the Neuralink YouTube channel that to date has 392,000 subscribers and the video alone has 2.6 million views; I argue this significant as this is a staged corporate report on the technological development of a brain-computer interface (BCI) implant. Similarly Ray Kurzweil's 2005 TED Talk 'The Accelerating Power of Technology' has 3 million views on the TED website and it was the first of four TED Talks Kurzweil will deliver for TED.com. In chapter four I expand on my argument that TED is a highly regulated space that invites the public in to witness a performance that is situated in Robert Boyle's legacy of the scientific method (Haraway, 1997). I bring the TED Talk into dialogue with *Immortality, Inc: Renegade Science, Silicon Valley Billions, and the Quest to Live Forever* by the scientific journalist Chip Walter (2020) to show how they work to mutually legitimise each other and give shape to the tech futurist figure. The inclusion of *Immortality Inc* (2020) is informed by media scholars Ben Little and Alice Winch who recognise these 'popular technology' biographies fit a framework of values that tech culture draws upon; innovation, brilliance, modernity and efficiency (Little and Winch, 2021). I extend this framing to the profile of Nick Bostrom in the New Yorker, as a reputable magazine known for its long-form journalism (Khatchadourian, 2015). My interest is how Kurzweil and Bostrom figure as technological futurists and this is legitimised through the mediated realm that brings into being transhumanist imaginaries.

Chapter five emerged from my early research as I identified that TERFs (trans exclusionary radical feminists) and gender critical groups were making connections between transhumanism and their conspiratorial imagining of 'gender identity ideology.' At the same time, and in the same year, *Frankissstein* (2019) is published and the series *Years and Years* (2019) debuts on BBC One. They imagine a transhumanist future through the creator's/author's understanding of being trans. I problematise these narratives and visualisations and analyse this material through a concern for the high stakes these figurations of transsexuality could have on wider cultural understandings of gender and transness situated in a contentious moment of

gender panic (Hines, 2020; Pearce, et al., 2020; Butler, 2024). I analyse the original hardback publication of *Frankissstein* (2019) that contains the missing words of the author Jeannette Winterson and the character Bethany in *Years and Years* (2019) by Russell T. Davis. Despite their cultural acclaim and mainstream audience, these materials have been neglected from other research on transhumanism (Thomas, 2024; MacFarlane, 2020; Schuster and Wood: 2021) as they do not neatly fit into the frame of 'transhumanism movement'. However, as science fiction is an imaginative space where aspirations and fears are explored (McNeil, 2007: 21), my analyse of these case studies reveals how being transhumanism is being imagined and how these imaginaries leak them into the wider cultural imagination. In this chapter, I also analyse Martine Rothblatt's thesis in 'Mind is Deeper Than Matter' published in *The Transhumanist Reader* (Rothblatt, 2013) as well as sections from her self-published book *From Transgender to Transhumanism* (2011). I include Rothblatt's work to give insights into transhumanist thinking and to analyse the figurations of transsexuality in her imaginings of a transhumanist future. In chapter five I elaborate my rationale for choosing these materials and discuss the ethical and political implications of this analysis.

Chapter six traces figurations of the tech futurist through visualisations and narratives of the self-birthing man that are situated in the pronatalist reproductive politics of transhumanism. The analysis is focused on common patterns, narratives, tropes and visual images of masculine rebirth in science fiction film and television with a focus on the 1993 film *Demolition Man*, Netflix's 2018 television series *Altered Carbon* and the 2014 remake of *Robocop*. These materials facilitate analysis that brings the self-birthing figuration of the tech futurist into relation with Vivian Sobchack's 'virgin astronaut' figure, that is tropic in male-dominated and action-oriented American science fiction film (Sobchack, 1999: 103). This analysis frames the case study of the Amazon Prime series *Upload* (2020) as a contemporary visualisation of 'rebirth' from a machine. Upload (2020) exemplifies how transhumanist imaginings are not reserved to the genre of action sci-fi films and television but include romantic comedies. I analyse this material alongside the writings of Hans Moravec (1988, 1999), an influential imaginer in transhumanism, for his uses of computer science semiotics to imagine 'uploading' the human mind into machine. This is informed by a Feminist Cultural Studies of Science and Technology perspective that is concerned with the interactions between popular culture and technoscience that gives science and technology cultural

meaning (McNeil, 2007). This analysis could be applied to other films and other television series that feature a masculinistic 'rebirthing' scene. I situate these visualisations and narratives of 'rebirth' in histories of racialised and gendered reproductive politics to examine and problematise how imaginings of 'uploading' reproduce whiteness and masculinity.

As I have already stated, this thesis is an investigation into how the production of transhumanist imaginaries also reproduces whiteness and masculinities and this, I argue, is an analysis of power as relational. A concern of mine is how methodologies and academic conventions may also reproduce masculinity and whiteness, therefore, in the rest of this chapter I discuss how we might study gender, race, ableism without reproducing it as innately powerful. This is also a contribution to debates within Elite Studies and the bridge between Cultural Studies of elitism and Science and Technology Studies.

The call for 'studying up' in the social sciences

In simplified terms studying *up* infers that the subject being studied has more power, influence, capital and/or wealth. Anthropologist Laura Nader, in her influential chapter 'Up the Anthropologist – Perspectives Gained from Studying Up' in *Reinventing Anthropology* (1974) makes the case for social scientists to study up. Nader primarily focuses on class relations, as such the 'up' infers to studying the middle and upper classes particularly within American corporations. Nader (1974) does not just argue that there is a gap in anthropological work in studying those who could be regarded as powerful, but it is insufficient to only derive theoretical conclusions from empirical studies that study down. In other words, theory should also be informed by studying upwards. Nader (1974) uses the phenomenon of crime to exemplify her argument – in that crime cannot be understood if white-collar crimes are ignored by social scientists. However, those with powerful interests can be difficult to access, as Nader writes, ". . . they don't want to be studied; it is dangerous to study the powerful; they are busy people; they are not all in one place, and so on" (Nader, 1974: 302). Through access to material resources and secretive practices those who are deemed powerful are able to keep a distance from ethnographers making them difficult to study (Puwar, 2004: 35). Therefore, studying up is not without methodological struggles and

social scientists continue to examine the implications of doing such work (Aguiar, 2012; Holmes, et al., 2018; Mayer, 2008; Pacholok, 2012; Vogels, 2019; Becker and Aiello, 2013; Clancy, 2021; Little and Winch, 2021). Furthermore, there are ethical concerns (i.e., access) and the notion of 'up' is contested. Sarah Becker and Brittnie Aiello (2013) suggest, despite a long history of 'studying up' within the social sciences, comparatively it can be considered as uncommon, for the "underprivileged" are studied far more often than the privileged (ibid, 2013: 63). Or as Nirmal Puwar puts it Elites have not "been the usual objects of anthropological scrutiny seeking to understand 'strangeness'" (Puwar, 2004: 35).

Social scientists who do 'study up' need to make a clear justification for this type of work and how it is characterised as studying upward. For as sociologist Luis L. M. Aguiar notes, in the interim between Nader's 1974 paper and his 2012 chapter in *Researching Amongst Elites: Challenges and Opportunities in Studying Up* (2012), questions of what it means to study up, and who the 'up' and 'above' refers to, have since emerged (Aguiar, 2012: 10). Aguiar supports Nader's 'rallying call' to social scientists to study up and argues that studying the elite and powerful remains a scholarly anomaly, especially in social science where researchers are concerned with democratic processes, justice, equality and transparency in liberal democracies (Aguiar, 2012: 2-3). I too take up the 'rallying call' as I believe that social science that concerns itself with how power becomes congealed and enacted in various and multiple social arrangements is not only justified but necessary. However, I wrestle with the notion of "studying up" as it risks crafting a dualist idea of power that fixes it into positions of upward and downward and could further conceal technologies of power-knowledge (Foucault, 1978; Balsamo, 1996). Social scientists are never 'outside' of power (Foucault, 1978), and I would argue, as the sociological imagination (1959, Mills) is an embodied and material practice of imagining it is situated in socio-historical relations of power-knowledge. Our citation practice and methods are historically situated nodes in the production of knowledge. Therefore, in part this chapter is also addressing the question of how we might study mechanisms of patriarchal power without reproducing it as fixed and innate. In the following sections I discuss the methodological challenges and alternative framings of risk and power by bringing together different experiences of researchers who 'study up.'

Making sense of risk when women research men

The position of a researcher is rightly regarded as a privileged position. Researchers are actors in the production of knowledge and in most cases they are benefitting from the researcher-researched relationship because of established arrangements of power. Consequently, there needs to be consideration of how the participants/subjects will be protected from risk in the research and publication process. However, are the researched always or ever without power in the researcher-researched relationship? Arguably if the participants/subjects have access to social and material privileges the issue of risk in this relationship should be considered differently (Becker and Aiello, 2013). For example, how might participants pose as a risk to researchers? Is there a risk that the participants will be hostile, harass or intimidate the researcher? This can sometimes be the case when the researchers are women studying men (O'Neill, 2018; Lefkowich, 2019; Zurbriggen 2002; Arendell 1997; Sharp and Kremer; 2006). Gwen Sharp and Emily Kremer (2006) calls the negotiation of the possible risks, such as physical violence and sexual harassment, some cis straight male participants pose to women researchers, the 'safety dance'. They (Sharp and Kremer, 2006) cite the case of Terry Arendell (1997) who in researching divorced men encountered anger, intimidation and harassment. In her paper 'Reflection on the Researcher-Researched Relationship: A Woman Interviewing Men' Arendell, examines the production of gender by the researcher-participant relationship and how she encountered shifts in her gender identity when the participants either merged her with their ex-wife or saw her as an "honorary male" (Arendell, 1997). Arendell's paper is a comprehensive, and often at times, uncomfortable examination of how gender differences are entangled in the research relationship (Arendell, 1997). As such she shows how misogynist and sexist views held by participants do not get left outside of the research process and therefore, this is a struggle for researchers, especially those with "feminist sensibilities" (Arendell, 1997).

After their own experience of harassment while interviewing male subjects about hegemonic masculinity, Sharp and Kremer argue that safety issues exist within research settings that do not immediately present as dangerous because it is the race, gender, sexual orientation and/or disability status of the researcher that may lead to them being endangered (Sharp and Kremer, 2006). The risks of harassment and

intimidation are posed to some researchers and not to others (Sharp and Kremer, 2006: 318). However, Sharp and Kremer (2006) are critical of the strategy of researching in public spaces as a way of maintaining safety. In addition to this, Maya Lefkowich in her paper 'When Women Study Men: Gendered Implications for Qualitative Research' argues that as researchers we must avoid reproducing notions of safe research environments that do not take account of participants racial or sexual identities (Lefkowich, 2019: 3). Otherwise, there is a risk of reinforcing invisible power structures and gender norms such as the fragility and innocence of white women (Lefkowich 2019: 3). Eileen L. Zurbriggen (2002), Arendell (1997), Sharp and Kremer (2006) and Lefkowich (2019), advocate for self-reflection by the researcher, in and outside of field, as an important safety strategy within this specific research-participant relationship. Sociologists Cecilia L. Ridgeway and Shelley J. Correll (2004) argue hegemonic cultural beliefs about gender serve as a background frame, that under specific circumstances, can bias the behaviour and evaluations of self and others (Ridgeway and Correll, 2004: 512). As such, this could have implications on the participant-researcher interactions (Ridgeway and Correll, 2004: 512). Ridgeway and Correll use the term "social relational contexts" to refer to any situation in which individuals define (and I would add redefine) themselves in relation to others in order to act (Ridgeway and Correll, 2004: 511). The researcher-participant interaction has relevance here, as beliefs about gender can become salient not only in the specific interactions but by the research process that determines power imbalances. As discussed in the thesis foreword, I had planned to conduct in-person observations and I would have had to communicate with the gatekeepers and speakers of the events. Therefore, I had considered the potential perceived power and status imbalance between myself and the participants. Risk is contextual to the research and publication process and researchers can encounter issues of safety and risk. For example, it is possible that those who hold transhumanist imaginaries may read and engage with my work after publication, creating a relationship after the fact[15]. I have a public presence as a researcher who studies transhumanism (albeit small[16]) and this could facilitate unwarranted engagement and

[15] Gender critical groups or transgender exclusionary radical feminists may also read my work after publication.

[16] I have a X (formly Twitter) account, I am on LinkedIn, I run a Substack newsletter and profiles on my university's website and my funding body's website.

interaction. Highlighting how gender norms and differences within the researcher-researched relationship become significant is to speak to the ethics and challenges of studying social relations that re-produce power; specifically, when women research men.

Privileged talk: interview-based methodologies

Studying those who have material privileges, influence and resources throws up unique challenges that alter the ethics of research. Karen Ho in *Liquidated: An Ethnography of Wall Street* makes the case that when 'studying up' privileging "talk" can be methodologically limiting. If the effect of the researcher-researched relationship renders the researcher as a less powerful actor, interviewing without participant observation can risk detaching the speech from the action (Ho, 2009: 31). As political scientist Toby S James highlights, interviews can be problematic when used with "elite actors" because "there is the risk that individuals may wish to paint themselves in the best possible light and not answer truthfully" (James, 2018: 559). For example, following her experience of interviewing "the top brass" of a production company Vicki Mayer argues 'studying up' involves fucking up (Mayer, 2008). Mayer notes how the interviews she conducted became less useful when the interviewee had more prestige because they would verge into "rhetorical realm of entertainment interviews" or at worse, "the sound-bite style of a public relations press release" (Mayer, 2008: 145). Media scholars, Ben Little and Alison Winch in their book, *The New Patriarchs of Digital Capitalism: Celebrity Tech Founders and Networks of Power* (2021) make a robust argument for why a methodology of case study analysis of media texts and biographies is a more appropriate approach for investigating those with wealth and resources. Rather than interviews-based methodologies, they state, "We recognise that even a face-to-face interview with the subjects of our research would take place within the remit of corporate public relations activity" (Little and Winch, 2021: 4). Therefore, we might ask how the researcher might become implicated in legitimising power through the reproduction of ideas or talk? When whiteness, maleness and ablism is historically privileged by the mechanisms of publishing and public relations how might interviews become implicated in the production of this privilege? Not forgetting that asking cis straight white men about their gender and white people about privilege can result in hostility (Lefkowich, 2019; Arendell 1997; Pacholok, 2012; Eddo-lodge, 2017;

O'Neill, 2018). A methodological consideration for those who 'study up' or 'study power' is how interviews alone have the potential to over-privilege the speech of the subject depending on how the researcher-researched relationship is situated in pre-existing power-knowledge arrangements (Ho, 2009; Mayer, 2008). Up until this point I have discussed possible ethical and methodological challenges of studying participants/subjects who have material resources, influence, wealth, social and material privileges. Studying enactments of privilege or stratified relations of power is often characterised as Elite Studies and this is garnering renewed interest within the social sciences. In the next section I discuss some characterisations of elitism and whether it can apply to transhumanism.

Elitism, earthly escape and the apocalypse of Man

The field of Elite Studies has a concerned interest in the wealthy (Ho, 2009; Sayer, 2014; Clancy, 2021), celebrities (Little and Winch, 2021) and decision makers (James, 2018; Mayer, 2008). While elitism is a characterizable phenomenon is it useful to this thesis? In *The New Patriarchs of Digital Capitalism,* Little and Winch (2021), frame tech founders - Elon Musk, Jeff Bezos, Mark Zuckerberg, Peter Thiel, Sheryl Sandberg, Larry Page and Serge Brin - as celebrities. Celebrity is a distinctive constitution of elitism. Little and Winch (2021) examine how these tech founders produce and consolidate power through a mediated patriarchal network. Interestingly, some of these tech-founder-celebrities are bearers of transhumanist imaginaries, and such it indicates why when we discuss transhumanism, we are also discussing the re-production of patriarchal power. But is studying the production of power or how some relations of people and things are deemed to be powerful, also studying elitism?

Aguiar[17] uses the term 'elite' informed by the work of sociologist C. Wright Mills (1956). In *The Power Elite* (1956) Mills' understanding of 'elite' is in relation to the 'ordinary'. For Mills (1956), elites occupy a position that enables them to make

[17] He acknowledges that the concept of elite is flexible and conserves them within the borders of the nation-state in that they emerge and are recognised " . . . as elites by the economic and cultural standards and developments within the country they are born or make their claim to fame" (Aguiar, 2012: 7). While Aguiar is arguing elites are constructed in specific socio-cultural ways, he is also concerned with the transnationalisation of the elite and the globalisation of the elite (Aguiar, 2012: 7-8).

decisions that have major consequences; this is not to say the decision in itself is important but rather that the ability to make that decision is a pivotal position (Aguiar, 2012: 4-5). Mills invokes a notion of elitism as 'up' when he writes, ". . . some men come to occupy positions in American society from which they can look down upon, so to speak, and by their decisions mightily affect, the everyday worlds of ordinary men and women" (Mills, 1956: 3). Mills' 'higher circles' are made up of what he sees as economic, political and military elites who arise from enlarged and centralized institutional domains of power (Mills, 1956: 8). Furthermore, these elites can transcend from the environments of ordinary men and women (Aguiar, 2012: 4-5). While I agree that elite is a relational position, I take caution with the concept of 'ordinary people'. I reason, origins stories of intergenerational humble beginnings[18] have come to mythologize wealth in Western imaginaries (Friedman, et al. 2021, Sayer, 2014; Davies, 2021; Little and Winch, 2021), and as Laura Clancy's analysis of the British monarchy in *Running the Family Firm* (2021) shows, ordinariness can disguise elitism, thus threatening the collapse of the elite/ordinary binary. Perhaps, instead we should pay extra attention to who counts as 'the ordinary' especially when we consider how masculinity can transgress class boundaries and obscure upper-class backgrounds[19].

In *Down to Earth* (2018) Bruno Latour outlines a worrisome picture that once a group of elites had concluded that the earth no longer had enough inhabitable space for them and us, then climate change denial became the veil to conceal their desire for a flight out of the shared world, ridding themselves of the burden of solidarity (Latour, 2018). He supposes that this began to happen in the nineteen eighties; as more and more activists, intellectuals, political parties, and artists realised that relationship between the earth and its human inhabitants was destabilising (Latour, 2018). When these elites reached an understanding that should they want to "survive in comfort" they "had to stop pretending" to "share the earth with the rest of the world" (Latour, 2018: 17-19).

[18] Not only through narratives of elites rising from struggle (see, Davies, R. (2021) 'Elon Musk: from bullied schoolboy to world's richest man' but class origin is a "thorny issue" as shown in Friedman, S., et al. (2021) 'Deflecting Privilege: Class Identity and the Intergenerational Self'.

[19] Not only the politicization of the 'white working-class male' figure in recent populist movements but the presumed universality of the white middle-class man as the ordinary position. Bruno Latour (2018: 35) notes, "billionaires are called upon to represent "ordinary people"!".

Thus, this fantasy of earthly escape is a re-production of class relations. As Latour writes,

> To go back to the well-worn metaphor of the Titanic, the ruling classes understand that the shipwreck is certain; they reserve the lifeboats for themselves and ask the orchestra to go on playing lullabies so they can take advantage of the darkness to beat their retreat before ship's increased listing alerts the other classes!
>
> (Latour, 2018: 19)

He conceptualises these actors as "obscurantist elites" (Latour, 2018). The significance of Latour's (2018) "obscurantist elites" is the productivity of obscurantism as a central tool to sustaining a group of elites who wish to flee our common world. For once the ruling class had chosen the flight out, denial and misinformation started to prevail (Latour, 2018).

At the beginning of 2021 ambitious mars coloniser and transhumanist Elon Musk[20], became the richest person in the world, exemplifying the existence of wealth and abundance of resources in extraplanetary and transhumanist imaginaries (Tutton, 2020; Neate & Partridge, 2021). So, Latour's (2018: 18-19) "obscurantist elites" – the term used to describe the elites who hold and sustain the 'imaginaries of globalisation' (Appadurai, 1993) could be useful here. Given that fantasies of earthly escape are entangled with transhumanist imaginaries as best exemplified by Silicon Valley[21] (Latour, 2018; Tutton, 2020). However, unlike Little and Winch, Latour fails to question, "why are they almost all white men?" (Little and Winch, 2021: 3). For as Rosi Braidotti[22] articulates, without the consideration of subjects there is no gender, class, race and age-oriented analyses of power relations but when we pay critical attention to imaginaries we must also consider power relations (Braidotti, 2019: 56). Joanna Zylinska in her polemic essay series, *The End of Man: A Feminist Counterapocalypse*

[20] Musk is known for saying he will use his fortune to save earth from its problem and set up a civilisation on planet Mars (Neate, R. & Partridge, J., 2021).

[21] For Richard Tutton, (2020: 5) Silicon Valley is not only a geographical location but Foucault's notion of 'attitude'; a value-laden relationship to understanding reality.

[22] Braidotti is critical of Latour writing, "By flattening out different degrees of power as *potentia*, Latour relinquishes the subject function altogether" (Braidotti, 2019: 56).

(2018), is critical of how the Anthropocene is "man's tragic worldview;" that it brings into being a temporarily wounded Man who will redeem himself by conquering time and space (Zylinska, 2018). She draws a connection between the emergence of the Anthropocene and Silicon Valley's visionaries' interest in nineteen eighties cyborg discourse of human enhancement and artificial intelligent; that I would argue is transhumanism (Zylinska, 2018: 23-24). Zylinska writes,

> It is thus not so much the actual gender of the storytellers that trouble me about the Anthropocene narrative but rather the gendered mode and tenor of this narrative, with its messianic-apocalyptic undertones and its masculinist-solutionist ambitions.
>
> (Zylinska, 2018: 14-15)

Similarly, Braidotti frames the Anthropocene as a discovery of white male vulnerability and calls us to be vigilant of who is complaining that we are on the edge of human extinction, including the supposed threat of the super-computer and projects of AI[23] (Sonic Acts, 2019; Bostrom, 2014).

Therefore, we must centralise power in our analysis of imaginaries and future-making practices, while refusing to reproduce the lamenting of apocalyptic narratives. As tech billionaires are inserting computer chips into pigs (Charlie Mitchell, 2020) and buying up land in New Zealand in preparation for the 'coming' apocalypse (O'Connell, 2018) there is an argument that transhumanist imaginaries are held and sustained by groups of elites. As Dan Goodley rightly points out,

> The richest global citizens are no longer interested in being normal or non-disabled. They desire technological, educational, and social projects that promise supreme forms of hyper-normalised, extended transhumanist lifestyles.
>
> (Goodley, 2014: 25-26)

[23] This was said during Braidotti's SONIC ACTS FESTIVAL 2019 keynote 'Necropolitics and Ways of Dying' on the 22 February 2019 at the De Brakke Grond, Amsterdam, The Netherlands. Sonic Acts (2019).

However, as this thesis will show, transhumanist imaginaries have leaky boundaries, spilling transhumanism into wider cultural imaginings of technoscience futures. Transhumanist imaginaries have taken hold in gender critical (GC) and trans-exclusionary radical feminist (TERF) circles, causing them to fear the transhumanist future is the sexed-body apocalypse. As I will discuss in chapter five, GCs and TERFs have drawn a conspiratorial link between transitioning and the transhumanist imagining of techno-transcendence (Rustin, 2021) and in their polluted view the sexed body is at risk of extinction by trans futures. If "the concept of the future is re-emerging as an urgent topic on the academic agenda" (Oomen, et al., 2022; 253) than I believe we need furious feminist interrogations of the relationship between power, imagination and futures. I am not intolerant to the notion of 'studying up' if rather than a hierarchical notion of power it signals to the dynamic of the researcher-researched relationship and that if the subject has resources and privilege, then it poses a different array of ethical challenges. With that said, I am persuaded by Becker and Aiello that "studying *power*" might be more appropriate for my thesis than "studying *up*" as power is not a case of haves and not-haves but rather power is relational and contextual (added emphasis, Becker and Aiello, 2013: 64). Furthermore, it highlights that the method and analytic focus is the re-production of power rather than the capture and dissemination of power.

Conclusion

To conclude this chapter, I turn to an anecdote that I believe signifies the gender politics of knowledge making. When I began my PhD journey, I attended a keynote lecture that asked whether human relationships with sex robots could be considered as theological love. In the question-and-answer session that followed, a male presenting conference attendee asked the speaker, also a man, why he had failed to mention gender. Was gender not an obvious concern given the subject of his research are highly sexualised female robots? The speaker explained, he could not attend to gender because it went beyond his research. It was as if gender is an object to be studied by somebody else or rather, as if gender was somewhere else, outside of the research, the paper, the very conference room itself. I mention this moment as it raises the question – who then, is expected to attend to gender, race, sexuality and disability? For in the academy the re-production of ableism, heteronormative, whiteness and masculinities are too often rendered invisible by those who don't see it - or refuse to.

This thesis makes the case for studying social relations – gender, race, sexuality, class and dis/ability – in the re-production of transhumanist imaginaries and this chapter was an exploration in the ways in which to do this and the implications of this work. This chapter has wrestled with studying how power is produced in ways that do not re-legitimise certain knowledges and ways of producing knowledge. For as Ahmed reminds us "feminism is at stake in how we generate knowledge; in how we write, in who we cite" (Ahmed, 2017; 14). If as Ahmed (2017: 15-16) writes, citations can be the "feminist bricks" we build with, then I ask, what am I building? How do I study the discursive domains of transhumanism without becoming complicit in contributing to making imaginaries myself? Might my citation practice be considered as both intentional and in conflict, as I cite both feminists and transhumanists. To do this work, I must also reckon with citing the derogatory work of trans exclusionary radical feminists (TERF) BUT as trans histories remind me - the "*empire*" can strike back (original emphasis, Stone, 1992). So, by doing this research my objective is, in Puwar's words, to be a "space invader" as I enter worlds that were built not to accommodate me –Elon Musk's Mars colony, transhumanist cryowombs and the sexed apocalypse of TERFdom (Ahmed, 2017: 9-10; Puwar, 2004). I intend to be a space invader by asking the "wrong" questions (Ahmed, 2017: 9-15) - the "wrong" being the implicit politics of knowledge making that is made visible when we ask questions about the re-production of gender, ableism, sexuality and racialisation.

Chapter Three: The Body Imagines: Conceptualising Imaginaries and The Materialisation of The Imagination

Introduction

If "seeing is always seeing from somewhere" [24] (Gram-Hanssen, 1996: 92), then so is imagining. Those of us who use imaginaries take the imagination seriously; how what might have begun as a vision pertaining to a few individuals becomes held in the collective imagination and sustained and enacted through social groups, communities, societies or entire nations (Jasanoff, 2015a; Anderson, 2006; Storey, 2015; Felt, 2015; Appadurai, 1993, Taylor, 2004). Imaginaries are social, multiple, entangled and co-enacting. As Lucy Suchman suggests, while imaginary and imagination share in the evocation of vision and fantasy it also references the ways in which we see and imagine the world to be shaped; "not only by our individual experience but also by the specific cultural and historical resources that the world makes available to us, based on our particular location within it" (Suchman, 2007: 1). Analysts from different disciplines such as history, anthropology and sociology have used imaginaries to unearth monsters (Dennis, 2015), shed light on the role of memory in the production of future action (Hurlbut, 2015; Felt, 2015), and in the making of and sustainment of national identities (Felt, 2015, Anderson, 2006; Verran, 1998; Jasanoff and Kim, 2009). In this chapter, I show how imaginaries are a useful conceptualisation of the sociality of imagining and how individuals who imagine together share in something social, cultural and historical. Imaginaries as an analytical tool facilitates an understanding of how the imagination *is* social, and therefore, re-produces relations of gender, race, sexuality, dis/ableism and class, through the practices, discourses, technologies, visual cultures and narratives that facilitate this imagining. However, to say the imagination plays a role in our ways of being is not the same as saying we have the freedom to imagine ourselves into being anything we like. For as Moira Gatens (1996) articulates in her criticism of modernism,

> Our embodied history cannot be thrown off as if it were a coat that one has donned only involuntarily in the first place. Whether we like it or not, in so far as

[24] As influenced by Donna Haraway's situated knowledge.

> our values and our 'ways of being' are embodied they cannot be wished away or dismissed by a pure act of will.
>
> (Gatens, 1996: 105)

This also serves as a critique of transhumanism, whose imaginers seek to persuade us their future is a genderless one. Men who gather together to imagine transhumanism do not enter the "scene of action" as "preformed beings" to be accounted for empirically, rather gender, race and class are co-constituted by "practices choregraphed in the new theatres" of imagining (Haraway, 1997: 29). As feminists have taught us, there is no disembodied gaze: a view is always situated, multiple, intersectional, complex and partial (Lorber, 2006; Haraway, 1991, Collins, 1991; Harding, 1991). Therefore, I suggest we understand imagining as 'a view' that is always situated in a specific sociocultural historical position.

In this chapter, as influenced by cultural geographer and theorist Leila Dawney's (2011) work on imaginaries, I bring together the ideas of Benedict Spinoza's (1996) *Ethics* (2018) with Michel Foucault's *History of Sexuality: volume one* (1978) to argue the imagination materialises through encounters, bodies, discourses and technologies in strategies of power-knowledge. Using the feminist work of decolonial thinkers such as C Riley Snorton (2017) and Sara Ahmed (2000) I extend this thinking even further to consider the enactment of the imagination in and through encounters and power-knowledge technologies that constitute gender, sex, sexuality and race as categories of difference. I build an understanding of how white men imagining themselves as 'otherwise' is an embodied material-semiotic practice that is situated in histories of colonialism and chattel slavery. For if the hypothesis is that it is through the imagination that we make and experience the world then it is reasonable to suggest imaginaries are gendered, sexualised, classed and racialised in specific ways. For as Dawney writes, "[Race][25], class and gender relations are always involved in the production and negotiation of imaginaries, since imaginaries always arise through situated embodied experience" (Dawney, 2011: 544). Once we understand the imagination as an affective, material and embodied practice than we introduce a way of

[25] I omitted the word 'ethnic' for race as I would argue the word ethnic historical renders whiteness invisible.

thinking to examine gender, sex, race, sexuality, ableism and class in-the-making (Dawney, 2011; Haraway, 1997). By attending to the imagination we make the body visible - before it disappears into the transhumanist future. To do this I begin with a comparative study of how the concept of imaginaries has been conceptualised across different disciplines, followed by how imaginaries as a conceptual framework operates within this thesis. Through an articulation of transhumanist imaginaries, this chapter is the theoretical grounding for my argument that the imagination is not apart from social relations but rather fundamental to their re-production and re-imagining.

From co-production to sociotechnical imaginaries

In the introductory chapter of *In Dreamscapes of Modernity: Sociotechnical Imaginaries and the Fabrication of Power* (2015) Shelia Jasanoff gives a thorough account of the disciplinary genealogy of imaginaries, rooted in anthropology, cultural and political theory, and recently taken up by Science and Technology Studies (STS). According to Jasanoff the introduction of imaginaries to STS is to bridge what was otherwise a gap in the analysis between two important literatures; the construction of imaginaries in political and cultural theory and sociotechnical systems in STS (Jasanoff, 2015a: 6). Significantly, as Jasanoff (2015a: 5) makes clear, STS breaks from social theory in that it acknowledges a centrality of science and technology in the making and stabilisation of collective beliefs. The terminology of 'sociotechnical imaginaries' suggests a focus on how science and technology is a central site of investigation (Jasanoff, 2015a: 5). The 'sociotechnical' aspect of imaginaries emerges from the influence of STS, a discipline concerned with the significance of technology in social imaginaries.

As an example of the utilising of 'sociotechnical' imaginaries by scholars traditionally outside of STS is the work of historian William Kelleher Storey. He uses sociotechnical imaginaries in his analysis of how the individual vision of the racist British politician Cecil Rhodes, became a durable sociotechnical imaginary in South Africa (Storey, 2015). In their paper 'Containing the Atom: Sociotechnical Imaginaries and Nuclear Power in the United States and South Korea' Sheila Jasanoff and Sang-Hyun Kim (2009) introduce the concept of national sociotechnical imaginaries that they later develop by widening the scope beyond the 'imagined nation' (Jasanoff and Kim;

2009, 2015; Anderson, 2006 [1983]). Within this specific paper Jasanoff and Kim (2009) are using case studies, or rather imaginaries, comparatively: they are concerned with how the United States and South Korea imagine nuclear power in nation-specific ways. Their work exemplifies how imaginaries are historically and culturally situated; as the state and society in the United States share an imaginary of the containable atom, the power of science and technology in South Korea symbolises empowerment, offering the opportunity to develop itself into a "strong, modern nation" (Jasanoff and Kim, 2009: 125-126, 131). The inclusion of the terms 'national' and 'sociotechnical', are used to emphasise that these imaginaries are "collectively imagined forms of social life and social order reflected in the design and fulfilment of nation-specific scientific and/or technological projects" (Jasanoff and Kim, 2009: 120). The relationship between technological projects and the "imagined nation" is exemplified by nuclear power (Jasanoff and Kim; 2009; Anderson, 2006). Urike Felt (2015) is another STS scholar to use sociotechnical imaginaries to investigate how (in this case) a *resistance* to nuclear power is tied to the Austrian national identity; a specific kind of "Austrianness" (Felt, 2015: 104). Influenced by the work of Benedict Anderson (2006), Jasanoff and Kim (2009: 124) are careful to mention that the terms "nation, national interest and state" are not to be taken as immutable, black-boxed entities but rather how they are themselves re-imagined in the production and uptake of sociotechnical imaginaries. Considering the emphasis on the state and nation, a quick note on the idiom of co-production in STS (Jasanoff, 2004a) as Jasanoff (2015a) discusses the limitations of co-production in her development of the concept of sociotechnical imaginaries.

Co-productionist accounts are concerned with the ways natural and social orders are being produced together, and how scientific knowledge embeds in social practices, identities, institutions, representations and discourse (Jasanoff, 2004a: 2-3). In Jasanoff's words, ". . . co-production is shorthand for the proposition that the ways in which we know and represent the world (both nature and society) are inseparable from the ways in which we choose to live in it" (ibid, 2004a: 2). This 'co-productionist idiom' can be generative when thinking about the social significance of 'the expert' and 'expertise', therefore, it could offer some use in analysis of how realities (plural!) come to inflect what is regarded as the "sciences" (Jasanoff, 2004a; Lynch, 2004). In this way it could offer a productive way of dealing with how the production of knowledge in transhumanism is entangled with the social order, however co-production does not go

far enough. Despite previously arguing for the analytic durability of co-production in *States of Knowledge: The Co-Production of Science and Social Order* (2004b), Jasanoff states in *Dreamscapes of Modernity* (2015) that co-production risks not having the specificity that would allow for analysts to illuminate the persistent problems and difficulties of the contemporary technoscientific world (Jasanoff, 2015a: 18; Jasanoff, 2004a; Jasanoff, 2004c). In simple terms, Jasanoff argues that the "why" is left unaccounted for by co-production, such as "why attempts to remake the world sometimes fail despite much concerted effort and expenditure of resources," and "why different moral valences attach to new scientific ideas and technological inventions throughout the world" (Jasanoff, 2015a: 3-4). This 'why' is not necessarily my concern, so I would instead argue that imaginaries, unlike in co-production, allows for a consideration for how the future comes to significantly matter, and hopefully I have already made clear the importance of the imagination to worldmaking.

This leads back to Jasanoff and Kim's revised definition of sociotechnical imaginaries. Recognising that they are not limited to nation-states, they write,

> . . . collectively held, institutionally stabilized, and publicly performed visions of desirable futures [or of resistance against the undesirable (Jasanoff, 2015a: 19)], animated by shared understandings of forms of social life and social order attainable through, and supportive of, advances in science and technology.
>
> (Jasanoff, 2015a: 4)

Jasanoff and Sang-Hyun Kim revised their earlier definition of sociotechnical imaginaries to include "resistance against the undesirable" (Jasanoff, 2015a: 4). This tightly formed definition can be a beneficial conceptualisation of sociotechnical imaginaries for STS analysis when dealing with structural technoscience projects such as nuclear power (Felt, 2015; Jasanoff and Kim, 2009) or information and communication technology (ICT) infrastructure (Bowman, 2015). The collective work in *Dreamscapes of Modernity* cuts through traditional disciplines lines, as scholars examine how notions of modernity links to science and technology (Jasanoff, 2015a: 5). Arguing why "sociotechnical" is used over "technoscientific" Jasanoff notes, this collection of work investigates

> . . . how, through the imaginative work of varied social actors, science and technology become enmeshed in performing and producing diverse actions of the collective good, at expanding scales of governance from communities to nation-states to the planet.
>
> (Jasanoff, 2015a: 11)

Here it is not clear if "collective good" can be understood as "public goods". Anthropologist Mary Douglas defines a public good as beneficial to all, or at the very least available to all, such as the infrastructure of a bridge or public roads (Douglas, 1986: 22). This could be applicable considering Jasanoff is discussing the enmeshing of technology and governance, however, the term "public" is not used. I would argue this shows "collective good" is ambiguous and has the potential to be misinterpreted. While it could be argued that the collective, be it a nation state or social group, desire what they deem as "good" what this "good" is should be critiqued. Therefore, as imaginaries are multiple and have the potential to come into conflict with each other, I would argue, descriptions of "good" and "desirable" imaginaries risk pitfalls in the analysis. As an example, in chapter four I trouble the "good" intent of technologies that promise to "save" the future from existential risk in transhumanist imaginaries, such as brain-computer interface (BCI) implants, by paying attention to the re-production of ableism. Thus, power relations are at stake in the mobilisation of a narrative of "collective good". I conclude, as analysts we cannot merely point to what is considered the collective good but rather we should examine the very meaning of it.

Social practices and modern social imaginaries

Anthropologist Arjun Appadurai is known for his distinctive work on imaginaries. In 'Disjuncture and Difference in the Global Cultural Economy' he writes, "The image, the imagined, the imaginary - these are all terms which direct us to something critical and new in global cultural processes: the imagination as a social practice" (Appadurai, 1993: 327). He argues that the imagination is no longer mere fantasy, simple escape, elite pastime, or contemplation but rather an organised field of social practices, a form of work, a form of negotiation between site of agency and globally defined possibility (Appadurai, 1993: 327). I would question Appadurai's use of "no longer" here, as there is an implication that the imagination once transformed

from being mere fantasy; whereas I am inclined to side with Donna Haraway that it is worthwhile to take the fantastic, mythological, the ideological as different registers of an imaginary relationship and not collapse them into one another (Haraway and Goodeve, 2000: 77-78). I posit that rather than understanding the imagination as *no longer* fantasy that both the fantastical 'register' of the imagination is to be taken into consideration without reducing the imagination to fantasy alone. In chorus with scholars Charles Taylor (2002) and Benedict Anderson (2006) in their work on imaginaries, Appadurai (1993) take the imagination beyond the notion of fantasy to understanding the imagination as organised work and social practices (Jasanoff, 2015a: 8). Taylor, in *Modern Social Imaginaries* (2004) examines Western modernity within a framework of social imaginaries. In his explanation of social imaginaries, he is clear it differs from a social theory in three defining ways. A defining difference for Taylor (2004:23) is theory is usually possessed by a small minority whereas social imaginaries are shared by large groups of people, a whole of society, or in Anderson's (2006) case a whole nation. I agree that what is interesting about social imaginaries is that they are shared by a collective. Taylor notes an individual's vision can become collectively held, and this collective can expand to the size of a society or nation. As reflected by Storey's case study of Rhodes, his individual idea of South Africa timed with industrial revolutions and political transformations therefore, it was able to bloom into a shared sociotechnical imaginary among the colonisers (Storey, 2015: 35).

Taylor's second defining difference is that unlike social theories social imaginaries allow for a consideration of images, stories, legends (or myths in the Haraway sense) that reveal how ordinary people "imagine" their social surroundings (Taylor, 2004: 23). I am cautious here with Taylor's (2004: 23) use of "ordinary" as it has normative assumptions about the people who are imagining; and as such there is no consideration of the stratification of relations in imaginaries, which is too often the case. Nevertheless, his recognition that imaginaries allow for analysis of stories and images that might otherwise be left outside of the theoretical is productive. For feminists, postcolonial thinkers, Disability Studies and Trans Studies have always seen the necessary importance of recognising storytelling, images, and myths within analysis. As Jasanoff notes, imaginaries urge analysts to take notice of the usages ". . . of symbolic and cultural resources, such as images, texts, memories, metaphors, and [even] language itself" (Jasanoff, 2015a: 25). This is supported by historian and philosopher of science

Helen Verran (1998: 243), who, in her examination of the negotiation of land ownership through land titles in Australia, is explicit that without the use of imaginaries the stories and pictures that are inherent to the knowledge of land will be denied. Verran (1998) is concerned with how and what accounts of knowledge are recognised and legitimised as rational; specifically, knowledge systems of indigenous Australians within the context of Australian law making. She argues that the imagination is involved in knowing and knowledge making, and it is constitutive of and constituted by ontic and epistemic commitments (Verran, 1998: 238). As mentioned, Taylor speaks to this idea of an imaginary as more than intellectual schemes, and he is in alignment with Anderson (2006) in his thinking of a social imaginary as encapsulating

> . . . the ways people imagine their social existence, how they fit together with others, how things go on between them and their fellows, the expectations that are normally met, and the deeper normative notions and images that underlie these expectations.
>
> (Taylor, 2004: 23)

This use of imaginaries to examine "how people fit together" can be reflected in the work of Anne-Marie Fortier (2012). In her analysis of migration imaginaries, she examines how imaginaries shape the shared understanding of our relationship to others that I understand as relationalities (Fortier, 2012). More explicitly Fortier is analysing the shared understandings of gender, race, class, generations, etc., that are entangled within migration imaginaries (Fortier, 2012: 31-32). Imaginaries can explore the enactment of gender norms and relations intersecting with race, class etc.

Taylor's third difference, is that a ". . . social imaginary is that common understanding that makes possible common practices and a widely shared sense of legitimacy" (Taylor, 2004: 23). This can be generative in thinking about how common practices require forms of legitimisation in order to stabilise social imaginaries but it requires the examination of the cultural encoding of visions of morality and social order (Jasanoff, 2015a: 4; 26). Social order becomes rearticulated in imaginaries and a commitment to that order becomes coherence and continuous through practice (Jasanoff, 2015a: 4; 26). As Jasanoff observes, when members of a social community are united by imagination there is a shared perception of futures that should or should

not be realised (Jasanoff, 2015a: 6). This I would argue is a key contribution the framework of imaginaries makes to sociology of futures. As discussed, storytelling, symbols and images are sites of analysis, and as Caroline Bassett, Sarah Kember, and Kate O'Riordan argue, new and old worlds are not conjured from the imagination alone but through processes of communication, pictures, language, forms, connections and negotiations (Bassett, et al., 2020: 13).

Nations as imagined communities

Taylor's use of social imaginary as a means to think about how people imagine their social existence in relation to others can be understood by Benedict's Anderson's definition of the nation. Originally published in 1983, Anderson's foregrounding work *Imagined Communities: Reflections on the Origins and Spread of Nationalism* (2006) is a study of nationalism through the framework of imaginaries. Anderson is disciplined in political science and history, but as he puts it, "in an anthropological spirit" he proposes a definition of the nation as "an imagined political community – and imagined as both inherently limited and sovereign" (Anderson, 2006: 5-6). It is *imagined* in that the members of a nation, even in the smallest sense, will never know each or every member of that nation but yet in each of their minds lives an image of their shared communion; tying them together through a sense of nationalism that is enacted through practices of narrating, recollecting and forgetting (emphasis added, Anderson, 2006: 6; Jasanoff, 2015a: 7). It is worth noting that while Anderson (2006) does not use the term 'sociotechnical', the social dimension of technology is partially taken into account in his analysis of the construction of the nation in the form of the novel and newspaper[26]. He writes, "For these forms provided the technical means for 're-presenting' the kind of imagined community that is the nation" (Anderson, 2006: 24-25). Furthermore, he argues that the "half-fortuitous, but explosive" interaction between capitalism as a system of production and print as a technology of communications made the new communities imaginable (Anderson, 2006: 42-43). "The essential thing is the *interplay* between fatality, technology, and capitalism" (original emphasis, Anderson, 2006: 43).

[26] He was also later influenced in the revised edition of *Imagined Communities* (2006) by Thai historian Winichakul Thongchai (1988) whose work, Anderson notes, enlightened him on the importance of maps in the nationalist imagination (Anderson, 2006: xiv). The technology of cartography becomes a significant site of investigation in Anderson's work.

This thinking of the nation as an imagined community has been significantly influential and scholars have built upon this work. Appadurai is influenced by Anderson's use of imaginaries but differs in its application, in that Appadurai is thinking about multiple worlds constituted by the historically situated imaginations of persons and groups around the globe (Appadurai, 1993: 329). As such, rather than Anderson's *imagined communities* (2006) Appadurai calls these *imagined worlds* (1993). He is interested in the globalised economy[27], how our 'imagined world' extends outside of our 'imagined community' and may subvert and contest the imagined world around us (Appadurai, 1993: 329). No imagined world can be untied from its locus of the imagining individuals or groups that are situated in a particular socio-historical culture time and space (Appadurai, 1993: 329). As Jasanoff highlights, and hopefully as I have shown, the social imaginaries in the work of Anderson, Taylor and Appadurai, "hold very big things together, such as nationhood and modernity;" but the use of imaginaries can also explore smaller collectives and fringe imaginings (Jasanoff, 2015a: 7).

Extraplanetary imaginaries and the failure of 'Mars One'

Some of the work I have included in this chapter emphasises how science and technology are central to the constitution of social imaginaries of nation states, however not all social imaginaries are bounded by nationalism or governance. STS Professor Richard Tutton in his paper 'Sociotechnical Imaginaries and Techno-Optimism' uses a concept of 'extraplanetary imaginaries' to examines the visions and practices of Elon Musk's spacecraft company SpaceX: Space Exploration Technologies Corp and Silicon Valley entrepreneurs and venture capitalists who dream of becoming an multiplanetary species (Tutton, 2020, Tutton, 2018). He underscores how the focus on sociotechnical imaginaries in STS brings a "new perspective" to "social studies of outer space . . . concerned with the role of imaginative practices in technological change and future-

[27] He explores what he calls 'disjunctures' (Appadurai, 1993). The 'disjunctures' are five dimensions - ethnoscape, finanscape, technoscape, mediascape and ideoscape - of global cultural flow that can move across national boundaries (Appadurai, 1993). He argues these cultural flows do not look the same from every angle as they are inflected by the histories, politics and linguistics of different actors (Appadurai, 1993: 329).

making" (Tutton, 2020: 5). In his earlier case study of Mars One – the organisation that claimed it would create a human settlement on Mars in the 2020s before going bankrupt in 2019 – Tutton (2018) examined what he called 'multiplanetary imaginaries'. In this paper, he articulates that the unrealising of Mars One's imagined future does not mean STS scholarship should not be concerned with multiplanetary imaginaries. On the contrary, the

> . . . enduring and contemporary speculation about interplanetary exploration and settlement, investments in engineering designs and systems, along with normative claims about the future of humanity, call for precisely the kind of analysis that STS work has given to other technoscientific endeavors.
>
> (Tutton, 2018: 519)

This is similar to how Jasanoff argues the concept of sociotechnical imaginaries offers a framework for critical engagement in why some collective sociotechnical formations endure and others weaken and wither away (Jasanoff, 2015b: 321). Therefore, I argue imaginaries as a concept allows for analysis of sociotechnical failures and the impossibilities of transhumanist futures.

Tutton's (2017, 2018, 2020) writing on imaginaries and wicked futures is influential to my thinking on imaginaries. A key contribution is how he articulates, as informed by Jasanoff (2015), that performance is important to the making and sustaining of imaginaries; as staged moments of technoscientific objects in action or where an audience pays 'witness' to public experiments foster a sense of collective belonging (Tutton, 2020: 11). In chorus with Tutton, I too include "technological demonstrations" that are witnessed and "the production of visualisations" as elements of performance (Tutton, 2020: 11). How performances and the practice of witnessing bring transhumanist imaginaries into being is explored in chapter four. In the case of SpaceX, Tutton argues, both actual and simulated technological performances work together to persuade public audiences that spaceflight has the potential to "become more like an everyday activity" and legitimises SpaceX as a company with the "technical capabilities to make that happen" (Tutton, 2020: 13). An important consideration in my work is concerning how arrangements of power-knowledge and human-machine relations legitimises transhumanist imaginaries. Furthermore, as forementioned, imaginaries

allow for consideration of the affective dimensions of imagining futures. As Tutton contends, technological performances are also designed "to engender positive, affective responses such as excitement or wonder" (Tutton, 2020: 13). In many ways I adopt a similar conceptual framework of imaginaries to analyse how the collectively shared visions of transhumanism, that are "animated by political and cultural claims about Earthly societies and their problems", are performed and produced through narratives, performance and visual culture (Tutton, 2020: 19).

Imaginaries in Egg Donation and Coastal Walks

The work of Nicky Hudson (2020) and Leila Dawney (2011) is also influential to my conceptual framework of imaginaries because it supports my understanding of the imagination as an embodied and material practice as I will outline later in this chapter. Professor Hudson is situated in medical sociology and describes 'the imaginary' as a 'sociological utility'; inviting sociological theorising around reproduction to consider the use of a conceptual framework of imaginaries (Hudson, 2020: 347-349). As those who use "assisted reproductive technologies" engage in affective and imaginative work as they "play out a range of possible scenarios" and associated futures (Hudson, 2020: 357). Hudson is exploring the embodied experiments of assisted reproduction treatment, such as egg donation, as material imaginative practices (Hudson, 2020: 348). In the article I am drawing from, Hudson uses imaginaries to understand "how a growing number of women globally who seek to conceive using donated eggs might make sense of their future desires, hopes and ambivalences" (Hudson, 2020: 347). How these women "imagined themselves as donor egg mothers" and thereby "re-configure their futures" (Hudson, 251). This she argues is a deeply ethical, reflexive and embodied practice that is social situated and embedded in transnational labour and body politics (Hudson, 2020: 353-354, 357-358). Hudson writes, imaginaries offer

> . . . a means to interrogate questions of individual agency (here defined as embodied imaginative and reflexive practices) in the context of wider social imaginaries (the social formations with which we negotiate and through which we move).
>
> (Hudson, 2020: 349)

The emphasis on the imagination as material and embodiment is largely informed by Dawney's theoretically rich paper 'Social imaginaries and therapeutic self-work: the ethics of the embodied imagination' (2011). Dawney, focuses on the experiences of two participants walking a long-distance coastal path in South West England as a culturally specific therapeutic body practice (Dawney, 2011: 536-537). She conceptualises this as 'therapeutic imaginaries' arguing they are constituted through "practices of therapeutic self-transformation, in terms of specific relations to the self" which "emerge from historically situated but future-orientated scenarios of affect, sensation and imagination" (Dawney, 2011: 437). Interestingly, Dawney also argues against tying imaginings down to the performance of a specific identity, a point I echo in chapter one (Dawney, 2011: 549). She writes, ". . . the identity of a walker could risk stultifying or homogenising the way in which subjects work on and through imaginaries in the making-therapeutic of a bodily encounter with a space" (Dawney, 2011: 549). I argue, this is an indication of how Dawney's concept of imaginaries instigates a concern for how the enactment of the imagination is part of the bodily encounters that constitute space. I will return to the co-constitution of space and bodily space in this chapter to explore this point further. Both authors, Dawney (2011) and Hudson (2020), offer a distinct conceptualisation of imaginaries that takes into consideration how the imagination is not opposed to the real but rather it is an embodied, material and affective practice that is socially and culturally situated.

Collapsing dualisms and the materiality of imagining

So far I have shown that there is a diverse use of the concept of imaginaries in anthropology, cultural theory, Science and Technology Studies (STS) and political science. Indeed, the concept provides an interdisciplinary edge as imaginaries have no singular interpretation or disciplinary restriction. As a conceptual framework they can highlight how visions of the future are collectively held and given meaning, and how future-making is an affective, embodied and material practice. They can hold together entire nations, dreams of colonising outer space and imaginings of motherhood. Through comparative study I have shown the possibilities of imaginaries, some of the diverse usage and the ways in which it is a concept that is undisciplined. My aim for this thesis is to contribute to the building of this body of work, in particular within STS and Cultural Studies, with a conceptualisation of transhumanist imaginaries that takes

influence from authors in sociology and cultural theory; in particular but not limited to Leila Dawney (2011), Maureen McNeil (2007) and Richard Tutton (2018, 2020). Despite the influence of sociotechnical imaginaries (Jasanoff, 2015a) my approach finds greater synergy with the work of Hudson (2020), Dawney (2011) and Tutton (2018; 2020), as I am concerned with the production of power relations, the body politics, embodiment, performance and material-semiotic practices. I will now outline the theoretical underpinning of my conceptualisation of imaginaries and how the imagination is interpreted and understood in this thesis. As I argue for an understanding of the imagination that is embodied, affective and material and enacted through and in power-knowledge relations. Thus collapsing the imagination/real and mind/body dualisms.

As mentioned previously, sociologist Nicky Hudson's (2020) focus is on how egg donation reconfigures ideas about future motherhood, through individual embodied practice and wider social and policy imaginaries; because of this she does well to highlight how imagining is an embodied material practice. In her paper 'Egg Donation Imaginaries: Embodiment, Ethics and Future Family Formation' (2020) she notes that,

> If we consider imaginaries to be reproduced at the individual level, we must therefore consider them as material, embodied practices. How we think, imagine, perceive and deliberate need to be considered as practices which happen at the corporeal level (i.e. thinking and imagining are things done by bodies). In this sense, our ideas and imaginings do not cause practices: they *are* practices (Dawney, 2011: 539).
>
> (original emphasis, Hudson, 2020: 348)

Hudson is influenced by the earlier work of Dawney (2011) and her conceptualisation of imaginaries as material, constituted by practices and technologies and worked on and through bodies, individually and collectively. Dawney (2011) offers a framework using Spinozist understanding of the imagination. A Spinozist approach collapses the demarcation between real and imaginary and mind and body to instead think about the how the body's capacity to imagine, and the technologies that facilitate imagining, can re-produce imaginaries. Interested in how walking as practice brings into being therapeutic imaginaries and imaginaries of the self, she brings together Spinoza and

Foucault[28] to think about the relationship between the imagination and subjectivity (Dawney, 2011: 536-537). Dawney's rich conceptualisation emphasises how imaginaries are brought into being through material and embodied practices. Influenced by Spinoza, Dawney argues the approach to social imaginaries that only focuses on the representational – i.e., language and signifiers – have the potential to lose sight of the materiality of imagining as they risk slipping into the dualities of idealism and materialism, imagination and practice, mind and body (Dawney, 2011: 537-538). Understanding the imagination as material is an intervention into the production of the enduring dichotomy of mind/body in Western philosophy and culture. The transhumanist imagining of severing the head from the body so the mind can be uploaded into a machine is a vivid reproduction of this Cartesian dualism. The irony of transhumanist imaginaries is that the only form techno-transcendence currently takes is that of an embodied practice of imagining the erasure of corporeality.

This chapter intervenes into the privileging of the mind in transhumanist imaginaries, for as I will show these techno-transcendence fantasies of disembodiment are rooted in histories of patriarchal power-knowledge relations that have separated mind from body. The significant of the mind/body split is because, as Donna Haraway argues, certain dualisms have been systemic to the logics and practices of the domination of those constituted as others because dualisms demarcate mind/body, nature/culture, whole/part, male/female, men/women, organism/machine, human/animal, public/private, truth/illusion, civilised/primitive, self/other and real/imaginary (Haraway, 1991: 163, 177). Similarly, Oyèrónkẹ́ Oyěwùmí in *Invention of Women: Making an African Sense of Western Gender Discourses* (1997) highlights that these dualisms such as nature/culture and visible/invisible are "variations on the theme of male/female bodies" that are ordered hierarchically and "differentially placed in relation to power and spatially distance from one another" (Oyěwùmí: 1997: 7). I will return to this later in the chapter, but for now, I argue against the trappings of Cartesian dualisms of invisible/visible, mind/body by using, as Dawney articulates, a "Spinozist account of the imagination as material" reinstituting "the body as the site of the thinking subject" (Dawney, 2011: 538). While recognising it is challenging to examine the

[28] Dawney (2011) is influenced by Foucault's notion of subjectivation and Spinoza's theory of knowledge and the imagination.

materiality of erasing the corporeal, I contend it is only by paying attention to how transhumanism is brought into being by material practices of imagining that we can understand how bodies are made - and then erased. Otherwise, the body is taken for granted as naturalised, universal and essentialist; and as feminists have long theorised the unmarked universal body is a white, able, male, cis, middle-class body. The very body transhumanists wish to escape. When Caroline Bassett, Sarah Kember and Kate O'Riordan (2020) write that "[a]bsenting ourselves from our futures is a sleight of hand," they are saying imaginaries that tell stories of post-human technological futures are actually just playing an invisibility trick, for 'we' humans re-enter this future unseen (Bassett et al., 2020: 2). In the next part of this chapter, I read Spinoza's *Ethics* (1996) in chorus with Dawney (2011) and Gatens (1996), as well as developing Spinoza's ideas through the work of Ahmed (2000), Foucault (1978), Haraway (1991; 1997), and Suchman (2007). Forming a theoretical grounding for understanding the imagination as an embodied, affect and material practice thus the foundations to my conceptualisation of transhumanist imaginaries.

Reading Benedict Spinoza's *Ethics*: The imaginative production of situated knowledge

Written in the mid-to-late seventeenth century, following his death, Benedict Spinoza's *Ethics* was published posthumously in 1677. Spinoza was a radical philosopher, thinking and writing in the Age of Enlightenment and his work has been taken up by contemporary social theory and feminist philosophy to unsettle and complicate the dominant view that all Enlightenment thought is the masculinist rationalism that privileges the mind. I am persuaded by Dawney's (2011) reading of (the reprint of) Spinoza's *Ethics* (1996), how she extracts a way to theorise the imagination as an embodiment practice that collapses the superficial binary between mind and body. Spinoza's *Ethics* (1996) breaks away from the Western philosophical tradition of constituting the mind as supreme and transcendental (Gatens, 1996: 110) and therefore, is a fruitful intervention into the "classical humanist rationalism of the Enlightenment" which is too often reproduced in technological imaginings such as transhumanism (Braidotti, 2019: 59). In this chapter I have outlined the usefulness of the concept of imaginaries but I also discussed the limitations of how this concept has

been developed in Science and Technology Studies (STS) especially for my thesis. Spinoza's philosophy offers a way of thinking that moves the concept of imaginaries forward (Braidotti, 2019, 122). Rosi Braidotti in *Posthuman Knowledge* characterises Spinoza's ethics as a praxis of joy that ". . . connects adequate understanding to the analysis of our bondage, limitations and flaws, i.e. power" to provide "qualitative differentiations between different instances, ideas and relations" (Braidotti, 2019: 92). This provides a way to understand the complexity of the production of social relations, figurations and body politics in transhumanist imaginaries.

As forementioned my feminist politics is influenced by Haraway's argument that theory and practice should address the social relations of science and technology and "systems of myth and meanings structuring our imaginations" (Haraway, 1991: 163). The work of historian David Noble (1999) illuminates how the overt masculinity of Western technoscience culture is rooted in the "celibate, misogynist, and homosocial clerical culture of the Latin Church" and from the Enlightenment to today this culture persists (Noble, 1999: 209). He challenges the assumption technoscience culture is secular and therefore, religion is in the past, arguing Western Christianity and technoscience evolved together as worlds without women (Noble, 1999). Western societal enchantment with the technological "is rooted in religious myths and ancient imagining" from the space programme to Artificial Intelligence (Noble, 1999: 3-5)[29]. As Noble persuasively argues, today's technologists in their pursuit of power and profit seem to set society's standard for rationality yet new technologies rarely seem to adequately meet our social needs (Noble, 1999: 3). This, as Noble argues, is because the desire has never been about meeting these needs but rather aimed at the loftier goal of transcending such mortal concerns altogether (Noble, 1999: 3). Therefore, I argue we need a theoretical framework for understanding the social relations of mythmaking and

[29] It can be argued this includes medicine. As C. Riley Snorton highlights how the inclusion of God and biblical verses in the medical-scientific narratives of and by James Marion Sims, the so-called father of American gynaecology, was more than act of faith but a "justification for mechanisms of pain and control" as he imagined his experiments on enslaved women as a divine mission (Snorton, 2017: 18).

imagining, to examine how technological imaginaries continue to reproduce these exclusionary histories[30] of white masculine capitalist colonial patriarchy.

While Spinoza is writing about God he makes the case for how "the mind is the *idea of the body* in its varying state" and centralises the imagination as a way of knowing and experiencing the world (original emphasis, Dawney, 2011: 540). The belief the mind is independent of the body is merely a product of the imagination, for no clear demarcation can be drawn between mind and body and the idea of the mind and knowledge of the body because they are all mutually constituted (Dawney, 2011: 540; Spinoza, 1996: 47-48). Thus, Spinoza (1996: 71) is arguing, as articulated by Dawney, "The mind is simply the body as understood through the attribute of thought. Mind and body then, are different ways of knowing the same things . . ." (Dawney, 2011: 540). The mind knows the body exists through "affections by which the body is affected" (Spinoza, 1996: 47), and there is no definitive boundary between thought and affect, making sense of and sensing (Dawney, 2011: 540). Spinoza argues that the habitation of our body, otherwise known as embodiment, is how we form general images of things and perceive the world around us; and sensory knowledge is produced by bodily affect (Spinoza, 1996). Ideas for Spinoza are not images "formed at the back of the eye" or "in the middle of the brain" but rather thought is inseparable from bodily modifications: change and affect (Spinoza, 1996: 63; Dawney, 2011: 540). Spinoza's philosophy offers a way to trouble the boundary between the real and the imaginary because ideas are products of the imagination which are grounded in bodily affect "and as such the body *imagines* external bodies as existing – *it is a condition for there being a real*" (original emphasis, Dawney, 2011: 541). This does not mean embodiment is about a "reified body" in a "fixed location" (Haraway, 1988: 588) outwardly imagining bodies into existence rather as Sara Ahmed argues, "'my body' is possible in its particularity only through encountering other bodies, 'your body', 'her body' and so on" (Ahmed, 2000: 47). For there is no given body, rather "bodies materialise in a complex set of temporal

[30] The use of histories is to reflect how " . . . the question of history can only be posed partially: it is a question that allows us to think about how the relationship between particular encounters and more general processes requires the particular and the general may be determined, it is not fully determined, which means that we must give up the assumption that it can be translated into a meta-discourse (such as History)" (Ahmed, 2000: 9).

and spatial relations to other bodies" this includes bodies "recognised as familiar, familial and friendly, and those that are considered strange" (Ahmed, 2000: 40). Rather than ideas being conceived as complete images residing inside the independent mind, Spinoza (1996) offers a way to conceptualise ideas as material products of the imagination that are incomplete assemblages of bodily modifications, associations[31] and histories formed by encounters with external bodies, objects and technologies (Spinoza, 1996; Dawney, 2011). Encounters are meetings that suggest two or more things, objects, bodies come into arrangement (Ahmed: 2000) and we form certain ideas about objects and external bodies in our imagination because of past encounters that produce affect as "ideas are always material" (Dawney, 2011: 539-540).

It is through the effort to organise or select our encounters, as Gatens explains in her reading of Spinoza, that we form associations and sociabilities between similar bodies and this leads to cultural groupings or what Gatens calls societies (Gatens, 1996: 112). In this sense, as Dawney writes "The possibility for imaginings to be conceived of as social arises from the sociality of lived experience and from the similarity of bodies" (Dawney, 2011: 540). Spinoza gives an example of two men who see the tracks of a horse in sand and their conception of thoughts is influenced by their experiences of the world; to a soldier the tracks of horse would conjure the thought of war, whereas for a countryman the thought of a horse would proceed to the thought of a plough and of the field (Spinoza, 1996: 47). If as Dawney argues, similar bodies may imagine objects in similar ways, even though the imagined object is specific to the bodily affects experienced by the individual body, then might we argue that what is considered similar or difference is in part constituted through imagining and this applicable to how bodies become differentiated from one another (Dawney, 2011: 540). As Ahmed writes in *Strange Encounters: Embodied Others in Post-Coloniality*,

> . . . The body becomes imagined through being related to, and separated from, particularly bodily others. Difference is not simply found in the body, but is established as a relation between bodies . . .

[31] On memory Spinoza writes " . . . it is nothing other than a certain connection of ideas involving the nature of things which are outside the human body - a connection which is the mind according to the order and connections of those affections of the human body" (Spinoza, 2018: 46-47).

(Ahmed, 2000: 44)

I take this to mean that when we imagine bodies and objects as different or similar to ourselves we are constituting them as different because of encounters that happen through temporal and spatial relations "in material-semiotic fields of meaning" (Haraway, 1988: 588). Importantly, as Oyěwùmí makes clear, the constitution of difference should not be applied universally rather as she writes,

> The emergence of patriarchy as a form of social organization in Western history is a function of the differentiation between male and female bodies, a difference rooted in the visual, a difference that cannot be reduced to biology and that has to be understood as being constituted within particular historical and social realities.

(Oyěwùmí, 1997: 15)

I will return to how the techniques and practices of differentiation that privileges the gaze are technologies of power-knowledge that mark "out of the boundary lines between bodies" (Ahmed, 2000: 44). But the point is, as Ahmed argues, to take seriously the functioning of cultural difference in the "constitution of bodily matters is not to read differences on the surface of the body" but instead "to account for the very effect of the surface, and to account for how bodies come to take certain shapes over others, and in relation to others" (Ahmed, 2000: 42). Therefore, if we understand the imagination as material, relational, and a practice of differentiation that works through the gaze than we also need to situate it in a particular cultural and historical location.

Hudson (2020: 347) and Dawney (2011) both call attention to the 'imaginative production of knowledge'; how the formation of thoughts, ideas, deliberations and perceptions are not separate to social life but rather integral to bringing it into being. For Spinoza, knowledge produced through the imagination by bodily affect is set apart from intuition and reason, he writes,

> . . . from signs, for example, from the fact that, having heard or read certain words, we recollect things, and form certain ideas of them, like those through which we

> imagined the things . . . these two ways of regarding things I shall henceforth call knowledge of the first kind, opinion or imagination.
>
> (Spinoza, 1996: 57)

These ways of knowing are always partial or in Spinoza's terms "confused" and can be a source of falsity (Spinoza, 1996: 51, 57-59). It reminds me of Haraway's argument for 'situated knowledge', writing in opposition to rationality understood as a practice of objectivity that is only achieved through disembodied vision as it re-produces the logics and practices of white colonial capitalist patriarchy (Haraway, 1988). As Oyěwùmí highlights, the social categories of "man of reason" and "women of the body" were derived from Western European thought and made oppositional as "only women were perceived to be embodied" whereas "men had no bodies — they were walking minds" (Oyěwùmí, 1997: 6). Furthermore, she calls attention to how "bodylessness" has been the precondition of rationality since the mind/body binary emerged in early Western discourse, and this "much-vaunted Cartesian dualism" affirms a tradition of seeing the body as a trap that any rational person should wish to escape (Oyěwùmí, 1997: 3).

As previously mentioned these dualisms have been systemic to the logic and practices of othering (Haraway, 1991) and those who could be considered as rational are those who have the privileged ability of invisibility (Oyěwùmí, 1997). As Oyěwùmí writes,

> Women, primitives, Jews, Africans, the poor, and all those who qualified for the label "different" in varying historical epochs have been considered to be the embodied, dominated therefore by instinct and affect, reason being beyond them. They are the Other, and the Other is a body.
>
> (Oyěwùmí, 1997: 3)

In Western thought objectivity as rationality does a disappearing trick on the unmarked body in the production of scientific truth-telling (Haraway, 1988). Instead of this enduring reproduction, Haraway argues rational knowledge is a process of ongoing critical interpretation; she writes "a splitting of sense, a confusion of voice and sight, rather than clear and distinct ideas, become the metaphor for the ground of rational" (Haraway, 1988: 590). Similarly, for Spinoza reason is not a transcendental ability of

the disembodied mind, for as Gatens reminds us in her reading of Spinoza, " . . . reason, desire and knowledge are embodied and dependent, at least in the first instance, on the quality and complexity of the corporeal affects" (Gatens, 1996: 110). Spinoza does not equate falsity (partial knowledge) to ignorance, rather knowledge formed from the imagination is better understood as a fragmented and inadequate ways of knowing (Spinoza, 1996: 54). He gives the example of imagining the sun's distance, we may imagine it is closer than it is not because of ignorance but because the body is affected by the warmth and light of the sun causing our body to be affected by the sun and thus forming ideas (Spinoza, 1996: 53-54). Similarly, the mind imagines other bodies because of how the body is affected by the impressions from external bodies, situated in complex histories (Spinoza, 1996: 46). He writes, "when the human mind regards external bodies through ideas of the affections of its own body, then we say that it imagines" (Spinoza, 1996: 50). Spinoza does not mean that when we encounter external bodies, we form ideas like images or inanimate pictures on a panel filled with misconceptions or when we have an idea with no mental picture we are somehow inventing a creation from our own free will (Spinoza, 1996: 64). Rather it is in the act of perception we affirm or negate our ideas that are formed through bodily affect (Spinoza, 1996; 48, 64). He gives the example of imagining a winged horse, the winged horse can be perceived as existing unless it is joined to an idea that precludes the existence of the winged horse (Spinoza, 1996: 65). For Spinoza, imagining the non-existent is not an error of the imagination as our perception informs how we make affirmations about those ideas (Spinoza, 1996: 66). Ideas are material but the undeniability of the materiality of ideas does not mean the same as affirming them (Butler, 2011: 36) as ideas get negated or affirmed through relations of power-knowledge in specific temporal and spatial locations that are culturally and historically situated[32]. Once we have an understanding the imagination is not only a material and social practice situated in a particular place, but is also productive and relational, it becomes clear Spinoza's

[32] Judith Butler in *Bodies that Matter* (1993), articulates that we make affirmations about an array of "materialities" pertaining to the body signified by the categories "of biology, anatomy, physiology, hormonal and chemical composition, illness, age, weight, metabolism, life and death" (Butler, 1993: 36). Butler (1993: 36) argues the inability to deny these "materialities" such as aging does not mean the same as affirming them, for "interpretive matrices condition, enable and limit" affirmations.

philosophy needs a critical elaboration to make sense of the relationship between technologies of power-knowledge and the socio-material practices of imagining.

As an example, it is my understanding that through her reading of John Griffin's *Black Like Me* (1970) Sara Ahmed argues *passing* for black as a white man is not transgressive but rather a set of practices that are constitutive of the white masculine identity affirmed through relations of power-knowledge (added emphasis, Ahmed, 2000: 132). In other words, passing - the transformation of skin colour from white to black - is an imagining of what it means to 'be black' that is "over-determined by the 'knowledges' available of blackness central to the violence of colonialism" (Ahmed, 2000: 131). This is demonstrated in Saidiya Hartman's (1997) critique of John Rankin's narrative of the violence of slavery when in an effort to appeal to his slaveholder brother and inspire empathy and commonality among men, he imagines himself, as well as his wife and child, as enslaved people (Hartman, 1997: 18). The acknowledgment of "the other's pain" is only as much as it can be imagined, and therefore, as established, this imagining is a practice happening through bodily affect and social relations (Hartman, 1997: 19; Spinoza, 1996). The white body is imagined in place of the black body in order to make this suffering visible and intelligible thus reproducing specific race relations that disappears 'the other' (Hartman, 1997: 19). As Hartman asks,

> Can the white witness of the spectacle of suffering affirm the materiality of black sentience only by feeling for himself? Does this not only exacerbate the idea that black sentience is inconceivable and unimaginable . . .?
>
> (Hartman, 1997: 19)

In other words, the white witness's imagining of black suffering might only be affirmed when it is the white body affected as power-knowledge relations privilege the white experience and account.

Elaborating further, that this is a "masochistic fantasy" whereby the indignation of the violence of slavery can only be aroused through making the "other's suffering one's own" which obliterates "the other" and obscures the suffering (Hartman, 1997: 19). Hartman suggests this imagining could conjure feelings of pleasure and excitement for the imaginer, I will expand on the complexity of the relationship between pleasure

and power later in this chapter, as the desire to occupy or 'pass' as the black body is enabled by the material relations of chattel slavery (Hartman, 1997: 21). The fantasy of becoming 'other' is made available to the Western subject because of specific societal arrangements in strategies of power-knowledge (Ahmed, 2000: 119; Foucault, 1978). As Ahmed writes,

> . . . consuming, becoming and passing are informed by access to cultural capital and knowledges embedded in colonial and class privilege which gives the dominant subject the ability to move and in which 'the stranger' is assumed to be *knowable, seeable, and hence be-able.*
>
> (original emphasis, Ahmed, 200: 133)

I am arguing we can apply Ahmed's critique of the overdetermined dominant subject's ability to 'move' and 'become' to how transhumanists imagine becoming 'other' in that it is informed by the access to material privilege (Ahmed, 2000: 131-133). In other words, how the transhumanist fantasy of techno-transcendence – moving from the flesh body to the machine body – is not inseparable from the material relations of white patriarchal colonial capitalist culture that privileges some over others (Ahmed, 2000: 133). This is made more significant when we consider how transhumanist imaginaries are held in the collective and bloom in places such as Silicon Valley. Imagining the ability to 'move' and 'become' is a set of practices that constitute white masculinity because this imagining is affirmed through relations of power-knowledge (Ahmed, 2000: 132). So, when billionaire transhumanist Elon Musk (2020) suggests that one day we will be able to upload and download your memories into a robot body[33] this imagining of the non-existent is affirmed because he is positioned in strategic power-knowledge relations that are situated in the Silicon Valley capitalist culture and because he has access to material privileges. The embodied practice of imagining being 'otherwise' by white cis able-bodied men has the effect of re-constituting their white masculinity identity because affirmations are made through sociohistorical relations of power-knowledge that have given meaning to bodies and marked some out as 'other'. White masculinity is affirmed through these imaginings because the overdetermined dominant subject has a history of imagining themselves otherwise. It is not enough to

[33] I return to this imagining in chapter four.

say the body imagines, for there are sociocultural specificities to imagining and how ideas formed from the imagination are given meaning and made possible through technologies of power-knowledge. To make sense of this I turn to Michel Foucault's theorising of power in *History of Sexuality*: *volume one* (1978) and use the work of decolonial thinkers to critique Foucault in order to account for gender, race, class, sex and ableist relations.

Reading Michel Foucault's *History of Sexuality*: technologies of power-knowledge and the making of flesh

A somewhat-Foucauldian perspective informs my conceptualisation of power as relational, as the reciprocal effect of the re-production of relations in various and multiple societal arrangements (Foucault, 1978: 92-102). For Foucault, power does not originate from a given point as a locatable substantive but rather "power means relations, a more-or-less organised, hierarchical, co-ordinated cluster of relations" (Foucault and Gordon, 1980: 198). It is not an institution or structure, rather it is local, unstable, situated and relational (Foucault, 1978: 92-94). There is no 'outside' to power, it is 'always already there' but this does not mean forms of domination are inescapable (Foucault and Gordon, 1980: 141-142) for the relational aspect of power relationships means the very existence of relations of power is dependent on points of resistance (Foucault, 1978: 94-95). This does not mean there is a "duality extending from the top down", a binary of rulers and ruled, for power can come from below, it "comes from everywhere" (Foucault, 1978: 93-94). Foucault argues "power holds good" because it induces pleasure and it also produces things such as forms of knowledge and discourse (Foucault and Gordon, 1980: 119). The situatedness of relations enacted in the production of discourses is what Foucault calls the "local centres of power-knowledge" and these "local centres" can only function as part of an over-all strategy (Foucault, 1978: 98-99). By analysing the ways in which situated "knowledge functions as a form of power and disseminates the effects of power" allows for a consideration of how "forms of domination are designated by such notions as field, region and territory" (Foucault and Gordon, 1980: 69). I am continually influenced by Haraway's writing on power in 'Situated Knowledges' (1988) and 'A Cyborg Manifesto' (1991) to help

conceptualise patriarchal power in the social relations of science and technology[34] and thereby extending Foucault's thesis to consider the production of knowledge as gender, sex, race, sexuality, ableism and class in-the-making (Haraway, 1991: 165).

In *The History of Sexuality*: *volume one* (1978), Foucault elucidates how a science of sexuality emerges in the nineteenth century, as an effort to master the flesh, through the Christian Western technique of confession and scientific discursivity; as morality and fear is transformed into a scientific-sounding vocabulary (Foucault, 1978: 55, 68). Western nineteenth century society did not shy away from sex rather it "put into operation an entire machinery for producing true discourses concerning it" (Foucault, 1978: 69). In the production of a "truth of sex", pleasure is classified, and sex is inscribed into ordered systems of knowledge; a biology of reproduction and a medicine of sex (Foucault, 1978: 54-70). Forms of discourse - examination, observations, interviews, and interpretations - were the vehicle for a production of subjugation and knowledge; the subject of the statement is also the speaking subject (Foucault, 1978: 61, 98). Foucault calls attention to how the positivist mechanisms that sort to produce a science of sexuality are technologies of power-knowledge as ". . . it is in discourse that power and knowledge are joined together" (Foucault, 1978: 100). Arguing we should not be distracted by who has the power (men, adults, parents, doctors) and who does not (women, adolescents, children, and patients) in the order of sexuality or who is given the right to know and who is forced to remain unknowing (Foucault, 1978: 99). Rather we must pay attention to the continuously modifying and shifting strategic relations of power and the domination effects (Foucault, 1978: 99, 102). He argues we must define the strategies of power inherent to this will to knowledge (Foucault, 1978, 73). For

> If sexuality was constituted as an area of investigation, this was only because relations of power had established it as a possible object; and conversely, if power was able to take it as a target, this was because techniques of knowledge and procedures of discourse were capable of investing it.

[34] Haraway's circumlocutory 'social relations of science and technology' is to purposefully avoid technological determinism and instead indicate the historical stickiness of structured relations among human and nonhumans (Haraway, 1991: 165).

(Foucault, 1978: 98)

Sexuality as a medicalised object is made through the clinical gaze that looks upon bodies and behaviours and for Foucault this produces effects of pleasure and power (Foucault, 1978: 44-45). He writes "The pleasure that comes of exercising a power that questions, monitors, watches, spies, searches out, palpates, brings to light . . ." (Foucault, 1978: 45). Strategies of power that take sex as an object of knowledge is part of the analytic Western tradition rooted in the history of white colonial capitalist patriarchy (Haraway, 1988: 592-593). As Donna Haraway argues, it "turns everything into a resource for appropriation in which an object of knowledge" is itself only matter for the self-formation of the human knower in the social production of knowledge (Haraway, 1988: 592).

The human knower is made more powerful through the technoscience technique of knowing - "resourcing" – that objectifies the world as a thing to be known and nature as a thing to be mastered (Haraway, 1988: 592). As Haraway articulates, in the history of science the eyes and its technologies of vision have signified the ability of the knowing subject to distance themselves from everyone and everything in strategies of power-knowledge (Haraway, 1988: 581). This is the god-trick of seeing everything from nowhere; "the gaze that mythically inscribes all the marked bodies, that makes the unmarked category claim the power to see and not be seen, to represent while escaping representation" (Haraway, 1988: 581). Moreover, as Oyěwùmí argues the visual is privileged in Western culture and the powers attributed to "seeing" constitute the gaze as power-knowledge technologies (Oyěwùmí: 1997: 1, 2). As the body is always in and on view, it is through the gaze of differentiation – "the most historically constant being the gender gaze" - the body is "given a logic of its own" (Oyěwùmí: 1997: 1, 2). It is in the West that the body as a site of difference is "positioned, posed, exposed, and reexposed" and the binary and opposition of man/woman is re-produced in narratives that centralise the body as "two categories persistently viewed – one in relation to the other" (Oyěwùmí: 1997: 7-8). It is for this reason Anne Balsamo (1996: 22), in *Technologies of the Gendered Body*, is critical of Foucault for failing to comprehend gender as a technology of power-knowledge. Foucault argues power produces effects "at the level of knowledge" (Foucault and Gordon, 1980: 59) yet he takes "gender identity of the female body as a naturally occurring bodily characteristic" rather than "a

"truth effect" produced by cultural discourses that constructs some bodies as active and disciplines other to be passive" (Balsamo, 1996: 22). Gender in his analysis solidifies as naturally given (Balsamo, 1996: 21) but as I have argued so far no body is given, rather bodies are materialised in temporal and spatial relations to other bodies in specific locations (Ahmed, 2000: 40).

The ways in which relations of gender, race, class, sex and dis/ability are made and remade through technologies of power-knowledge is exemplified by the emergence of gynaecology as field in nineteenth century America where for the purpose of conceiving medicoscientific knowledge the sexologist and captive black women came into relation because of chattel slavery (Snorton, 2017). In 'Bodies of Work: A Meditation on Medical Imaginaries and Enslaved Women' Nicola Ivy (2016) analyses Nathan Bozeman archive[35] who continued the work of his collaborator James Marion Sims – the so-called fathers of gynaecology. Bozeman's first fistula[36] patients were "overwhelming black" and like Sims he would later operate on Irish American white women replicating his early clinical work (Ivy, 2016: 16-17). The scholarship of C Riley Snorton, articulates how the pelvis was a critical site of power-knowledge, producing racial hierarchies in American gynaecology in the nineteenth century as anatomists and sexologists were intent on finding bodily proof of black inferiority (Snorton, 2017: 19). Inspired by the field of semiotics, Ivy uses the term "representational labour" to speak to "the surrogacy enacted by enslaved women's bodies rendered knowable - and *tell*-able" within medioscientific discourse (original emphasis, Ivy, 2016: 14). Importantly as Ivy writes,

> . . . not only were black women made to be the ciphers through which medical knowledge about an imagined constituency of suffering white womanhood could

[35] In synergy with Jules Gill-Peterson (2018) who examines how medical archives might distort the intelligibility of the lives of "trans of colour", Ivy notes that despite having "little more than Bozeman's accounts of the events to rely on for the narrative's source material" (Ivy, 2016: 27) these "women's lives reach out to us through these archival gaps" (Ivy, 2016: 28) just as the lives of trans people of colour do in the historicity of gender clinics.

[36] "A vesicovaginal fistula is a breach in the vaginal wall that opens into the urinary tract and produces continuous involuntary discharge of urine" (Snorton, 2017: 19) it is "a symptom of captivity" (Snorton, 2017: 21).

> be telegraphed, they also remained rendered knowable and fungible across time and geographic space.
>
> (Ivy, 2016: 15)

In *Black on Both Sides: A Racial History of Trans Identity*, Snorton characterises this as "putting their bodies to work as flesh" (2017: 27), turning the hospital into a laboratory whereby bodies were made flesh through technologies of power-knowledge that characterised the "enslaver's relation to the captive" as a "possessive scopophilic dynamic" (Snorton, 2017: 40). Strategies of power take flesh as an object of knowledge through the objectifying clinical gaze as exemplified by the speculum – a tool for looking (Haraway, 1988: 592; Snorton, 2017: 31). While Sims does not directly indicate chattel slavery as the necessary condition for the cure to Vesico-Vaginal Fistula (VVF), Snorton argues the production of discourses, including examinations and wood-cut images, shows how gynaecology materialised a series of subject-object relations (Snorton, 2017: 33). According to what Foucault describes as "a power that can only function thanks to a formation of a knowledge that is both its effect and also a condition of its exercise" (Foucault, 2003: 52). Returning to the relationship between how pleasure is produced from the gaze that has the power to see (Foucault, 1978: 45), Hartman's *Scenes of Subjection* (1997), examines the ways in which "delight," "enjoyment" and "pleasure" are splintered by race relations in chattel slavery and therefore, she argues we must interrogate and be suspicious of who's pleasure is being considered when such[37] encounters are made intelligible.

Influenced by the work of Hartman, Ivy pays close attention to the ways in which pleasure, comfort, pain and satisfaction are made to speak in strategies of power-knowledge in the clinical spaces where the lives and work of enslaved women are re-imagined "in support of dominant narratives of medical progress" (Ivy, 2016: 11). In the surgical theatre of early gynaecology comfort and harm become entwined and join

[37] In a critique of the account from Tryone Power who suggests that it was unwarranted for a caravan of fifty enslaved people travelling southwest with their owners in 1830s America to be in the holiday spirit, Hartman obverses this "leads us to interrogate whose pleasure is being considered the site of such encounters – the observers' or that of the fettered slaves within this hideous parade – as well as the relation of song and suffering" (Hartman, 1997: 34).

together the figurations of the "pained body" with the "body made comfortable" (Ivy, 2016: 25). For, as Snorton argues, it is the very condition of slavery that made their bodies "congenitally impervious to pain" and inexhaustibly available[38] (Snorton, 2017, 25). As the enslaved women were characterised by the surgeons as pleased and willing (Ivy, 2016: 22). The discourse and practices produced by these surgeons as evidence of their expertise work through the bodies of enslaved women who were imagined as comfortable and willing patients because of strategic relations of power-knowledge (Ivy, 2016 14).

Foucault articulates that "the relations of power are interwoven with other kinds of relations (production, kinship, family, sexuality)" (Foucault and Gordon, 1980: 142) but the relations of power also invested in and are entwined with relations of gender, race, sex, class and dis/ability that cannot be severed and analysed separately. The point is, as Haraway articulates,

> Gender and race never existed separately and never were about preformed subjects endowed with funny genitals and curious colors. Race and gender are about entwined, barely analytically separable, highly protean, *relational* categories.
>
> (original emphasis, Haraway, 1997: 30)

Snorton highlights how captured in the narratives of American gynaecology are the ways in which chattel slavery functioned as "one cultural apparatus that brought sex and gender into arrangement; the instrument in such an encounter occurred in and as flesh" (Snorton, 2017: 52). It also disrupts the idea that sex and gender can be "neatly divided" from one another[39] and a key reflection from Snorton is, flesh produces relations "– real

[38] Gynaecologist Nathan Bozeman writes in his account, it is "quite possible" to make the enslaved woman and patient Matilda Stamper comfortable; but as Ivy points out, "Her comfort is deranged by the forces of white supremacist possessorship, which . . . include the medical gaze" (Ivy, 2016: 25).

[39] Snorton's critiques Foucault's (2003) description of power as productive not repressive[39] (Foucault, 2003: 51-52) as a failure to "connect racialization to power's procedural efficacies", overlooking how "race functions as a necessary prefix to the particulates of" power-knowledge (Snorton, 2017: 39). He also challenges Foucault's temporal sequence of the discourse of flesh following the discourse of the

and imagined, metaphysical and material" (Snorton, 2017: 33, 40). Gynaecology opens lines of inquiry about ""power-knowledge" as a correlative of flesh" (Snorton, 2017: 39), because as he reveals the unwillingness of the medical men to view white women *as* flesh exemplifies how the production of a field of sex/gender knowledge occurred through the visual economy of racial slavery that defined blackness by an unrelenting scopic availability (added emphasis, Snorton, 2017: 33).

Writing on sixteenth and seventeenth century England but applicable here, Haraway argues a function of the discourses of "race" that emerged from a scientific cultural anxiety about gender, was to demarcate the differentially sexualised bodies of people of colour, both locally and globally, from the "subject position of self-invisible, civil inquirer" (Haraway, 1997: 30). The "civil inquirer"[40] as the "gentleman-scientist" is endowed with a white virtuous masculinity that is separate from the polluting body, granting him self-invisibility, and as such can be trusted with "reporting on the world, not himself" (Haraway, 1997: 23, 30). The "walking minds" of transcendental truth (Oyěwùmí, 1997: 6). It is my understanding that in *Sexual Demon of Colonial Power*, Greg Thomas is critical of the ways in which sex and sexuality as cultural categories in the West function through the erasure of the histories of colonialisation and empire from their critical frame of reference (Thomas, 2007: 4). For as Haraway writes, "Racial, class, sexual, and gender formations (not essences) were, from the start, dangerous and rickety machines for guarding the chief fictions and powers of European civil manhood" (Haraway, 1997: 30). In the European projects of "civilisation" what may count as knowledge is constituted through the misogynoir metaphors of unmanliness as uncivilised and darker skin as unruliness (Haraway, 1997: 30). We see this reflected in the logics of slavery and medicine, where "smelling badly signals an

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body (Foucault, 2003: 201-202) as it is incompatible with the narrative of how gynaecology emerged as a field (Snorton, 2017: 39). Yet to confuse things, Foucault also argues that sexuality is a product of the eighteenth century, sex emerged in the course of the nineteenth century and before sex and sexuality "was no doubt the flesh" (Foucault and Gordon, 1980: 210-211).

[40] Sims regarded his work in gynaecology as part of a civilising project as if producing knowledge for the "civilised world" (Snorton, 2017: 39). For this reason, Snorton persuasively argues, Sim's reputation, research and international practice is a lesson on the ways in which gender and race were articulated in science (and nature) in the wave of "European colonial-imperialist expansion in Africa and Asia, which was also expressed under the banner of civilization" (Snorton, 2017: 39).

unruly body within plantation economies" (Snorton, 2017: 27). Influenced by Julia Kristeva's (1941) theorising on abjection, Ahmed reminds us 'the abject' is not a particular body but the border that threatens and is threatened (Ahmed, 2000: 51). Arguing if we regard the skin as a border[41] and consider its "function and effect" we can consider how "bodily exchange" - or what Spinoza (1996) would call affect - "reopens the histories of encounter that both substantiate and subjugate strange bodies, here constructed as black bodies" (Ahmed, 2000: 52). Snorton characterises the captive bodies of enslaved women as the raw material in the making of the field of "women's medicine" (Snorton, 2017: 52-53) and it is the conditions of chattel slavery that made and makes encountering their bodies possible (Snorton, 2017: 24). To extend Foucault's thesis of *The History of Sexuality* (1978), the nineteenth century obsession with 'mastering the flesh' through scientific discursivity (Foucault, 1978) made the bodies of captive women 'strange bodies' or 'the body out of place' thereby, "marked different from" the body-at-home being "the white masculine thinker and viewer" (Ahmed, 2000: 50-54). For the history of American gynaecology exemplifies how in strategies of power-knowledge, as Ahmed writes, "The strange body becomes a fetish", as material-semiotic practices through encounters and relations "both conceals and reveals the body-at-home's reliance on strangers to secure his being – his place – his presence – in the world" (Ahmed, 2000: 54). For example, even decades after Emancipation, the surgeon Bozeman called upon the knowledge and techniques produced through the captive women's bodies to establish his position in the medical-scientific field by reopening prior histories of encounters (Ivy, 2016: 28; Ahmed, 2000: 8).

Reading Sara Ahmed's *Strange Encounters*: Encounters, figurations and fetishism

Ahmed argues, differences as markers of power are determined by the historical situatedness of social relations (Ahmed, 2000; 8-9) and as Haraway writes "gender does not pertain more to women than to men" rather gender is "the relation between

[41] Starkly, as Snorton (2017: 17) reveals, with a diagnosis of incurable VVF some middle-class European and European American white women chose death rather than live as "an object of disgust". Therefore, it was important that the enslaved women did not die to "create and reproduce the boundary between being and object" (Snorton, 2017: 27).

variously constituted categories" of difference (Haraway, 1997: 28). As I have argued so far, differences are not 'in' the body, rather differences are determined by encounters in relationship to other encounters in particular socio-material arrangements (Ahmed, 2000: 9, 145; Suchman, 2007: 244-246). As Ahmed writes,

> So, for example, rather than thinking of gender and race as something that this other *has* (which would thematise this other as always gendered and racialised *in a certain way*), we can consider how such differences are determined at the level of the encounter, insofar as the immediacy of the face to face is affected by broader social processes, that also operate elsewhere, and in other times, rather than simply in the present (though this is where they may be presented or faced).
>
> (original emphasis, Ahmed: 2000: 145)

Ahmed argues 'the subject' becomes constituted in relation to 'the stranger' who is recognised[42] as out of place through the practice of trying to read the 'stranger's' body as a sign (Ahmed, 2000: 8). Recognising or the failure to recognise the body we encounter is a constitutive practice of difference as the encounter is partially situated in sociocultural histories that have the potential to "*violate and fix others in regimes of difference*" (original emphasis, Ahmed, 2000: 8). They are not simply happening in the present but are determined by what has already taken place[43] to bring the encounter into situate, reopening *"the prior histories of encounter that violate and fix others in regimes of difference*" (original emphasis, Ahmed: 2000: 8). It for this reason that Ahmed disrupts the notion that the face-to-face encounter is a reified moment in the here and now (Ahmed, 2000: 144). For there are temporal and spatial dislocations that are implicated in the very possibility of being faced (Ahmed, 2000: 144); "other faces,

[42] "To recognise means: to know again, to acknowledge and to admit" (Ahmed, 2000: 22).

[43] As an example, in 1884 Chicago, Bozeman delivered a speech to an audience of physicians practicing obstetric and gynaecological medicine (Ivy, 2016). Despite the temporal and spatial distance between the Chicago talk and when he first worked with the enslaved black women who suffered from VVF their bodies are once again encountered because of strategic relations of power-knowledge (Ivy, 2016: 12; Foucault, 1978). These encounters between Bozeman, his audience and the bodies of enslaved women is only made possible because of what has already taken place and is framed by broader relations of power (Ahmed, 2000: 8). As Ivy writes, "Their bodies were made to speak at the point where they were also physically absent" (Ivy, 2016: 28).

other encounters of facing, other bodies, other spaces, and other times" (Ahmed, 2000: 7). As previously mentioned, Spinoza (1996: 45, 80) suggests the mind is able to regard external bodies as existing even if they are no longer in the present because the body has previously been affected. He goes further to argue that when we conceive the image of a thing and/or an external body we are affected in the same way as if the thing or external body were actually present to the body thus affirming its existence (Spinoza, 1996: 45, 80). He writes, "*man is affected with the same affect of joy or sadness from the image of a past or future thing as from the image of a present thing*" (original emphasis, Spinoza, 1996: 80). Enacted through social relations the imagination in practice may produce the affect from encounters that occurred elsewhere (Spinoza, 1996: 60; Ahmed, 2000). This I argue, is not only a way to theorise the social and collective aspect of imagining transhumanism because affect - desire, fear, uncertainty, hope - is a productive effect of transhumanist imaginaries but also how imagining a future of when the flesh becomes machine is predetermined by encounters that are spatial and temporal dislocated or located elsewhere.

Take for example, the human and machine encounter, where each is figured as a "self-standing entity possessed of preestablished capabilities" as exemplified by Lucy Suchman's somewhat failed encounters with the robots Cog and Kismet in the autumn of 2001 at the Massachusetts Institute of Technology AI lab (Suchman, 2007: 245). Suchman articulates how in order for machines to be brought into relationship with us there must in some sense be granted agency (Suchman, 2007: 257) and "like all forms of agency . . . the capacities for action are created out of sociomaterial arrangements that instantiate histories of labour" (Suchman, 2007: 245). However, Suchman cautions that we should avoid assigning agency to persons or things and instead identify "the materialization of subjects, objects, and the relations between them" as the effects of socio-material practices (Suchman, 2007: 286). Cog the robot was inactive due to the commonly known infliction of "bit rot" and despite the demonstrational videos that displayed a competent machine, Suchman and her colleagues were also unsuccessful in eliciting coherent intelligible behaviours from the robot Kismet (Suchman, 2007: 245-246). Rather than consequentially framing Kismet and Cog as unreliable autonomous robots, Suchman argues it is generative to frame them as "collaborative achievements made possible through very particular, reiteratively developed and refined performances" (Suchman, 2007: 246). The failure to illicit the same encounter with

Kismet that is demonstrated on the pre-recorded video makes visible that Kismet's affect is an effect of the human caregiver Breazeal's history of labour with the machine and her trained ability to read Kismet's actions (Suchman, 2007: 246). It for this reason that Ahmed writes differences that are encountered in relation to other encounters are not simply determined in the present but elsewhere (Ahmed, 2000: 9). Let's return to Spinoza's example of the two men who see tracks of a horse in sand (Spinoza, 1996: 47). We could argue then, that when the countryman proceeds from the thought of a horse to the thought of a plough that this encounter with the horse tracks is affected by the social process of labouring in a field that has occurred elsewhere and at other times (Spinoza, 1996: 47; Ahmed: 2000: 145). The human-machine relationship that is brought into being by Suchman's encounter with Kismet is pre-determined by Breazeal's labour and it is only by 'forgetting' or making invisible this labour that Kismet can be figured as an autonomous intelligential machine (Suchman, 2007, 245-247; Ahmed, 2000; 8-9). This I argue offers a way to understand how figurations emerge in and from imaginaries as the imagination in practice has the potential to conceal or overexpose labour that happens elsewhere.

In *Strange Encounters*, Ahmed (2000: 4-5) extends Marx's (1995) analysis of commodity fetishism[44] to understand how figures functions, arguing while Marx's is theory of objectification it allows for a consideration of the relationship between object fetishism and a fetishism of figures. Influenced by Marx (1995), Ahmed argues the way in which objects come to be valued through a detachment to the social relation of labour and production, objects are invested with meaning through the association of figures (Ahmed, 2000: 114). Ahmed is writing specifically about 'the stranger' as a figure and how "the object becomes the stranger; it is consumed as that which contains the 'truth' of the strange or exotic" (Ahmed, 2000: 114). 'Stranger fetishism' is the investment in the figure of the stranger - as to give it a life of its own by cutting it off from the histories of determination (Ahmed, 2000: 5). Thus "the differential relationships of labour . . . are concealed in stranger fetishism" (Ahmed, 2000: 15). I argue we can take this conceptualisation of fetishism of figures and apply it to the figure of the tech-futurist. Importantly for this thesis, she suggests that we could argue the process of

[44] "There it is a definite social relation between men, that assumes, in their eyes, the fantastic form of a relation between things" (Marx, 1995: 43).

fetishisation involves not only the displacement of social relations and material labour onto an object – say for example, the CYBERTRUCK[45] - but the transformation of fantasies into figures in a way to give a fantasy an external form, as something 'pushed out', 'out there' (Ahmed, 2000: 5, 182). In the same ways in which the encounters that produce the figure of 'the strange' are not necessarily in proximity of face to face, the 'tech futurist' is imagined as existing because of prior encounters (Ahmed, 2000: 114). I extend this further, using the work of Ahmed (2000) to think about how the overdetermined white masculine human subject who imagines transhumanism comes to inhabit the tech-futurist figure through socio-histories that constitute whiteness and masculinity as invisible and disembodiment. Haraway writes, "A figure collects up the people; a figure embodies shared meanings in stories that inhabit their audiences" and like the modest witness, the tech futurist is a figure "which works to *refigure* the subject, objects and communicative commerce[46] of technoscience into different kinds of knots" (original emphasis, Haraway, 1997: 23). In the next chapter I outline how the figures of the modest witness and scientific hero becomes reconfigured through figurations of the tech futurist. How the tech futurist figure becomes useful (Suchman, 2007: 244) and is *"put to work, and made to work"* (original emphasis, Ahmed: 2000: 15) in transhumanist imaginaries.

Conclusion

This chapter is a contribution to gender theory and Feminist Technoscience that offers a theoretical grounding for the examination of gender, sex, race, sexuality, class and ableism in-the-making of imaginaries. It begins the work of articulating my conceptualisation of imaginaries by building a foundational understanding of how the imagination is a socio-material, affective and embodied practice and therefore, re-produces relations of gender, race, sexuality, class and dis/ablism. I also hope to contribute to the work on imaginaries in the discipline of Science and Technology Studies (STS) that might otherwise not pay attention to socio-material relations. To return to the introduction of this chapter, imagining is always imagining from somewhere and as such is always situated, intersectional and partial. Imaginers imagine

[45] This will be made clearer in chapter four.
[46] "Commerce is a variant of conversation, communication, intercourse, passage" (Haraway, 1997: 276).

their world to be shaped from their socio-cultural location within it (Suchman, 2007). Therefore, this chapter opens up an avenue for examining the role of the imagination in how we understand ourselves, our world view and our possible futures without disregarding the significant of socio-material relations. Transhumanist imaginings are not universal they are gendered, sexualised and racialised in specific ways and how transhumanist imaginaries come to dominate is predicated on strategies of power-knowledge technologies. Centralising the imagination in the re-production of socio-material relations, and in strategies of power-knowledge, accounts for the white masculine mythmaking cultures of technoscience that is perpetuated in transhumanism. This chapter continues the work of situating transhumanist imaginaries in their sociocultural historical place: Western colonial capitalist patriarchy. By taking a Spinozist approach to argue the imagination is an affective, material and embodied practice the boundaries of imaginary/real, mind/body collapse and makes visible the associated dualism that have histories of "othering". Thus, by arguing the body imagines this chapter intervenes in the privileging of the mind in transhumanist imaginaries.

Through the work of Spinoza (1996), Foucault (1978), Haraway (1997), Snorton (2017) and Ahmed (2000) I emphasis the imagination is enacted in and through encounters that are predetermined by associations, labour relations, social relations, power-knowledge arrangements and histories. The imagination in practice has the effect of constituting and fixing differences, as encounters are affected by broader social processes occurring elsewhere and at another times (Ahmed, 2000: 145). This contributes an understanding how masculinity, whiteness and ableism are not static characteristics but socio-material relations re-producing and re-affirming in the enactment of the transhumanist imagination. When white cis able-bodied men gather together to imagine themselves as 'otherwise' it opens up prior encounters in the patriarchal colonial histories and re-constitutes the white masculine identity. I believe this offers a way towards theorising how the imagination is enacted within in human-machine encounters and how encounters with artificial intelligence have the potential to re-constitute the white masculine identity because of sociocultural associates, memories and social relations. Furthermore, how whiteness, cisness, masculinity and ableism are given meaning in encounters with the 'tech futurist' which I will discuss in the next chapter. The tech futurist as a figure with knowledge on the transhumanist future is

affirmed through relations of power-knowledge, enacting in temporal and spatial locations. As I have begun to discuss in this chapter, to analyse the emergence and configuration of the tech futurist in transhumanist imaginaries requires an understanding of the sociocultural histories of the 'scientific gentleman' as the 'unmarked knower' rooted in colonialism and chattel slavery. How the arrangement of specific power-knowledge technologies renders whiteness and masculinity invisible through class and ableist privileges and constitutes the 'other' as an object of inquiry, disgust and fascination. Furthermore, the work of decolonial thinkers contribute an understanding of how the discourse of the flesh (Snorton, 2017: 40) produces power-knowledge relations and this is made significant when you consider transhumanist imaginers wish to escape their fleshy bodies. This thesis is an endeavour to make sense of how transhumanist imaginings of techno-transcendence re-produce and enact patriarchal power and colonial capitalist culture.

Chapter Four: Figuring Technological Futurist Heroes

Introduction

Gender is trouble (Butler, 2006), and the future is wicked (Tutton, 2017). The wickedness of the future is trying to make sense of the entanglement of matter and meaning and the relationship between the imagination and materiality; for the distinction between what is imagined and what is real cannot easily be distinguished (Tutton, 2017). As I argue in chapter three, the imagination is not only in the domain of the mind but an embodied and socio-material practice, therefore, thinking through imaginaries is a generative way of attended to the processes and practices of futuring (Anderson, 2006; Jasanoff, 2015; McNeil et, al., 2016; Taylor, 2002). For Donna Haraway – who troubles the distinction between the real and figural – to bring the future-present[47] into being requires imaginative figurations (Tutton, 2017: 489; Haraway, 1997). I take up Haraway's suggestion of paying critical attention to the relationship between figurations and imaginaries as key to understanding "racial formation, gender-in-the-making, the forging of class, and the discursive production of sexuality" and apply this to the practices, narratives, visual cultures and discourses of transhumanism (Haraway, 1997: 35). Interrogating futures without considering the re-production of relations of dis/ableism, sexuality, gender and race in the constitution of the imaginary (figural) and the real (factual) risks taking categories of difference as essentialist given (unchanged and universal) characteristics; that defaults white able cis heterosexual masculine maleness and others everything else. As discussed in chapter three, I want to build upon the argument that the imagination plays a significant role in how we encounter others, other bodies, objects, and the world around us and therefore, constitutes differences. In this thesis I demonstrate how through an interrogation that avoids technological and biological determinism cracks begin to form, opening ways through to other possible futures. As Ahmed writes, "We could ask, not only what made this encounter possible (its historicity), but also what does it make possible, what futures might it open up?" (Ahmed, 2000: 145). I liken this to how Tutton invokes

[47] Future-present meaning how the future is conceived in the present.

Haraway's figure of the coyote in his notion of the wicked future (Tutton, 2017). He writes,

> In Haraway's terms, the future is not a 'free resource' open to human will to simply refashion, but is wicked – it is difficult, dangerous and tricky to act on – a 'problematic and potent tie' between desires and dreams and the unintended material consequences of our actions.
>
> (Tutton, 2017: 486)

The future is not in the abstract but situated in the present and made material through the embodied socio-material practices of imagining a future for ourselves. In this chapter, I examine how the future-making practices of transhumanism - that work to legitimise transhumanism as a possible future - is historically rooted in Robert Boyle's scientific method. Thus, how the tech futurist is a reconfiguration of the scientific hero (McNeil, 2007). I argue transhumanism is culturally technoscientific, this is not to suggest all knowledge claims made in transhumanist imaginaries are or are not scientifically sound but rather it is an argument for paying attention to the legacies of the 'culture no culture' (Haraway, 1997) and the inherent production of masculinity in transhumanist imaginaries.

Writing in *Burn Book: A Tech Love Story* (2024) commentator and reporter Kara Swisher, famed for her unbridled access to the tech elite, commented "Too often, inventors [of technology] are painted as heroic, with their faults glossed over in our accepted narrative" (Swisher, 2024: 53). This chapter will show this is not a coincidence but part of the homosocial relations of the exclusionary masculine culture of technoscience that engages in mythmaking and storytelling. I return to the emergence of the heroic figuration of Boyle's 'Modest Witness' in the Scientific Revolution and how this constituted masculinity as modest and therefore, of the mind, and this was dependent on the exclusion of women from the scene of action (Haraway, 1997). Then through work of Maureen McNeil (2007), I discuss the reconfiguration of the scientific hero in contemporary narratives of scientific adventures and discovery. I argue, as a reconfiguring of the 'modest witness' (Haraway, 1997) and the contemporary scientific hero (McNeil, 2007) the technological futurist figure is sacred-secular, masculine, white, heterosexual, independent, ordinary, knowledgeable, competitive and also a bit

threatened by feminism. Rosi Braidotti argues figurations "function as material and semiotic signpost for specific geo-political and historical locations" (Braidotti, 2019: 136). Therefore, by paying attention to figurations of the tech futurist, the specificities of the material and discursive re-production of transhumanist imaginaries are too made visible. In this chapter, I discuss how transhumanist imaginaries are normalised and legitimised through discourses, narratives, visualisations and practices of virtual witnessing and how the tech-futurist figure emerges as a congealing of meanings, knowledges and practices (Castañeda, 2002). To do this, I examine the , the "geek masculinity" (Little and Winch, 2022) of Elon Musk and his CYBERTRUCK as a virtual witnessing technology, the human and non-human staging of the 'progress update' from Neuralink's YouTube channel (2020), the figurations of Oscar Pistorius as a carbon-fibre anti-hero, Ray Kurzweil's TED Talk 'The accelerating power of technology' (2005a), extracts from the book *Immortality, Inc: Renegade Science, Silicon Valley Billions, and the Quest to Live Forever* by Chip Walter (2020) and the New Yorker profile of Nick Bostrom, 'THE DOOMSDAY 'INVENTION: *Will artificial intelligence bring us utopia or destruction?*' By Raffi Khatchadourian (2015). Through critical analysis, I bring these materials together to argue they collectively bring transhumanist imaginaries into being through material, visual and social technologies (Shapin and Schaffer (2011 [1985]). They mutually legitimise transhumanism as technoscientific knowledge of the future through the practices of imagining and virtual witnessing that is only made possible because of the legacies of the Robert Boyle's modest witness (Haraway, 1997). Thus, I will show how transhumanist imaginaries are gender, race, sexuality, class and ableism in-the-making.

Gender-in-the-making in Robert Boyle's scientific method

To make sense of gender-in-the-making in transhumanist imaginaries, we must first return to "the world of [seventeenth century] scientific gentlemen" and how it "was *instrumental* in both sustaining old and crafting new gendered ways of life" (original emphasis, Haraway, 1997: 28). Steven Shapin and Simon Schaffer's *Leviathan and the Air-Pump: Hobbes, Boyle, and the Experimental Life* (2011 [1985]) is an important contribution to the Sociology of Science. Moreover, it provoked Donna Haraway's *Modest_Witness* (1997) which is a critical text for understanding how transhumanist imaginaries are gender-in-the-making. For while the scientific credibility of

transhumanism is debatable, I would argue the existence of these debates speaks to how the credibility and legitimacy of transhumanism as scientifically possible is constituted through the legacy practices of western science and philosophy. Echoing Haraway, I ask whether gender, intersecting with other stratified relations, is *still* at stake in the continuing reconfigurations of knowledge and practices that make transhumanist imaginings of technoscience possible (emphasis added, Haraway, 1997: 27).

Haraway is rightly critical of Shapin and Schaffer (2011 [1985]) for taking Robert Boyle's "masculine gender for granted" and presenting gender *as* women, rather than as a relationship (emphasis added, Haraway, 1997: 26, 28). Seventeenth century philosopher Robert Boyle, with his instrumental air-pump, is an enduring heroic figure in stories of the Scientific Revolution[48] (Haraway, 1997: 24, 33; Shapin and Schaffer, 2011 [1985]: 5, 8; Potter, 2001: xi). Living in the turbulence of English Civil War and Revolution, he is regarded as both "the father of the experimental world" scientists now inhabit and "the father of chemistry" (Haraway, 1997: 24; Shapin and Schaffer, 2011 [1985]: 5, 8; Potter, 2001: xi). In production of a scientific method, Boyle's experimental programme utilized mutually constitutive technologies that folded into one another (Haraway, 1997: 24; Shapin and Schaffer, 2011 [1985]: 25, 76-77). The three technologies are, as Shapin and Schaffer explain,

> . . . a *material technology* embedded in the construction and operation of the air-pump; a *literary technology* by means of which the phenomena produced by the pump were made known to those who were not direct witnesses; and a *social technology* that incorporated the conventions experimental philosophers should use in dealing with each other and considering knowledge-claims.
>
> (original emphasis, Shapin and Schaffer, 2011 [1985]: 25)

Haraway rightly describes this as an "apparatus of production of what could count as knowledge" (Haraway, 1997: 24). The mere existence of the air-pump was not enough

[48] Shapin and Schaffer (2011 [1985]: 5) argue, Boyle's experimental programme triumphed over rivalling alternatives in-part because of the institutional power relations of the Royal Society of London. It is worth, then, emphasising women could not be members of the Royal Society and "were barred from its meetings" (Potter, 2001: 16).

to establish matters of fact. English experimentalists insisted that in order for knowledge to be considered empirically based, experimental performances had to be *witnessed* and "witnessing was to be a collective act" (original emphasis, Shapin and Schaffer, 2011 [1985]: 56). For Boyle, science[49] is "generated through experiment" and for "experiments to yield matters of fact" depended upon the assurances of "the relevant community" of intellectuals (such as lawyers and clerics) who had witnessed the performance (Shapin and Schaffer, 2011 [1985]: 22, 25, 55; Haraway, 1997: 25). As Shapin and Schaffer explain, the natural philosopher's knowledge in part relied upon the testimony of witnesses and, therefore, he played both judge and jury in determining their credibility which included their perceived moral constitution as determined by the social systems of Restoration England (Shapin and Schaffer, 2011 [1985]: 58-59). The significant of this to my argument is the legacy of Boyle's apparatus of knowledge production and how witnessing is stratified by power relations. In this chapter, I explore how transhumanist imaginaries are made and sustained through material (i.e. Neuralink), visual (i.e. CYBERTRUCK) and social (i.e. Ted Talk) technologies.

The production of experimental knowledge is made through "individuals' acts of seeing and believing" and the agreement with one another about "what had been seen and ought to be believed" [50] (Shapin and Schaffer, 2011 [1985]: 78). Shapin and Schaffer write,

> An experience, even of a rigidly controlled experimental performance, that one man alone witnessed was not adequate to make a matter of fact. If that experience could be extended to many, and in principle to all men, then the result could be constituted as a matter of fact. In this way, the matter of fact is to be seen as both an epistemological and a social category.
>
> (Shapin and Schaffer, 2011 [1985]: 25)

[49] Known then as "proper natural philosophical knowledge" (Shapin and Schaffer, 2011 [1985]: 22) as "our term "scientist" came along much later" (Potter, 2001: xi).

[50] Another way of saying this is; "Legitimate knowledge was warranted as objective insofar as it was produced by the collective, and agreed to voluntarily by those who comprise the collective" (Shapin and Schaffer, 2011 [1985]: 78).

The multiplication of witnesses was imperative to the scientific method that produces experimental knowledge and as such, witnessing became integral to the legitimacy of scientific knowledge production. For this reason, the experimental laboratory was to appear to be a "proper civic public space" as experiments were performed in social spaces with the purposeful effect of multiplying who could give eye-witness testimonies (Shapin and Schaffer, 2011 [1985]: 56-57, 336; Haraway, 1997: 31). For example, the air-pump was brought into the Royal Society of London's assembly rooms to perform trials in front of witnesses (Shapin and Schaffer, 2011 [1985]: 57). However, the 'public laboratory' in actuality was a disciplined space (Shapin and Schaffer, 2011 [1985]: 39). Haraway elucidates how the management of the public/private distinction was "critical to the credibility of the experimental way of life" as the site where the experiment must take place is "semiotically accepted as public" but "not everyone could come in and not everyone could testify credibly" (Haraway, 1997: 25). Consider the Future Humanity Institute at the University of Oxford, once led by founding Professor Nick Bostrom, or the company Neuralink (both of which I discuss in more detail later on in this chapter), the distinction between public (i.e., research output) and private (i.e., the meeting rooms and laboratories) are managed. Thus, I argue in the making of technoscientific knowledge these boundary formations between what is private and what is public remains critical to establishing credibility of knowledge production and future-making practices. Furthermore, as I argue in chapter two access or the denial of access is a practice that can produce power relations. In the experimental programme, access was restricted through decisions or tacit processes to those who agreed "to the legitimacy of the game being played within its confines" (Shapin and Schaffer, 2011 [1985]: 336). Or other methods, such as Boyle's tactic of holding demonstrations late at night with the effect of excluding women of his own class (Haraway, 1997: 31). As such, women and labourers were regarded as unqualified in making knowledge through the practice of witnessing and could not attest to the experiment's validity (Potter, 2001: 16, 19; Haraway, 1997: 31).

In these new laboratories the experimental space was both opened up and closed down. As Haraway writes, "The laboratory was to be open, to be a theatre of persuasion, and at the same time it was constructed to be one of the ""culture of no

culture's" most highly regulated spaces"[51] (Haraway, 1997, 25). Some women and other non-scientists may enter the laboratory and watch a demonstration but they could not witness it because they could not disappear (Potter, 2001: 16, 19; Haraway, 1997: 31). As Haraway writes, "Transparency is a peculiar form of modesty" as ". . . only those who could disappear "modestly" could really witness with authority rather than gawk curiously" (Haraway, 1997: 25, 26). Boyle's "air-pump was a technology of gender at heart of scientific knowledge" because the experimental way of life baked in the exclusion of cultural practices and symbols deemed to be feminine (Haraway, 1997: 28). This as well as the actual exclusion of women contributed to what could count as scientific truth (Haraway, 1997: 28). Gentleman scientists sort to dissociate themselves with all things feminine, including alchemy traditions, as the scientific revolution emerged in a time when women (and some men and children) were persecuted as "witches" (Ehrenreich and English, 2010). Thus the statement "Western science evolved only half human, in a world without women" by historian David Noble (1992: xiii) encapsulates how the culture of Western science emerged from exclusionary practices that stratifies relations of gender, race and class (Noble, 1992: xiii). Below through the work of Nirmal Puwar (2004) and Sara Ahmed (2000), I explore further how social space and bodily space are mutually co-constituted, in particular how the white masculine able body is imagined as the "body in-place" through power relations situated in sociocultural and historical norms.

Boundary formations in the co-constitution of social and bodily spaces

To ruminate on this point, social spaces are not fixed or blank spaces to be occupied by any-body, as I argue in the thesis introduction, but rather the bodies imagined as the rightful occupiers of a social space is constituted through power, shown in the case of experimental philosophy discussed above (Puwar, 2004: 2; Haraway, 1997). For Nirmal Puwar writes in *Space Invaders (*2004),

[51] Haraway's conceptualisation of the culture of no culture is inspired by the work of Sharon Traweek (1988). In Traweek's account of physicists, she observes their culture as objectivity in the extremity – as a culture of no culture - as they construct and represent their world as if free of their own agency; longing passionately for a world outside time and human space without "temperament, gender, nationalism or other sources of disorder" (Traweek, 1988: 162).

> There is a connection between bodies and space, which is built, repeated and contested over time. While all can, in theory, enter, it is certain types of bodies that are tacitly designated as being the 'natural' occupants of specific positions. Some bodies are deemed as having the right to belong, while others are marked out as trespassers, who are, in accordance with how both spaces and bodies are imagined (politically, historically and conceptually), circumscribed as being 'out of place.'
>
> (Puwar, 2004: 8)

For example, as Haraway shows, in the experimental way of life the exclusion of certain bodies from the regulated social space, "was instrumental to managing a critical boundary" between the practices of watching and witnessing (Haraway, 1997: 33). "Between who is a scientist and who is not, and between popular culture and scientific fact" (Haraway, 1997: 33). Sara Ahmed elaborates this argument further to consider how the embodied experience of different bodies is lived through the "establishment of boundaries" between an inside and outside, that mark out bodily space through differentiating "others" into bodies considered touchable and untouchable (Ahmed, 2000: 46-49). She emphasises,

> The containment of certain bodies in their skin (bodily space) is a mechanism for the containment of social space. We can recall here how the white woman's refusal to touch the black child does not simply stand for the exposure of blackness from white social space, but actually reforms that social space through the reforming the apartments of the white body.
>
> (Ahmed, 2000: 46)

The refusal of a relation of physical proximity to bodies imagined as strange is to be touched by those very bodies; "a body that is out of place because it has come too close" and this in turn reforms the social space as exclusionary (Ahmed, 2000: 49). It is for this reason Ahmed suggests the social body is an imaginary body re-produced through relations of touch between bodies recognised as friendly or strange (Ahmed, 2000: 49). Ahmed argues that we should "think through the skin" as a "process of materialisation" not as a fixed place but as a boundary-formation containing the subject; "keeping the subject inside, and the other outside" (Ahmed, 2000: 46-48). I recall chapter three, and the articulation of the making of flesh in production of relations and

the significance of affect – pain, abjection, comfort and pleasure (Snorton, 2017: 40). "For if the skin is a border, then it is a border that feels" (Ahmed, 2000: 48).

For Puwar, spaces can be institutional positions, organisations, cities, neighbourhoods, nations and these spaces become marked as territories through the demarcation of bodies (Puwar, 2004: 141). In turn space emerges and is given meaning through the bodies that inhabit that space. To exemplify the relationship between bodies and occupying space she uses the nation as influenced by (but not without critique[52]) Benedict Anderson's *Imagined Communities* (2006) (Puwar, 2004). As discussed in chapter three, Anderson theorises nations are imagined by its members and therefore, nationalism is enacted through technologies, semiotics and practices that bring into being imaginaries of nationhood and community (Anderson, 2006). Puwar argues the inclusion of women into the nation is through the symbols of virtue, beauty, nurture and justice whereas the normative figure of leadership, especially in battle, is reserved for white masculinity (Puwar, 2004: 6). Through the example of Trafalgar Square, for it is a cultural site where national imaginaries of Britain are ritualised in stone and ceremony, Puwar discusses how the plans to have two statues of Nelson Mandela in Trafalgar is met with unease and contestation (Puwar, 2004: 2). The anticipated discord caused by the suggested statues exposes how particular bodies are coupled with specific spaces revealing the "constitutive boundaries of the imagination of the nation" and questions "who has an undisputed right to currently pass as the universal figure of leadership" (Puwar, 2004: 5). The proposed "arrival of a 'black'[53] figure of leadership in this privileged public domain is reserved for very specific types of heroes" bringing to light the somatic norm that is racialised and gendered (Puwar, 2004: 3-5). I will return to figurations of heroism later in this chapter but for now, as Puwar (2004: 144) persuasively argues, historically privileged positions are 'reserved' for specific kinds of racialised, sexualised, able and gendered bodies. Therefore, the status of 'space invader', invading the space of 'the natural' member, is symbolic of how being viewed as 'out of place' is a form of othering (Puwar, 2004: 144). It is important to consider

[52] Through the work of Joanne Sharp (1996) who argues it overlooked how the 'Unknown soldier' in Benedict Anderson's work is a gendered figure.

[53] Nirmal Puwar uses "the term 'black' to refer to those people who are associated with the African and South Asian diaspora" (Puwar, 2004: 171).

then, how in the Scientific Revolution, witnessing as a credible practice became constituted as such through the exclusionary social space of the Royal Society of London that co-constituted the white male modest man as 'in place' (Ahmed, 2000; Haraway, 1997: 267).

The forming of unmarked bodies happens in the confinement of regulated social spaces such as the demonstrations of Boyle's air-pump and the closed doors of the Freemasons (Haraway, 1997; Noble, 1992). Consider the example in the introduction of this thesis when journalist Mark O'Connell describes attending an event located in the University district of London and home to the British Museum, Bloomsbury, where "mainly men" "arranged in tiered seating" gathered together to imagine a transhumanist future for themselves (O'Connell, 2017: 10). The location, as well as the tiered seating, is suggestive of a lecture theatre and I argue this is a purposeful mimicking of academic culture that gives meaning to both the space and the bodies that inhabit the space. I argue, it is not an essentialist quirk that these men come together to imagine transhumanism, instead their shared similarities in gender, race and class reinforces their sense of belonging and this is situated in the histories of Western philosophy and technoscience.

What is compelling is how social spaces and bodily spaces are co-constituted through the practices and discourses of technoscience production (Haraway, 1997: 33; Ahmed, 2000). For the forming of the boundaries of unmarked bodies – the bodies that go unseen - is connected to the construction of social space (Ahmed, 2000). For example, as Haraway argues, "the new masculine virtue had to be of the mind" so modest men of the experimental way of life were to be a "self-invisible source of vision" to be transparent "so that their reports would not be polluted by the body" (Haraway, 1997: 30, 32). They enhanced their gentlemanly epistemological "agency through their masculine virtue exercised in carefully regulated "public" spaces" (Haraway, 1997: 30, 32). Whereas "female modesty was of the body" and therefore, the visibility of women's bodies marks them out as "subjective" not objective, only able to report on the self and evacuated of agency (Haraway, 1997: 30, 32). It is, as Puwar (2004: 57-58) notes, as if whiteness, masculinity and maleness are absences of sex, colour and gender; emptied of corporeality the universal body can "transcendence the bodily into the realm of rationality, culture and enlightenment" (Puwar, 2004: 142). As I

discussed in chapter three, disembodied transcendental reason is the 'God trick' of Western European patriarchal logic that privileges the gaze as a technology of differentiation (Haraway, 1988; Oyěwùmí, 1997: 15). The universal body is a body deemed to be unmarked by gender, race, sexuality, disability or class, it is the "body in-place", for there is a co-constitutive relationship between the universal body and universal spaces (Puwar, 2004: 56, 57; Ahmed, 2000: 46). Therefore, as Puwar argues, to be visible as non-white bodies or as women is an indicator of the sticky corporeality of these positions (Puwar, 2004: 144). I would expand this argument to include the articulation of the politics of visibility/invisibility in experiences of "passing" or "being read" whereby "success[54]" is constituted by "passing" as "a "natural" member" of the person's gender in other words, as cis (Stone, 1992: 165-167). Not to confuse transitioning as becoming disembodied but rather to highlight the relationship between the gaze as a technology of "othering" and the practices of exclusion from spaces that privileges positions of invisibility.

It in the construction of relations as oppositional and hierarchical through the exclusion of those marked out as "other" (Puwar, 143-144) that to go unseen, to be invisible, "is clearly a place of power" (Puwar, 2004: 58). Importantly, as Haraway argues, it is through the carefully choreographed exclusionary spaces of the "public" laboratory that modest men exercised their masculine virtue and agency, in turn minimising critical attention to their own embodiment while gaining the credibility to describe others (Haraway, 1997: 32). This she writes "is a crucial epistemological move in the grounding of several centuries of race, sex, and class discourse as objective scientific reports" (Haraway, 1997: 32). To labour this point, gender and race are relations re-made and re-imagined through how bodies are constituted as marked or unmarked, as belonging or out of place; and in the history of Western philosophy and science to inhabit the unmarked position is to be masculine, white and considered civilised. Continuing the discussion of Boyle's scientific method, I will now elaborate on the heroic figuration of the modest witness (Haraway, 1997) and gender-in-the-making in technologies of virtual witnessing.

[54] "invisibility as an imperfect solution to personal dissonance" (Stone, 1992: 167).

Making modesty masculine: witnessing as a technology of gender

Another way to multiply witnesses is what Shapin and Schaffer conceptualise as "the literary technology of virtual witnessing" which invited readers into the "public" space of the laboratory (ibid, 2011 [1985]: 60, 77). Made a powerful technology through its ability to obviate the need to directly witness the experiment in action the laboratory is reproduced in the reader's "mind's eye" - which I interpretate as in the imagination (Shapin and Schaffer, 2011 [1985]: 60). As explored in chapter three through the work of Spinoza (1996), forming images of things in the imagination cannot be separated from embodiment, therefore, virtual witnessing as a technology of knowledge production is always partial and situated (Haraway, 1997). It is important to pay attention to Shapin and Schaffer's argument that in Boyle's texts visual representations were a "mimic device" (ibid, 2011 [1985]: 61-62). For, while an experimental report was often thought of as a narration of prior visual experience, it "constitutes a visual source" in itself (Shapin and Schaffer, 2011 [1985]: 61-62). Later in this chapter, I will show discuss how the use of "virtual witnessing technologies" (Kirby, 2003) through a narrative framework work to mimic technoscience action that has occurred elsewhere to produce transhumanism imaginaries through the practices of imagining and witnessing.

A key point being that the texts are produced with specific inclusions, exclusions and symbols to assure Boyle's readers that he is a man of good faith[55] and should be believed and "[t]hus the literary display of a certain sort of morality was a technique in the making of matters of fact" (Shapin and Schaffer, 2011 [1985]: 65). Throughout his experimental reports Boyle stipulated how to write proper scientific prose, as well as appropriate moral postures and modes of speech; as the ways in which experimentalists talk with one another is part of "specifying the social relations that could constitute and protect experimental knowledge" (Shapin and Schaffer, 2011 [1985]: 63, 65, 66-67). When Boyle reported on experiments regarded as important or problematic he named the witnesses and specified their qualifications and by recounting any unsuccessful experiments it was as if his objectivity could not be distorted by his

[55] It was well known Boyle was the son of the Earl of Cork, and his "presentation of self as a moral model for experimental philosophers was powerful" (ibid, 2011 [1985]: 66).

personal interests (Shapin and Schaffer, 2011 [1985]: 58, 65). Not forgetting, as Elizabeth Potter notes, he never mentioned any women's names among those who could attest to his veracity (Potter, 2001: 180). Instead, he reports his difficulty with the attendance of women in his own class, who during a demonstration demanded air be let in to stop the suffocation of a struggling bird (Potter, 2001: 18-19, Haraway, 1997: 31-32). As previously discussed, to exclude such disruptions he took to assembling men at night so they alone could attest to the facts produced by the experiments (Potter, 2001: 18-19, Haraway, 1997: 31-32). Potter makes clear that it is in Boyle's view that however chaste and modest the compassionate "fair ladies" maybe, they, like other non-scientists, are obstructions in the pursuit of knowledge (Potter, 2001: 21). For while compassion is a worthy quality, the "man of science" must put it to one side and only liberate the suffering animal after the facts have been established (Potter, 2001: 21). Throughout his vignette he contrasts the experimental scientist against "womanly women" thus strengthening "the boundary between the scientist and the non-scientist" (Potter, 2001: 21). For no matter how modest or chaste they might be, women did not have "the independent status to be modest witnesses" as such became constituted as unfit for witnessing and experimenting, therefore, unable to make knowledge claims (Potter, 2001: 17-16, 19, 21; Haraway, 1997: 27). However, as Potter argues, "women's modesty indirectly contributes" to the production of facts as "she has to be there to a form a contrast" (Potter, 2001: 13, 16). Women must be modest to insure "that they do not distract men" with their desirable sexuality for this "new man of science" is constituted as a heterosexual man (Potter, 2001: 13, 16, 21). Therefore, through manly modesty and chastity-as-celibacy the experimental scientist overcomes his desires in pursuit of facts, in the "divine service" of experimental philosophy, and thus the making of knowledge is made a masculine technology (Potter, 2001: 13-21; Haraway, 1997: 28-32).

The essay was a crucial form in which Boyle could make his modesty known (Shapin and Schaffer, 2011 [1985]: 65-66). His so-called "naked way of writing" constituted the narratives "as mirrors of reality" and himself as "a *modest man*" (original emphasis, Shapin and Schaffer, 2011 [1985]: 65-66). Scientific modesty is rooted in what Haraway articulates as a constitutive meaning of masculine gender as the unseen, the eye (I), the author (Haraway, 1989: 54). Consequentially, reinforcing a

traditional form of femininity as of the body (Potter, 2001: 3; Haraway, 1997: 30). As Potter writes,

> Boyle's theoretical modesty and innocence not only allow the constitution of matters of fact, they also constitute an epistemologically modest and innocent masculinity, opposed to a corporeally modest femininity.
>
> (Potter, 2001: 12-13)

For Boyle to successfully produce the figuration of a "new man of science" modesty and chastity became masculine qualities and therefore, took on greater value, as women were pushed into the margins of experimental science (Potter, 2001: 3, 15-16). So it was, that "masculinity seemed more and more simply the nature of any non-dependent, disinterest truth-telling," endowing the modest witness "with the remarkable power to establish the facts" as if his sex, gender and race is invisible (Haraway, 1997: 24, 32).

In the case of Boyle, witnessing brings together the *material technology* of the air-pump; a *literary technology* that uses narrative and visual representations to "mimic" the phenomena of the pump for those who could not directly witness the experiment; and a *social technology* that not only incorporates the conventions among experimental philosophers to make knowledge claims but purposefully excludes the feminine and thereby removing women from the scene of action, in pursuit of a masculine modesty (original emphasis, Shapin and Schaffer, 2011 [1985]: 25; Haraway, 1997). Regarding the contributions from Haraway (1997) and Potter (2001) we can conclude this apparatus of knowledge production is also gender-in-the-making. For as Haraway shows "the story of Boyle and the experimental way of life" is a "figure for technoscience" as despite some reconfigurations the practical inheritances from the Boyle's scientific method and "what may count as reliable knowledge in technoscience" remains potent (Haraway, 1997: 33, 268). The credibility of those who attest to what they have witnessed is never finished, it must be continuously legitimised; and a figure of the modest witness as self-evident, invisible and without culture has the effect of re-constituting the masculine gender as the unseen eye (I) (Haraway, 1997). It is through the work of Haraway (1997: 24-25), we can understand the legacy of the "culture of no culture", who's modest witness is a figure of the heroic scientist as a legitimatised ventriloquist, acting as a "transparent spokesman" on behalf of the object world without

opinion or biases from his corporeality. She writes, "He bears witness: he is objective; he guarantees the clarity and purity of objects" (Haraway, 1997: 24). Narratives about "objectivity" with the power to mirror reality, were crafted in the storytelling furnace of the Scientific Revolution and they "continues to get in the way of a more, adequate, self-critical technoscience committed to situated knowledge" (Haraway, 1997: 33). This is in part why Haraway draws an important distinction from Shapin and Schaffer (2011[1985]) on the "practice of credible witnessing" (Haraway, 1997: 33). Writing,

> Witnessing is seeing, attesting; standing publicly accountable for, and psychically vulnerable to, one's visions and representations. Witnessing is a collective, limited practice that depends on the constructed and never finished credibility of those who do it, of whom are mortal, fallible, and fraught with the consequences of unconscious and disowned desires and fears.
>
> (Haraway, 1997: 267)

To make situated knowledges possible, witnessing should be understood as a socio-material semiotic and affective practice that is always collective, partial and locatable; as "seeing is always seeing from somewhere" (Gram-Hanssen, 1996: 92).

When seeing is believing: how virtual witnessing blurs the irreal with the real

As forementioned in Boyle's scientific method, the literary technologies of virtual witnessing multiplied the number of witnesses who could attest to, and view indirectly, a prior experiment that happened elsewhere; "constituting a visual source" in itself (Shapin and Schaffer, 2011 [1985]: 61-62). Despite neglecting the significant of "gender-in-the-making" (Haraway, 1997), I find the work on virtual witnessing by Professor of Science Communications Studies David A Kirby's (2003, 2009) insightful as it propels witnessing into a contemporary context. Kirby too takes up the observations from Sciences Studies[56], in particular Shapin & Schaffer's *Leviathan and the Air-Pump* (2011 [1985]), to argue for a conceptualisation of virtual witnessing that

[56] There is an absence of observations from Donna Haraway's *Modest_Witness* (1997) creating gaps in his analysis.

accounts for audiences who witness 'phenomena' through visual popular culture, in particular science fiction film and television (Kirby, 2003). He is specifically interested in fictional films that receive consultation from scientists during the production stage and how this plays a role in communicating science and/or presents technological possibilities to the viewing public (Kirby, 2003, 2009). Arguing science fiction film acts as a powerful "virtual witnessing technology" because it blurs the distinction between virtual and direct witnessing as the "natural phenomena" represented on screen has "never actually been directly witnessed (e.g. dinosaurs)" yet it is depicted in an evidential way (Kirby, 2003: 234-236). For example, in the blockbuster film *Jurassic Park* (1993) there are multiple scenes that "present the audience with the 'visual evidence' that birds evolved from dinosaurs" (Kirby, 2003: 253). Audiences are invited "to see scientifically" becoming "witnesses" of the experimental scenes on screen as if they are public demonstrations[57] (Kirby, 2003: 236). He suggests because of the visual technologies of filmmaking (i.e. computer generated imagery) and the consultation from scientists, the irreal is taken up[58] as real (Kirby, 237-240). This thinking is extended to consider how 'scientific' documentaries are virtual witnessing technologies, as what is seen on screen is constituted by the witnesses as referents to the 'real' and 'natural' world (Kirby, 2003: 247). Working at the intersection of Cultural Studies and Film and Media Studies, Vivian Sobchack examines how the use of documentary footage in fictional films, and vice versa, has blurred the boundary between irreal and real, figural and fact (Sobchack, 2004: 267-268). Arguing for audiences to distinguish what is fiction is not always done by 'semiotic regulations of spectatorship'[59] but depends on their subjectivity, knowledge and social investments that frame the text (Sobchack, 2004: 267-268).

While Kirby (2003) points to the ability of visualising technologies to create images of technological and scientific possibilities in the 'audience's mind' he pays no attention to the obvious role of the imagination. He characterises the collapse between

[57] Noting, "Film-makers who consult with scientists explicitly state their need for 'reality' - based science" (Kirby, 2003: 240).

[58] This is influenced by Vivian Sobchack (2004: 267-268), who uses 'taking up' to connote the audience's active participation in making meaning and to distinguish from 'making up'.

[59] My understanding of this is, as an example, the title cards that start at the beginning that read 'some scenes created for dramatic effect'.

reality and effect in filmmaking as "perceptually realistic" as audiences perceive the irreal as real based upon their perception and the cues the viewer has previously encountered (Kirby, 2003: 238-239). Arguing this enhances the "film's persuasiveness" and thus "its ability to act as a virtual witnessing technology" (Kirby, 2003: 238). I would argue this corresponds to Spinoza's example of imagining a winged horse, discussed in chapter three, as he contends it is not error of the imagination to imagine the non-existent, as the irreal can be perceived as existing unless attached to an idea that eliminates the possibility of its existence (Spinoza, 1996: 65-66). Thus, our perception informs how we make affirmations and negations about our images and ideas that are formed through bodily affect, i.e., sensory knowledge (Spinoza, 1996: 66). Sobchack echoes Spinoza's notion of sensory knowledge, when she writes, "We see and comprehend and feel films with our entire bodily being, informed by the full history and carnal knowledge of our acculturated sensorium" (Sobchack, 2004: 63). Arguing photography, cinema, television and computer screens are culturally pervasive perceptive technologies that remake and transform "our bodily sense" of "being-in-the-world" (Sobchack, 2004: 135-136). Encounters with these technologies transform us as *embodied subjects* and alter our perception towards the world, ourselves and others (original emphasis, Sobchack, 2004: 136-137). The abilities of visualizing technologies to extend our capacity to 'see' is material, socioculturally and historical situated (Sobchack, 2004: 138). As Sobchack suggests,

> Our vision is neither abstracted from our bodies nor from our other modes of perceptual access to the world. Nor does what we see merely touch the surface of our eyes. Seeing images mediated and made visible by technological vision thus enables us not only to see technological images but also to see technologically.
>
> (Sobchack, 2004: 139)

Therefore, to see - to attest - to 'virtually' witness the 'reality' represented on screen is always a socio-material, affective and limited practice that happens through bodies and technologies in strategies of power-knowledge (Haraway, 1997: 267). Any image created in the imagination through virtual witnessing technologies such as "'here is what a comet looks like', 'here is how dinosaurs communicate', 'here is an effective cloning protocol', etc." is affirmed or negated through perception and therefore, is fallible, partial and situated (Kirby, 2003: 258).

For fictional demonstrations of scientific and technological possibilities (within cinematic narratives) to succeed as virtual witnessing technologies, the audience must reach a social consensus about the 'facts' seen on screen through their embodied vision and their sociocultural place in the world (Kirby, 2003; 2009; Sobchack, 2016: 64; Sobchack, 2004). The legacy of the experimental method is the cinema is made into a "theatre of persuasion" (Haraway, 1997, 25); with the moving image as a technological tool to disseminate the scientists' interpretations of 'nature' and "individual's acts of seeing" are made powerful by collective agreements on what "ought to be believed" (Kirby, 2003: 258). Importantly, as Sobchack argues, the "spectatorial engagement" with film may be "cued, structured" and "contained by conventional cinematic practices" but it is ultimately our "cultural, and embodied experience and [situated] knowledge that governs how we first take up the images we see on the screen and what we make of them" (Sobchack, 2004: 273). In other words, we do not leave our embodied histories at the cinema door (Gatens, 1996: 105). To make it possible for audiences to inhabit the position of witness, to attest to the technoscientific future seen on screen as a coming reality requires specific strategies of power-knowledge and it is performative, relational, sociocultural and historically situated. I contend that moving-images, photography, video, television and film are *made* virtual witnessing technologies through specific subject-object relations that bring bodies and technologies into arrangement and open up prior encounters. I wish to extend Kirby's (2003) conceptualisation of 'virtual witnessing technologies' to include TED Talks and other video media that is choreographed to mimic technological and scientific demonstrations. This will become clearer in the later part of this chapter, in particular how the practice of witnessing brings into being transhumanist imaginaries as audiences are invited to witness the technological possibilities of transhumanism. Before, we get to that point, it requires an understanding of the legacy of scientific heroism and how the figure of the modest witness is reconfigured into the tech futurist.

Encountering Newton and Watson: figuring scientific heroes in the work of Maureen McNeil

Writing in the early nineties but arguably still relevant today, historian David Noble observes that in spite of the "efforts to recruit women into so-called traditionally masculine scientific fields" little attention is paid to how these fields became masculine (Noble, 1992: xiv). Challenging the assumption that the Western masculine culture of learning, for which science emerged, is just an automatic and inevitable extension of ancient patriarchy (Noble, 1992: xiv-xv). He argues, women were not merely excluded but rather through its evolution this culture of science has been defined in defiance of women and as such the world of science remains a hostile and alien culture for women, where they face discrimination (Noble, 1992: xiv). Haraway notes, "Several scholars have commented on the proliferation of violent, misogynist imagery in many of the chief documents of the Scientific Revolution" (Haraway, 1997: 33). As previously discussed, Boyle was living through a time when gentlemen scientists were dissociating from alchemy traditions deemed feminine, and through the church's concept of witchcraft heresy too became associated with women (Haraway, 1997; Noble, 1992: 229; Ehrenreich and English, 2010). Noble writes, "The feminization of witchcraft was but the reverse side of the demonization of women by the clerical world without women" (Noble, 1992: 207). Out of this emerges The Royal Society, and the anxious membership of this new academic and "clerically sanctioned scientific organisation" had to be seen to be guarding themselves against any signs of religious sectarianism and heresy, emphasising science is a reliably "masculine" endeavour (Noble, 1992: 229).

This in part captures the "anxieties over gender", sex, sexuality and race in this period, for as Haraway notes, "Boyle could not risk his modest witness's being a" feminine man (haec vir) (Haraway 1997: 29-30; Potter, 2001: 14). Consequently "he worked to produce a new form of masculinity conducive to the new science as he envisioned it" (Potter, 2001: 3). As Haraway elucidates,

> The new science redeemed Boyle's celibate, sacred-secular, and nonmartial man from any gender confusion or multiplicity and made him a modest witness as the type of specimen of modern heroic, masculine action – of the mind.
>
> (Haraway, 1997: 32)

Conquering nature was the reward for "manly valour" of the mind (Haraway, 1997: 33). The urban dwelling 'new man of science' counters the masculinity of the traditional figure of the manly "warrior hero" who engages in martial art combat on the battlefield (Haraway, 1997: 31; Potter, 2001: 13). Thus, out of the "world without women" (Noble, 1992) emerges a figuration of the scientific hero[60]. I now turn towards Professor Maureen McNeil, an interdisciplinary feminist researcher working in between the sub-disciplines of Cultural Studies of Science and Technology and Feminist Technoscience Studies, who expands on the work of Haraway[61] (1997). In *Feminist Cultural Studies of Science and Technology Studies*, McNeil (2007: 44, 67) shows how the personal account of James Watson reconfigures the seventeenth-century scientific hero into a hero "much more overtly and aggressively heterosexist and masculine"; and this is important to the configuration of the tech futurist figure that I will discuss later in this chapter. She argues, despite the differences between the twentieth-century scientific hero to the chaste, sacred-secular, non-martial predecessor, the legacy of Boyle's "modest witness . . . of the mind" (Haraway, 1997: 32) endures. Continuing the work of Haraway, McNeil offers a way to examine how figurations of scientific heroes get their meaning and her study of Isaac Newton as a heroic figure helps structure cultural analysis of figurations. Noble describes Newton as epitomizing "both the mechanical philosophy and the ascetic scientist, the twin orthodoxies of the renewed world without women" (Noble, 1992: 232). So, I proceed from here by first discussing the making of Newton before introducing James Watson as a re-figuring of the modest witness as overly heterosexist with "scientific prowess" (McNeil, 2007: 66-67).

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[60] "Figuration is a complex practice with deep roots in the semiotics of Western Christian realism" (Haraway, 1997: 9).

[61] Noting, how Haraway through her interrogation of Shapin and Schaffer's *Leviathan and the Air-Pump* (2011 [1985]), recasts it as an investigation "not only of the making of modern science, but also of the making of modern gender relations" (McNeil, 2007: 66).

McNeil argues that a Cultural Studies approach acknowledges that science accrues meaning through cultural processes and "the contemporary meaning of science" is constructed across various cultural locations and material forms (McNeil, 2007: 28, 39). This approach can challenge the traditional history of science practice 'to tell it like it is' (McNeil, 2007: 27-43). The chapter 'Newton as National Hero' (2007) is concerned with the influence and mobilisation of Newton as a figure in late eighteenth century Britain. McNeil is rightly critically of modes of writing that naturalise 'heroes' of science as if 'the *real* Newton' will delegitimise the cultural modes of *making* Newton (original emphasis, McNeil, 2007: 38-43). She argues that by letting go of the pursuit of the '*real* Newton' we can develop understandings of how figures are constructed (original emphasis, McNeil, 2007: 38-43). In a 'theoretical pivot'[62] McNeil uses Benedict Anderson's concept of imaginaries (2006) to denaturalise the historical accounts of Newton and explores the makings of a cultural imaginary of Englishness in the production of Newton's image (McNeil, 2007: 29-31, 42-43). "In this sense there is no single Newton" but rather figurations of Newton that come to matter and accrue meaning and this is made clear through investigating how figures, such as Newton, are "used as a symbol or lodges as part of the popular imaginary" by tracing patterns and practices (McNeil, 2007: 28).

McNeil proposes a good place to begin an analysis of how hero figures are produced as cultural signifiers is the cultural site where figures are encountered (McNeil, 2007: 28, 35). McNeil states these places of encounter provide ". . . a potentially fruitful area of investigation for those concerned with the role of science in culture, with national heroes and/or with popular culture" (2007: 35). McNeil (2007: 25) gives the examples of a twenty-first-century Brit encountering Newton as a postage stamp or as a statue at Westminster abbey. Therefore, as articulated in chapter three, the figure of Newton as a national hero is given an external form through the transformation of social relations and material labour into an object (McNeil, 2007; Ahmed, 2000). As I have discussed, encounters do not have to be face-to-face and as Sara Ahmed (2000: 7, 15) explains, reading can also be considered as a meeting between the reader and the

[62] In chapter three, in accordance with McNeil's (2007: 42-43) theoretical framework to do Cultural Studies of Science, I outline the usefulness of imaginaries to study the practices of technoscientific cultures.

text. “Such encounters are always mediated and partial” and therefore, I would suggest figurations made through encounters are always becoming (Ahmed, 2000: 7, 15). Here is a recent example of encountering Newton. In November 2023, the firing and rehiring of Sam Alterman as CEO of the artificial intelligence company Open AI, the creators of ChatGPT, caused a media storm and shocked Silicon Valley. On the 21 of November, the podcast *Hardfork* by *The New York Times* released their interview with Alterman (Roose and Newton, 2023b). What caught my attention was the use of the figuration of Newton by Alterman and his fellow co-founder of Open AI, computer scientist Ilya Sutskever (Roose and Newton, 2023b). Alterman invokes a figuration of Newton to explain the development of OpenAI’s model of artificial intelligence. In response to the question by the host (coincidentally named) Casey Newton, “What are some of the barriers to getting to that place where we’re doing novel physics research?” (Roose and Newton, 2023b), Altman answers;

> . . . The model needs to be better at reasoning. An example of this, that my co-founder Ilya uses sometimes that is really stuck in my mind, is that there was a time in Newton’s life where the right thing for him to do was to read every math textbook he could get his hands on. He should talk to every smart professor, talk to his peers, do problem sets, whatever. And that’s kind of what our models do today. And at some point, Newton was never going to invent calculus if it didn’t exist in any textbook. At some point, he had to go think of new ideas and then test them out and build them. And that phase, that second phase, we don’t do yet. And I think you need that before we want to call it AGI.
>
> (Roose and Newton, 2023b)

Here the figure of Newton signifies scientific heroism through discovery and practice (idea, test and build), producing an imagining of humanlike artificial intelligence. The scientific hero is reconfigured by transhumanist imaginings of human-machine relations, specifically super-intelligent machines, and yet continues the “modest witness” legacy of “being of the mind” (Haraway, 1997: 32).

Returning to the work of McNeil, in the chapter ‘Making twentieth-century scientific heroes’ (2007) she focuses on James Watson’s *The Double Helix* (1968). First published in 1968 and noted by McNeil as “the most popular scientific memoir of the

twentieth century" the bestseller is Watson's "personal account of the research associated with the discovery of the double-helix structure of DNA" (McNeil, 2007: 44, 46). McNeil analyses *The Double Helix* (1968) alongside four books on "women's lives as working scientists" that were highly circulated among the English-speaking world of the nineteen seventies and eighties as "Watson's narrative haunts [these] other texts" (McNeil, 2007: 44-45). McNeil illuminates how with popular appeal *The Double Helix* folds in the trope of scientific discovery into adventure memoir meets detective novel, to conjure " . . . a powerful image of modern scientific heroism, which was both highly controversial and very attractive" (McNeil, 2007: 46). The significance of this text to the "history of modern natural science" is, as argued by McNeil, the powerful refiguration of the "quintessential modern, secular" heroic scientist through the character of James Watson as an ordinary, sexy, competitive, racing guy who happens to be profoundly threatened by feminism (McNeil, 2007: 46-47, 65). On the other hand, the high qualified and accomplished female scientists, even though positioned as 'modest witnesses' faced repeatedly delegitimising ploys (McNeil, 2007: 66). Made into the "object of vision" (Haraway, 1997: 32) through the scrutinising male gaze and the mobilisation of the label of 'feminist' their claim to be an objective witness was undermined and delegitimised (McNeil, 2007: 66). For Watson the figure of the feminist "posed the greatest threat to science" without explanation as to why he finds feminism so threatening (McNeil, 2007: 57-60).

As McNeil articulates, "Watson's imaginative construal of scientific heroism" constituted a distinctive set of tropes of the scientific hero as an ordinary, masculine, racy, competitive, cerebral, secular, heterosexual and anti-feminist figure (McNeil, 2007: 47-65). As the world of science was made more accessible and 'open' to the public, through the figuration of Watson as an ordinary guy, readers of *The Double Helix* (1968) were invited to identify themselves with him (McNeil, 2007: 47). McNeil writes, "Of course . . . these imaginative positionings were also intensely gendered" (McNeil, 2007: 47). Flourishing in a "man's world" Watson was a modern hero, telling stories of being distracted by the undergraduate girls around Cambridge and adventurous stories of exclusionary homosocial friendships among male researchers, both collegial and competitive, that help to shape modern science (McNeil, 2007: 48-49). In the late twentieth century, and early twenty first century, science became defined by speed and competition and Watson's "heroic scientific adventure was portrayed as a

'race'" (McNeil, 2007: 51). For the reader encountering *The Double Helix* (1968), to inhabit this figuration of Watson's scientific hero is an imaginative practice that is embodied, affective and material-semiotic, which suggests not every reader can take up this position. There is a relationship between the gendered figurations of scientific heroism and the embodied experience of being gendered. It exemplifies how the imagination is not apart from the production of gender relations and this is important to consider throughout this thesis.

Despite no longer accruing heroism through celibacy and sacred-secularism, like the seventeenth-century gentleman scientist, the hero of *The Double Helix* (1968) is still part of Robert Boyle's legacy of "a modest witness . . . of the mind" (Haraway, 1997: 32; McNeil, 2007: 67). The figure of 'the modest witness' is not "banished" by the figure of the twentieth-century scientist, argues McNeil, but rather it is refigured into a "heterosexist, virile 'modest witness'" that "offers a new alignment of heterosexual masculinity and scientific prowess" (McNeil, 2007: 66). Through the contributions of Haraway (1997) and McNeil (2007), I argue the figure of the technological futurist is a reconfiguration of the 'modest witness' and the scientific hero as described by McNeil (2007). My approach to analysis is also influenced by McNeil's (2007) cultural examinations of the figurations of Newton and Watson. Continuing the tropes of masculine, racy, cerebral, secular and heterosexual (McNeil, 2007) and the legacy of Boyle's technoscientific practices (Haraway, 1997), the tech futurist figure comes to speak on behalf of the transhumanist future and promises to "save" humanity through the merging of human and machine. In the next section, I discuss the tech futurist in more detail.

Refiguring the hero in technocultures of mythmaking

Following his work as an engineer at Google, Guillaume Verdon founded the artificial intelligence start-up Extropic, and he is outspoken about what he perceives as 'the system' acting against the development of powerful technologies and the P-(doom) discourse (Roose and Newton, 2023a). P-(doom) is the measurement of probability that AI is or will become an existential risk to humanity. A reporter at Forbes, the media company known for ranking billionaires, revealed Verdon was also operating as @BasedBeffJezos, the X (formerly Twitter) account that is described as "leading" the

"tech elite effective accelerationism movement"[63] (Baker-White, 2023). My understanding is "effective accelerationism" ("e/acc" for short) is a syntax for the imagining of super intelligent machines and capitalism let loose from any regulating "constraints", and it is made through social practices that predominantly bring men together and make some of them figureheads. I find there is little to gain in a purist approach to what constitutes as transhumanism but arguably "e/acc" is only a step away from the cautionary storytelling of transhumanists that "warn" about the potential negatives of artificial intelligence that I will discuss later on. The point of this introduction to Verdon is to draw attention to a statement he made in 2023. In an article on "e/acc" for *The New York Times*, journalist Kevin Roose quotes[64] Verdon as saying, ". . . I was thinking, let's make an ideology where the engineers and builders are heroes" (Verdon *cited in* Roose, 2023). Heroes who will presumably save the future by letting go of any constraints on artificial intelligence and thereby usher in the transhumanist evolution of the human. This is an example of the futurism that puts its faith in technology to rescue "its naughty but very clever children" that Haraway cautions us to avoid (Haraway, 2016: 3). I believe Verdon's desire for a hero is illustrative of how the mythmaking cultures of Western technoscience, such as those within Silicon Valley, need a heroic figure for transhumanist imaginaries to take hold and how the once scientific hero is reconfiguring into a technological futurist.

To situate Verdon's comments that bring together the imagining of a future of unleashed "techno-capital singularity" (Roose, 2023) and the notion of computer engineers as heroes, I turn to Paul Dourish and Genevieve Bell (2011). They explain that in the nineteen eighties and early nineteen nineties computer scientist Mark Weiser and his team of Palo Alto Research Center (PARC) researchers inhabited "a world very much bookended" by mythical stories of the personal computer and the information age (Dourish and Bell, 2011: 2). Weiser and his team followed the injunction of "early PARC researcher Alan Kay" "to predict the future by inventing it" staking "their own claim in the technomythscape" (Dourish and Bell, 2011: 2). Predicting the future is an imaginative, embodied and limited practice, therefore, it is reasonable to suggest

[63] Even with a new name these technovisions are transhumanist imaginaries and as I argue in the introduction describing them as movements is an analytic pothole.

[64] As transcribed from an audio discussion on the social media service X (formerly Twitter).

arrangements of power-knowledge technologies makes this imagining productive. Consider this statement by computer scientist and roboticist Hans Moravec who popularised the imaginary of uploading the mind into machine, that I will discuss in chapter six, ". . . the future *can* sometimes be predicted, if one steadily nudges events towards the prediction!" (original emphasis, Moravec, 1999: 12). He then goes on to genealogically link historical men by their perceived ability to predict and then realise the technological future. He writes:

> In the thirteenth century Roger Bacon imagined high-speed worldwide travel – via seven-league boats, rather than flying conveyances. In the sixteenth century Leonardo da Vinci designed aircraft – powered by human muscle, rather than combustion engines. In the nineteenth century Jules Verne anticipated submarine warfare – against wooden sailing vessels, rather than armored battle fleet guarded by electronic sense and aircraft. Shortly after, H. G. Wells anticipated a world of the distant future with humanity radically transformed – by Darwinian evolution, not directed engineering.
>
> (Moravec, 1999: 12-13)

Despite what this narrative might suggest there is no innate essentialist qualities to these men that gives them the ability to imagine the technological future into being. This conception of the future-present collapses the real and imaginary and out emerges a figuration who can anticipate the technological future, made possible by 'cutting it off' from the social relations of labour and production (Ahmed, 2000).

We will encounter Moravec again, but my inclusion of his work here is to emphasises how the computer science cultures of "predicting" the future inspires my use the term "tech futurist." Tech futurist signifies this perceived ventriloquism for the technoscientific future through human and machine arrangements, immanent to the cultures of transhumanist imaginaries. This will become clear as this chapter develops. Although Dourish and Bell were commenting specifically on the technovisions and technotales of Palo Alto Research Center (PARC) and ubiquitous computing it has relevance here. They write,

> That these myths emanated from the center of Silicon Valley gave them a sense of inevitability as well. After all, if smart engineers and computer scientists say this is our future, then surely it will be true . . . And like all good myths, there would be heroes, seemingly impossible tasks, perils, pitfalls, and dangers, and of course, in the end, glory.
>
> (Dourish and Bell, 2011: 2)

My approach differs from Dourish and Bell (2011) methodologically and theoretically, but I find the above helpful in highlighting the assemblage of discourse, narratives, heroic figurations and associations that make the imagined real. They may not use the concept of imaginaries, but Dourish and Bell are interested in ubicomp as an "imaginative effort" and how an understanding of technology in mythical terms can "uncover the ideas that shape our technological world" (Dourish and Bell, 2011: 3-4). You could easily replace their use of 'myths' with 'imaginaries' and get the point I have been making.

The term "futurist" is to connote the imaginative practice of predicting the future and it is also influenced by how Haraway describes futurism in *Staying with the Trouble* (2016) as creating utopic technological futures but with a game-over attitude (see chapter one). Haraway outlines how she wishes to eschew futurism's "affects of sublime despair and its politics of sublime indifference" (Haraway, 2016: 4). It also inspired how 'futuristic' and 'futurist' is used across media[65] to connote human-machine relations that are imagined as futural. The tech futurist figure is a material-semiotic ventriloquist for the technoscientific future yet-to-come and it is made possible because of the masculine tropes of Western technoscientific cultures. Haraway observes, ". . . technoscience is a millenniarian discourse about beginnings and ends, first and last things, suffering and progress, figure and fulfilment" (Haraway, 1997: 10). In chapter six, I explore how the tech futurist is a figuration of the fantasy of the self-birthing man but for now, consider this from anthropologist Stefan Helmreich; in *Silicon Second Nature: Culturing Artificial Life in a Digital World*, he writes,

[65] An example of this is an episode of the *Elon, Inc.* podcast by Bloomberg (Chafkin, Frier, Hull: 2024) when guest Sarah Frier responses to a misunderstood question on her seeing prototypes of the Tesla Inc.'s CYBERTRUCK driving around San Francisco by saying "I think I'm just surrounded by futurists."

"Computers are figured as places to being again" (Helreich, 1999: 92). The tech futurist is semiotic signpost of this millenniarian discourse (Haraway, 1997:10) and the computer is made a signifier for the beginning and the end of humanity. Therefore, I argue Verdon's desire for a hero is historically rooted in the Christian Millennialism that emerged from the clerical culture and transcendence became attached to technology in the hope of "a new earthly paradise" (Noble, 1999: 21-23). As I will show in this thesis.

Imagining a future on Mars through Elon Musk's CYBERTRUCK

Elon Musk is a compelling case study for considering the heroic figure of the tech futurist, due to his inescapable dominance in the cultural imagination and popular discourse concerning the transhumanist future (Schuster and Woods, 2021). Taking the billionaire Musk as their case study, in their book *The New Patriarchs of Digital Capitalism*, Ben Little and Alison Winch (2021: 58) characterise an "entrepreneurial geek masculinity" as the emerging "paradigm of a heroic man" for a new generation. There is, they argue, a cultural ambivalence to the tropic celebrity tech founders as either genius superhero or super villain in popular narratives (Little and Winch, 2021: 57). For Little and Winch (2021), the celebrity mediatisation of the 'visionary founders' of Silicon Valley is distinctly recognisable in fictional representations of geek masculinity[66]. Therefore, they connect Musk's performance as a celebrity founder to "these evolving new forms of masculinity within popular culture" (Little and Winch, 2021: 59). They write,

> . . . at its most stereotypical extreme these characters appear as cerebral, wounded by early trauma (bullying schoolmates or angry/absent father), emotionally incapable rather than repressed, and they are armed with computer engineering expertise rather than mechanical or martial skills. Instead of performing (often violent) 'morally correct' action to defeat adversaries, these heroes outthink their opponents, manipulate the system, or find loopholes to enable them to win. Like

[66] They (Little and Winch, 2021) give the example of the character Riley in the American CBS television programme *Scorpion* (2014).

> previous variants of 'hegemonic masculinity' these forms of geek or 'hacker' heroism inaugurate a social order where they dominate.
>
> (Little and Winch, 2021: 58)

Some of the qualities of this 'geek masculinity' (Little and Winch, 2021) are recognisable when we consider the mediatisation of Elon Musk and science fiction protagonists such as Nathan Brown on the television programme *Upload* (2020) I discuss in chapter six. For Little and Winch, Musk's "geekiness" is a new characterisation of a heroic and hegemonic masculinity as represented by his celebrity persona (Little and Winch, 2021). However, I take caution with the description of this as a new and emerging form of hegemonic masculinity as I argue it is tethered to a history of gender relations in the making of technoscience cultures. As discussed earlier in this chapter, since Robert Boyle's seventeenth-century modest witness, masculine virtue has been considered cerebral (Haraway, 1997), and martial arts heroism was transfigured into qualities of modesty and chastity (Potter, 2001). The "arming" of computer engineering skills as a form of heroism (Little and Winch, 2021) is relevant but I prefer to consider how this produces the heroic figure of the tech-futurist as if they can speak on behalf of the object – in case, the computer – because of social relations of science and technology that are situated in histories of white patriarchal capitalism.

Furthermore, characterising hegemonic masculinity as 'new' can also result in an oppositional relationship with a 'traditional' hegemonic masculinity as evidenced by Little and Winch's (2021) analysis of Musk's appearance on *The Joe Rogan Experience* podcast. They frame Rogan and Musk as masculine opponents (Little and Winch, 2021: 75-80). Writing,

> The jumping-off point is Musk's particularly geeky way of framing his moral mission [to make the future better]. But Rogan's role becomes to reconcile that with the more traditional forms of masculinity that he demonstrates. He creates a space for two forms of masculinity to merge. The discussion of social justice and kindness must immediately be transformed into a discussion of weapons to maintain the masculine status of the two men.
>
> (Little and Winch, 2021: 79)

Arguing further, that Musk is granted some modesty by Joe Rogan as it is Rogan in the traditional masculine role who sets up a comparison between the samurai sword and the Tesla, transforming social justice into weaponry (Little and Winch, 2021: 79). The authors suggest they "have no reason to doubt Musk's sincerity" when it comes to 'social justice' (Little and Winch, 2021: 80), such as his ambition to halt the capabilities of artificial intelligence or colonialise Mars to 'save' the future of humanity. All the while acknowledging his methods "involves laying claim to an emerging celebrified form of hegemonic masculinity, and, as a result, accruing great wealth, power and influence" (Little and Winch, 2021: 80). This could imply there is a separation between transhumanist ideas and the power relations of bringing these imaginaries into being. However, in this thesis I am making the argument that transhumanist imaginaries cannot (and should not) be understood as outside of the re-production and enactment of power relations that privilege whiteness, hetero- cis masculinity, wealth, class and ableism. As I emphasis in chapter two, if we have any hope in intervening in futures that reproduce and widen inequalities we need sharp-edged analysis. How might Musk and other transhumanist imaginers, through the use of material technologies, social technologies, and literary technologies (Shapin and Schaffer, 2011 [1985], Haraway, 1997) be part of an apparatus of technoscientific production that endows the heroic figure of the tech-futurist with ability to speak on behalf of the future? How is this gender-race-class-sexuality-and-ableism in the making?

In Little and Winch's characterisation technology is weaponised and marketed to "young, intellectually curious men" by hegemonic masculine men as "heroic-world-saving work" (Little and Winch, 2021: 77-79). They argue 'tech founders' have extracted technological tools and turned them into weapons to dominate (Little and Winch, 2021: 77-79), but I would also like to consider the imaginative and tropic aspect of these "high-tech artifacts" (Sofia, 1984: 48). How they are symbolic of a transhumanist future and loaded with cultural meanings, such as Tesla Inc's[67] CYBERTRUCK. The electric battery powered CYBERTRUCK is nostalgic in design, as if imagined by fans of nineteen eighties science fiction, it could also be likened to the vehicles of the 2017 film *Bladerunner 2049*. Symbolic of the transhumanist imagining of an extraterrestrial future, in a promotional image for the CYBERTRUCK, it is seen

[67] Musk is the CEO of Tesla

to be driving on a red dusty mountainous landscape that if your imagination allows could be the surface of Mars. This is an example of how the visual technologies of Tesla - as a company made into a signifier for the technological future - invites the public to virtually witness the CYBERTRUCK on Mars. As Zoë Sofia reminds us in her paper 'Exterminating Fetuses: Abortion, Disarmament, and the Sexo-Semiotics of Exteraterrestrialism*', ". . . high-tech artifacts are regularly depicted as extraterrestrial and futuristic" (Sofia, 1984: 84). Instead of delivering the promise of other worldly futures of the technicolourful, science-fiction culture pulls the extraterrestrial into the terrestrial, collapsing the "future onto the instant" (Sofia, 1984: 84). The CYBERTRUCK is promoted as "built for any planet" and promises to be "durable and rugged enough to go anywhere" (Tesla, 2023), despite reports of one getting stuck in the snow (Adarlo, 2024). I suggest the visualisations of the CYBERTRUCK[68] exempilifies Sofia's concept of "*Jupiter Space*"; where the "hyperreal" terrain is inseminated by the "spermatic" technologies of transportation, communication and information (original emphasis, Sofia 1984: 48). Sofia eloquently argues science-fiction iconography is sexo-semiotic, as the contours of "*Jupiter Space*" are "elaborated in visual complexes" which forms connects between "the male brain, the womb, outer space, city landscapes, grids of lights, microcircuits, the interiors of computers, skyscraper façades, and so on" (original emphasis, Sofia, 1984: 48). I will expand on Sofia's argument in chapter six, but for now, the materialisation of these high-tech artifacts get their meaning through visualising technologies and the practices of imagining and witnessing.

The transformation of material labour into an object through human-machine relations gives external form to the tech futurist figure (Suchman, 2017; Ahmed, 2000). Rather than being fixed technological tools that are extracted by the heroic tech futurist - they materialise together. Therefore, to understand how these technological tools come to dominant (Little and Winch, 2021) requires a consideration of the material-semiotic practices of imagining and witnessing. I argue for a Feminist Cultural Studies of Science and Technology (McNeil, 2007) perspective to account for the legacies of the tropic heroic scientist who is reconfigured into the tech futurist, inflected in the discourses, narratives, visualisations and practices of transhumanism. The figure of the

[68] Arguable as well as Musk's spacecraft company SpaceX: Space Exploration Technologies Corp.

tech futurist reproduces the tropes of the twentieth-century scientist; masculine, white, ordinary, secular, heterosexist with scientific prowess (McNeil, 2007). It also gives form to the ableist fantasy of merging the human body with technology in the promise of a transhumanist future (Goodley, 2014). To explain this further I turn to Dan Goodley's analysis of Oscar Pistorius as "a very desirable transhumanist phenomenon" in his book *Dis/ability Studies: Theorising Disablism and Ableism* (Goodley, 2014: 145).

The materialisation of transhumanist imaginings through the figure of Oscar Pistorius as a carbon-fibre superman

Oscar Pistorius as a sprinter is culturally significant because he raced competitively with carbon fibre prosthetic legs "against his able-bodied peers" (Swartz and Watermeyer, 2008: 188; Hickey-Moody, 2015). After his success at the 2012 London Olympics, Oscar Pistorius was convicted of murdering his girlfriend Reeva Rebecca Steenkamp. Dan Goodley argues Pistorius is symbolic of the "production of dis/ability" as both "hero/villain" for his once inspirational "transhumanist dis/abled masculinity" was resold as "fucked up" following his arrest (Goodley, 2014: 144-145). However, as Anna Hickey-Moody argues in 'Carbon Fibre Masculinity: disability and surfaces of homosociality' (2015),

> Pistorius' athletic success and his seemingly misogynist treatment of his female partner show the multiple investments that Pistorius carries with him as a combination of jingoistic national hero, misogynistic partner, technologized body, and disabled athlete.
>
> (Hickey-Moody, 2015: 145)

Like the figure of the twentieth-century scientific hero as masculine, anti-feminist and heterosexist (McNeil, 2007), Pistorius' misogyny does not subvert his heroism rather, as Hickey-Moody points out, "being a misogynist is core to the operation of homosociality" between men (Hickey-Moody, 2015: 143). In patriarchal cultures

misogyny is productive in and to the social lives of men[69]. For example, commenting on the social circles of tech leaders in Silicon Valley, reporter Kara Swisher writes ". . . the exclusion of women was not an oversight but deliberate . . . some individual men had a very deep problem when it came to women and nobody was telling them to stop" (Swisher, 2024: 177). In the cultural imagination Pistorius figured as "a high functioning machine–human hybrid and a cyborg poster boy for disabled people" that transhumanists could love (Goodley, 2014: 145). Carbon fibre materialises as masculine through the way it produces homosocial technologies that dominant spaces (Hickey-Moody, 2015: 140) and in the case of Pistorius its perceived ability to transcend the fleshy-impaired body. His tech futurist heroism is best symbolised by his qualification and success at the 2012 London Olympics and Paralympics as "Pistorius was positioned as too good, too specialized, to compete with mere humans" (Hickey-Moody, 2015: 145).

Astutely described by Goodley as a "transhumanist's wet dream" (Goodley, 2014: 145), the figuration of Pistorius in the 2012 London Olympics and Paralympics enacts ableist fantasies of enhancing the human to perfection through the erasure of disability by carbon fibre (Goodley, 2014: 25, 144-145; Hickey-Moody, 215). As Leslie Swartz and Brian Watermeyer (2008) ask, "Surely, the place of bodily perfection and desirability we are called to reach for is not a place inhabited by disabled people" (Swartz and Watermeyer, 2008: 189). They suggest athleticism in general discursively produces mythical virtues of bodily perfection and this is "closely linked to broader cultural ideas of bodily ideals" (Swartz and Watermeyer, 2008: 189). Therefore, the acceptance of Pistorius racing in able-bodied competitions asks questions about the "virtues of culturally designated bodily perfection" (Swartz and Watermeyer, 2008: 188-189). Through athleticism strive to exclude bodies, these very bodies are made adject, undesirable and damaged (Swartz and Watermeyer, 2008: 189), and this is gendered, sexed, racialised and ableist. As articulated above with the example of Newton (McNeil, 2007), the 'real' Pistorius has little relevance here. Rather I want to draw attention to how the tech futurist figure of Pistorius reinforces white masculine

[69] There was "misogynist imagery" in "documents of the Scientific Revolution" (Haraway, 1997: 33) and the masculinity of Western technoscience culture is rooted in the enduring "celibate, misogynist, and homosocial clerical culture of the Latin Church" (Noble, 1999[1997]: 209).

ableism through a symbolic heroism and the destabilisation of the boundary of man-and-machine. Through the admittance into able-bodied competitions, the figure of "Pistorius also suggests power operates across an entangled series of relationships between humans and non-flesh materials that are productive of power relations" (Hickey-Moody, 2015: 143). It is key to understanding the power effects of transhumanist imaginaries and how the tech futurist reveals the ways in which power relations are re-produced through the entanglement of human and "non-flesh materials" (Hickey-Moody, 2015: 143). To explore this further, in the next section I examine ableism-in-the-making through the example of Neuralink and an imagining of existential risk.

"Pigs in Cyberspace": ableism in-the-making in transhumanist imaginings of Neuralink implants

On YouTube the public can view the 2020 progress updates of Neuralink, the "neurotechnology" company started by Elon Musk to produce brain-computer interface (BCI) implants to combat so-called existential risk (Neuralink 2020; Regalado, 2017). This is a biotechnological business with ableist ambition, as the company line of developing a BCI to "help" people with severe brain injuries coalesces with the hope Neuralink will "fight"[70] off the presumed "threat" of artificial intelligence through mass adoption of their implant (Urban, 2017; Masunaga, 2017). According to The Verge, about six years after its launch, in 2023 Neuralink secured approval from the United States food and drug administration (FDA) for human trials with the intent of testing technology designed "to help those with paralysis control devices"[71] (Pierce, 2023). The company is seeking, as Journalist David Pierce writes, "people with quadriplegia due to vertical spinal cord injury or ALS [motor neuron disease]" to take part in the study (Pierce, 2023). He reports, Neuralink is nowhere near testing their promised "all-encompassing brain computer" to 'aid' humans against the imagined threat of AI, rather

[70] I am reminded of Donna Haraway's (1991: 155) explication, as influenced by Zoë Sofia '(1984), that a certain perspective of a cyborg world is about "the final abstraction embodied in a Star Wars apocalypse waged in the name of defence".

[71] Journalists at the Verge report researchers at Stanford University are already testing BCI implants for people with ALS (Pierce, 2023; Song, 2023)

this study is a safety and efficacy test[72] (Pierce, 2023). In the case of Neuralink, the transhumanist vision of technologically 'enhancing' (by erasing) the essentialised impaired body is conflated with the fear of existentialist risk believed to be posed by artificial intelligence[73].

With this in mind it is reasonable for Professor of Disability and Ableism Studies, Fiona Campbell (2009: 73), to characterise transhumanism is "an unbridled form of ableism". She argues that while some disabled people may gravitate towards transhumanism in the hope of gaining "supra-abilities", an eschatological vision of enhancement may "present dangers" to individuals considered impaired as ableness is left intact and "the binary opposition of the normal and pathological" is reinscribed (Campbell, 2009: 63). It reminds me of Sofia's argument that there is a two-facedness to "modern technology" as "for every shiny good product there's a slimy bad by-product" and masculine cultures of technoscience try to persuade us "their bad side-effects are worth the cost" (Sofia, 1984: 48-49). But as Campbell's suggests, for those of us interested in intervening in the reproduction of ableism must go, ". . . beyond the dust of a mere *instrumental* argument about the attraction of post-human technologies for disabled people and focus on the discursive shifts in the overall meaning and positioning of abnormality" (original emphasis, Campbell, 2009: 73). It is important to consider the ableist relations in transhumanist imaginaries and how these are constituted through the abjection and fetishism of impairment. For some disabled people the entangled relationship between human and "non-flesh materials" (Hickey-Moody, 2015) is not always desirable, "chosen nor productive" (Goodley, 2014: 107). As Goodley writes, "Lifesaving tubes to feed and painful prostheses are hardly the stuff of sci-fi fantasy or transhumanist rebirth" (Goodley, 2014: 107). Therefore, when Campbell asks, ". . . is the evolution of the post-human figure/entity a 'way out' of impairment?" (Campbell, 2009: 63) she is highlighting the ableism that is fundamental to the imaginings of becoming transhumanist.

[72] The PRIME (Precise Robotically Implanted Brain-Computer Interface) study is to test the safety and efficacy of a three-part system from the surgical robot to the user app (Pierce, 2023).

[73] As an example of this, in an episode (Papadopoulos et al., 2023) of the *Elon, Inc.* podcast by Bloomberg, the imagined capabilities of Neuralink's brain implant congeals impairment with artificial intelligence.

This brings us back to the 1-hour-and-13-minute 'Neuralink Progress Update' (Neuralink, 2020). There is a lot going on in this video including a demonstration of a surgical robot and a failed interaction with a cyborg pig. The pigs are housed in three open top pens with their own human handlers who are wearing scrubs and face masks. Neuralink arranges human-animal-machine relations in ways that raises crucial questions about the production of power[74]. The pigs are fenced off from Musk who is delivering the progress updates (Neuralink, 2020) through a microphone to an audience of employees who are sat around black-clothed round tables strangely resembling a comedy club. There is an awkward interaction between Musk and the pig Gertrude who has a Neuralink implant. Gertrude is reluctant to appear on Musk's demands and this rebellion reveals to the audiences there is a backstage concealed behind a black curtain; like Boyle's 'public laboratory' it is actually a highly regulated space. The cyborg pigs are (quite literally) trapped in a material-semiotic relation with the human, as Neuralink makes their materialised flesh into a signifier of the coming transhumanist future. Eventually Musk returns to the stage and talks through a slideshow presentation with familiar technoscientific iconography to demonstrate the imagined future capabilities of Neuralink, before sitting down among the audience for a Q&A.

At the time of writing this video has over 2.5 million views on YouTube and it is rich for analysis, as those directly and virtually witnessing the carefully choregraphed 'progress update' are to be persuaded this future, as imagined by Neuralink (2020), is possible. While Kirby is specifically arguing filmmakers together with scientists and engineers portray technological possibilities in the hope of "stimulating desire in audiences to see these possibilities" as coming realities, I believe this is appliable here (Kirby, 2009: 43). Kirby elaborates it is not enough to have technological objects on screen it must be embedded into a narrative that "contextualizes technologies within the social sphere" (Kirby, 2009: 45). So, Musk establishes a narrative of the possibilities of Neuralink through demonstration, lecturing and a Q&A with the intention the audience will be persuaded this imagining of a transhumanist future is possible. I want to draw

[74] This question goes beyond this chapter but as Donna Haraway reminds us about the primate; "The primate body, as part of the body of nature, may be read as a map of power" (Haraway, 1989: 10).
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attention to when Musk takes a question from his social media platform X (formerly called Twitter), read out by an in-person audience member. The question is "Will you be able to save and replay memories in the future?" and Musk answers,

> Yes in the future I think you will be able to save and replay memories.
> I mean this is obviously sounding increasingly like a Black Mirror episode but uh well I guess they're pretty good at predicting.
> But yeah essentially if you have a whole brain interface everything that's encoded in memory you could upload you could basically store your memories as a backup and restore the memories.
> Then ultimately you could potentially download them into a new body or into a robot body.
> The future is going to be weird. [75]
>
> (Neuralink, 2020)

The use of 'save' and 'replay' signifies how this imagining is rooted in the cybernetic mythology of 'the information age' (Dourish and Bell, 2011) critiqued by Katherine Hayles (1999) for its belief that intelligence is codable information, therefore, disembodied. With a hint of irony, Moravec's essay 'Pigs in Cyberspace'[76] is an imagining of a bodiless human mind uploaded to the virtual cyberspace (Moravec, 1999: 168). In other words, we humans become the pigs. This idea of uploading the human memory is a materialised product of the imagination brought into existence through an incomplete assemblage of affect, associations and encounters between the human and non-human. Witnesses of the Neuralink (2020) 'Progress Update' video engage in an imaginative practice of "seeing technologically" through embodied encounters, figurations and power relations.

Through the material-semiotic figure of the cyborg pig, Musk invites the audience to become witnesses who can attest to a future of uploading your memories into a machine. This imagining and witnessing is happening outside the realm of the

[75] Black Mirror is the British television series popularised for its depicts of the potential societal harms from digital technologies.

[76] It also published as a standalone essay in The Transhumanist Reader (2013).

laboratory but I argue it mimics technoscientific and academic visual culture. As previously mentioned, Boyle's reports used visual representations to "mimic" prior experiments (Shapin and Schaffer, 2011 [1985]: 61-62), and I would argue the 'Progress Update' video (Neuralink, 2020) is mimicking a prior experience of when the Neuralink BCI was inserted into the pig's brain. These choreographed demonstrations involve the practices of imagining and witnessing, as well as the production of discourse, that I argue is only made possible because of the historical legacies of technoscientific culture. Haraway's conceptualisation of witnessing is a way to consider how the collective practice of witnessing is constructed through a partial credibility of who is doing the witnessing and the affect of attesting for these visions and representations (Haraway, 1997: 267). The use of Youtube multiples the potential witnesses who can give validity to Musk's imagining of a BCI that will 1) erase the imagined impaired body and 2) facilitate techno-transcendence and save humanity from extinction. It is not to say that every audience member gives credibility to this future as fact, rather, it shows how virtual witnessing is a powerful technology for legitimising and normalising transhumanist imaginaries made possible because of existing power relations. In the next section I elaborate on this argument through analysis of what I call 'tech talks'.

Tech talks: demonstrating the imagined future into being

TED is an acronym for 'technology, entertainment and design' and it is a non-profit organisation, describing their renowned TED talks as "influential videos from expert speakers on education, business, science, tech and creativity" available to watch in over 100 languages (TED, 2024a). TED is an expansive multiple media project that capitalises on communication and visualising technologies. It even has its own 'TED institute' to "unlock institutional knowledge" through partnerships with foundations and businesses (TED, 2024b). I argue TED is part of the legacy of the 'public laboratory' as if the production of knowledge is 'open' to the public when in actuality it is a highly regulated space. The organisation is best known for their global TED conferences that are staged and recorded to become TED Talks that can be watched on their website or

the video streaming platform YouTube. TED has platformed – with success[77] - notable figureheads of transhumanism such as Ray Kurzweil, Nick Bostrom and Audrey de Grey as I will discuss in detail later in this chapter. I characterise TED Talks that focus on the technological future as tech talks to narrow the scope but also to recognise how tech talks are not limited to the company TED. For tech talks are a performative demonstration of knowledge claims about the future. Therefore, in this thesis, 'TED Talk' is used for the specific and 'tech talk' the general.

The choregraphing of a staged expert speaker positioned to demonstrate the technological possibilities using visualisation technologies to a 'credible audience' of witnesses is not unique to TED but prevalent in Western technoscience cultures. So much so there are multiple fictional imaginings of tech talks in television, film and literature. Such as Professor Victor Stein's Royal Society lecture 'The Future of Humans in a Post-Human World'[78] in Jeanette Winterson's book *Frankissstein* (2019). Professor Stein is arguing for a future of AI that will facilitate the full transcendence of the biological body into machines (Winterson, 2019: 73-74). Another example is in the film *Transcendence* (2014), a dystopian portrayal of a vision of the future when human minds will be uploaded into machines. The plot centres around a (problematic) love story between protagonist Doctor Will Caster, as played by Johnny Depp, and his wife Doctor Evelyn Caster. A pivotal plot point is Will's keynote at a conference titled 'Evolve the Future' in which he outlines his hope for humans to transcendence into super intelligent machines. It is at this conference an unnamed man who is part of the extremist group 'Revolting Independent From Technology (R.I.F.T)' shoots him with a radioactive laced bullet putting an end to Will's human life[79]. A tech talk appears in the popular HBO television series *Succession* (2018) that satires a wealthy elite media

[77] Each TED Talk racking in millions of views but Ray Kurzweil is a particular successful TED speaker as he has multiple talks, an interview, features in TED blog posts and podcasts (TED, 2024c).

[78] Professor Stein's talk surpasses de Grey's (2005), Kurzweil's (2005) and Bostrom's (2015) with a total of six million views (Winterson, 2019: 72).

[79] Will is characterised as a uniquely genius mind, a somewhat human super intelligence and if he is to die so does A.I., therefore, his upload is imperative.

dynasty[80]. In season four ('Living +', 2023), CEO and protagonist Kendall Roy is congratulated on the success of his tech talk[81] that launches the product Living+ to an exclusive audience. Living+ is the life extension programme that combines property development, media companies, privatised medicine and transhumanist imagining of immortality ('Living+', 2023). Fictionalised tech talks bolster the effect of conferences such as TED by blurring the boundaries between irreal and real; socialising the audience to see technologically as witnesses of the coming technological reality (Sobchack, 2004; Kirby, 2003). I argue, there is a cultural familiarity with tech talks as a mediated social space where a speaker invites the audience to collectively imagine and witness the technological future into being. Utilising virtual witnessing technologies - such as video sharing platforms - to multiply witnesses who can indirectly watch and participate in imagining transhumanism. In this way, tech talks work as a reconfiguration of the legacies from Boyle's scientific method in practice through the use of material, visual and social technologies (Haraway, 1997; Shapin and Schaffer, 2011 [1985]). As forementioned, virtually witnessing is always a socio-material, affective and limited practice and how the audience takes up and makes sense of tech talks is through their own embodied experience and situated knowledge (Sobchack, 2004).

The repetition of tech talks is not consequential but rather a purposeful re-production of narrative and practice that is made possible because of specific social relations of science and technology that happen in both time and space. I argue these tech talks work to legitimatise and normalise transhumanist imaginaries through the conventions of making knowledge claims by reaching social consensus through demonstrations and witnessing (Haraway, 1997; Kirby, 2003). Narrative and practice are joined together in the production of transhumanist imaginaries and the tech futurist is figured through these processes of bringing these speculative futures into being (Castañeda, 2002). As discussed, I call this figure the tech futurist to connote how this

[80] Transhumanism features in the first season of *Succession* ('Shit Show at the Fuck Factory' 2018), when the patriarch Logan Roy suffers a heart attack and his eldest son Connor comments, "he once spoke to me about cryogenics . . . what? Wouldn't that just be typical, all the other billionaires are strolling around in new bodies but not dad because we were too embarrassed to actually discuss it."

[81] *Succession* ('Living+' 2023) mocks the 'tech talk' by having Kendall Roy insisting on elaborate staging and props.

figuration emerges from the promise that the transhumanist future will save humanity from existentialist risk and as such acts as a ventriloquist for the technoscientific future-yet-to-come. Transhumanism is an imagining of a 'safe future' situated in time of sociocultural anxieties about the techno-apocalyptic potentials of artificial intelligence (Future of Life Institute, 2015). These imaginings are best demonstrated by the work of notable transhumanists Ray Kurzweil and Nick Bostrom. Through bringing together TED Talks with journalistic narratives, I argue the figurations of Kurzweil and Bostrom as tech futurists work to sustain and legitimise transhumanist imaginaries. The focus of this next section is how computer scientist Kurzweil figures as a tech futurist in the biographical narratives and storytelling of *Immortality Inc.* (2020) and his 2005 TED Talk 'The accelerating power of technology' (Kurzweil, 2005a). The 'real' Kurzweil is not relevant to how the tech futurist materialises as a semiotic figure loaded with cultural meanings who can stand in for the technological future.

Imagining the singularity: figuring Ray Kurzweil as a tech futurist hero

Published by the National Geographic*, Immortality Inc.: The Renegade Science, Silicon Valley Billions, and The Quest to Live Forever* (2020) is the work of Chip Walter. Walter, as a self-described science author, documentary filmmaker and a National Geographic grantee "who had also been a CNN bureau chief", reassures his readers it is in his interest to establish the facts (Walter, 2020: 13). In particular facts on the potentials of science to extend human longevity. *Immortality Inc.* (2020) is situated in the genre of popular science literature and it has an enthusiastic and philosophical tone that merges scientific journalism with biographical storytelling. Similar to other non-fiction books[82] on transhumanism it is structured into profiles of key figures in transhumanism such as Raymond Kurzweil, Max More and Aubrey de Grey (Walter, 2020; Agar, 2010). Walter (2020) recognises there are social relations between the men in his book but in no instance does he attempt to think about the significance of their shared masculinity, whiteness and class status. Rather he attributes these social bonds to a shared appreciation of scientific discourse and practice, not the bond of homosociality

[82] Nicholas Agar's academic work, *Humanity's End: Why We Should Reject Radical Enhancement* (2010) is structured by profiles, he has given each a nickname; 'the technologist' Ray Kurzweil, 'the therapist' Aubrey de Grey, 'the philosopher' Nick Bostrom and 'the sociologist' James Hughes.

among men. For example, when writing about Art Levinson, the CEO of Calico Life Sciences LLC (the biotechnology company that hopes to "halt" the aging process), Walter (2020: 90) cites Ray Kurzweil as an influence. He writes, "Levinson himself told me that Kurzweil's books and ideas on the Singularity, as well as his thinking on rapid exponential growth, influenced his thinking at Calico" (Walter, 2020: 90). Another example is how Kurzweil has known Max More, the CEO of Alcor Life Extension Foundation[83], since the early twenty first century when he signed up to be cryogenically frozen and his immediate and blossoming friendship with the doctor and author of *The Baby Boomers' Guide to Living Forever* (2000) Terry Grossman (Walter, 2020: 91, 131). These are insights into the homosociality of transhumanism that are littered throughout the book - yet never addressed. Unlike my observation that pays attention to sociality of men and enactments of power relations, Walter chalks it up as scientific-like-mindedness and by happenstance it is productive, as these men work and publish together. I argue these social bonds are not a coincidence, rather they exemplify how transhumanist imaginaries are held by a specific sociocultural collective that share in ideas and imaginings and work together to bring transhumanist imaginaries into being.

Walter (2020: 91, 258) describes Kurzweil as "a darling of the transhumanist movement" because of his strongly held belief in the singularity; that by 2045 we humans will merge with artificially intelligent machines. I argue *Immortality Inc.* (2020) contributes to the re-production of transhumanist imaginaries. In the passage that describes how by age sixty Kurzweil was rankled by death[84] it is unclear who is speaking when Walter writes, "Aging robbed you of your mental agility, whittled your sensory acuity, and burgled your sexual desire. In time, everything was taken from you until there was not a scintilla of life left to give" (Walter, 2020: 132-133). This is an example of how the boundaries between author and subject often blur through an affective narrative about the desire to live forever, the hatred of aging and the fear of dying. In *Immortality Inc.* (2020) Kurzweil figures as a uniquely mathematically "gifted inventor" that shows technological promise from an early age with the innate ability to

[83] The non-profit cryonics facility in Scottsdale Arizona.

[84] Walter (2020: 103) also states Kurzweil associated dying with loneliness because of his own recurring nightmares and his father's illness and as such dying became intolerable to Kurzweil.

predict the technology future (Walter, 2020: 92, 98-100, 286). To support his claim that a young Kurzweil foresaw the developments of artificial intelligence, he writes ". . . when he [Kurzweil] was 14 years old, he wrote a paper that outlined how a machine might somehow become as intelligent as a human" (Walter, 2020: 252). This essay, according to Walter, eventually led to the publication of Kurzweil's book, *How to Create a Mind: The Secret of Human Thought Revealed* (2012) that secured him a job at Google (Walter, 2020: 252-253). Walter goes to great effort to highlight that unlike other kids Kurzweil's childhood hero was boy scientist *Tom Swift*; the protagonist of the storybook science fiction series from the early twentieth century (added emphasis, Walter, 2020: 92). With a tone of admiration, Walter characterises Kurzweil's early invention of a machine that "learns to play music" as if through this human-machine relation Kurzweil becomes the real-life Tom Swift[85] (Walter, 2020: 94-96). Thus, becoming the hero in his own story. In Walter's storytelling, teenage Kurzweil is a problem solver who labours for "hundreds of hours" to invent a musical machine that defeats the competition at the Westinghouse Science Talent Search (Walter, 2020: 94-95, 252). Leading to seventeen-year-old Kurzweil demonstrating the machine's abilities on a popular US television show (Walter, 2020: 94-97). Shortly after his public presentation on national television, Kurzweil would be accepted to Massachusetts Institute of Technology (MIT) by Marvin Minsky, who according to Walter, was then considered the world leading expert in artificial intelligence (Walter, 2020: 97).

These public demonstrations are important to the figuration of Kurzweil as a tech futurist, as Walter writes, "On stage or in conference rooms . . . Kurzweil enthusiastically shared all of this thinking with the world" (Walter, 2020: 129). Kurzweil's material inventions are mostly irrelevant to his status as a tech futurist hero in *Immortality Inc*., it is his "cranium" that reigns supreme (Walter, 2020: 99). As Walter enthuses,

> He *had* changed the world – less with his inventions than his ideas. Others may have explored the notion of living forever, but no one had driven the message into

[85] Mentioning Tom Swift again when describing adult Kurzweil's opposition to those who issue warnings about the development of artificial intelligence, he writes "For Kurzweil, the smart thing was to let technology march ahead, Tom Swift-Style, because that was where we were headed" (Walter, 2020: 258).

> the mainstream with the unrepentant fervor of Ray Kurzweil. And no one hammered away harder at the importance of exponential growth than he – science driven by the irresistible fusion of human and artificial intelligence.
>
> (original emphasis, Walter, 2020: 286)

Exemplifying how by bringing transhumanist imaginaries into the cultural imagination through the presentation of ideas Kurzweil is legitimised as a tech futurist visionary. In Walter's estimation Kurzweil is an extraordinarily brilliant genius who got "pretty good at foreseeing the future" (Walter, 2020: 128).

The tech futurist figuration takes fuller shape in the chapter 'The Acceleration of Acceleration', when Walters writes,

> [Kurzweil] predicted a computer would beat the world's best human chess players by the year 2000 – and lo and behold, in May 1997 it happened . . . Kurzweil also foresaw the explosive growth of the internet in the early 1990s . . . Smartphones, cloud computing, and self-driving cars were also among his predictions.
>
> (Walter, 2020: 128)

While he accredits Moore's law[86] as for why Kurzweil can 'predict' the future - Kurzweil (2005a) himself will mention Moore's law a number of times in his TED Talk - Walter pays no attention to power-knowledge relations. As at the time Kurzweil was situated in the sociocultures of MIT and this contributed to Kurzweil's perceived knowledge of the coming technological future (Walter, 2020: 127-128). In his TED Talk, Kurzweil even says himself he is "from the Massachusetts high-tech community" (Kurzweil, 2005a). A failure to consider what I discuss in the section of this chapter titled 'refiguring the hero in technocultures of mythmaking'; how the computer science cultures in the nineteen eighties and nineties "predicted the future by inventing it" (Dourish and Bell, 2011: 2). Cut off from social relations, the innate ability to forecast the future is essential to this figuration of Kurzweil as a visionary in *Immortality Inc.*

[86] Named after founder of Intel Corporation George Moore, Moore's Law concludes through observation that is it highly probable that the transistor components in integrated circuits will double every two years (Walter, 2020: 128).

(2020). This is in large part because of Kurzweil's 'law of accelerating returns' (LOAR[87]) that provides his 'evidential' reasoning that the singularity will be realised before the end of the twentieth-first century (Walter, 2020: 127-129). Similarly, Kurzweil's book *Fantastic Voyage: Live Long Enough to Live Forever* (2004) uses a model he created to argue the accelerating pace of scientific and technological discovery implies that the knowledge of life extension already exists it just needs aggressive application (Kurzweil and Grossman, 2004: 3). According to Walter, Kurzweil's adjustment of diet and lifestyle following a diabetes diagnosis led to him to co-authoring *Fantastic Voyage* with Terry Grossman (Walter, 2020: 103, 132-133). Walter acts as a virtual witness to the futurist narrative of *Fantastic Voyage* when he states ". . . a good deal of evidence supported the general trends *Fantastic Voyage* foresaw, even if the timing of it all might be in dispute" (Walter, 2020: 134). For Walter, Kurzweil's published work exemplifies how his "personal and persistent visions of the future" is a technoscientific practice that can be attested to because his ideas gained interest and credibility from the 'titans' of Silicon Valley (Walter, 2020: 135). "Bill Gates called him a visionary thinker" then it much be so (Walter, 2020: 135).

This is part of the reconfiguration of the 'modest witness' (Haraway, 1997) into a figure of the tech futurist and through power-knowledge relations is inhabited by the unmarked subject who can attest to these futures as credible and knowable. Consider this description of Kurzweil from *Immortality Inc.* (2020), Walter writes,

> He had become an oracle in all things technological – which was to say, all things. Kurzweilian concepts that had once seemed so *out there* began seeping slowly into the public consciousness, becoming sources of insight into the murky future that Silicon Valley wanted so desperately to clarify. Because, as he saw it – and as the Valley was clearly demonstrating – every change in the 21st century was becoming a blazing, exponential bitstream! And hadn't he predicted precisely that? Even if there was still an immense amount of work to be done, hadn't he actually said the words? *Life without death was not only possible. It was inevitable.*
>
> (original emphasis, Walter, 2020: 135)

[87] In his book *The Age of Spiritual Machines* (1999) Kurzweil outlines LOAR; the principle that exponential growth will continue at an increasingly faster rate.

Immortality Inc. (2020) is framed as scientific journalism and I argue through specific strategies of power-knowledge relations it does the work of a virtual witnessing technology; as the reader encountering figurations of the tech futurist can imagine the transhumanist future as legitimate and 'real.' However, as I have emphasised throughout, witnessing is a partial, fallible and an embodied practice and therefore, is relational, sociocultural and historical situated. In ways I discussed the cinema and moving images, for the reader to inhabit the position of witness is to be persuaded to reach a social consensus that this is 'factual' (Kirby, 2003; 2009). To understand the power-knowledge effects of virtually witnessing technologies and how they reproduce transhumanist imaginaries requires *Immortality Inc.* (2020) to be analysed together with other virtual witnessing technologies such as Kurzweil's TED Talk. While I am focusing on Kurzweil's TED Talk (2005a) and *Immortality Inc.* (2020) there is an exhaustive number of sociocultural sites where transhumanist imaginaries come into being; some of which I listed in chapter two. These multiple forms of media and discourse do not exist in isolation, they are in relation to one another, situated in a socio-material apparatus that re-produces and sustains transhumanist imaginaries.

Coinciding with the publication of his book *The Singularity is Near* (2005b) in February 2005, Ray Kurzweil took to the TED stage as part of "an official TED Conference" to deliver his talk 'The Accelerating Power of Technology' that forecast by 2020 we would have the technology to reverse-engineer the human brain. This talk is available to view on the TED.com website and at the time of writing this 22 minute video has over 3 million views (Kurzweil, 2005a). Similar to *Immortality Inc.* (2020) TED (2024c) describes Kurzweil as an AI visionary, futurist and author. Some of his other books I have not yet mentioned include titles such as, *The Age of Spiritual Machines* (2000), *Transcend: Nine Steps to Living Well Forever* (2010) and the children's novel *Danielle: Chronicles of a Superheroine* (2019). For over a decade Kurzweil has been lecturing and publishing on the singularity - when computers will allow humans to ditch their fleshy organs and transcend into artificial intelligence. Before Kurzweil's forecast, computer scientist Hans Moravec (1988) foretold a similar future when humans will free themselves from their "bondage to a mortal body" and upload themselves into shiny metal machines. In the same year of Kurzweil's TED

Talk, British computer scientist, researcher and transhumanist Aubrey de Grey[88] delivered his TED Talk, 'A Roadmap to end Aging' (2005). In short, he claims aging is not inevitable and there is a technoscientific path towards immortality (de Grey, 2005). *Immortality Inc.* (2020) figures de Grey as a scientist and credits him with influencing Kurzweil; further demonstrating the social bonds among these men (Walter, 2020: 136, 141). He is associated with the biotechnology company called AgeX Inc and a foundation called the Sens Research Foundation. Kurzweil's and de Grey's TED Talks are made a powerful technology because they work together to re-produce transhumanist imaginaries and make claims about the future through virtual witnessing and the legacies of Boyle's scientific method. The repetition of these mediated and choreographed tech talks, that brings together narrative, visualising technologies and practices, has the effect of sustaining and legitimising transhumanist imaginaries as possible futures. For over two decades, Kurzweil has given multiple talks for TED, but I am focusing on the talk I began with 'The Accelerating Power of Technology' (Kurzweil, 2005a).

The tone of Kurzweil's 2005 TED Talk is optimistic. He begins by discussing the then decreasing numbers of those living in poverty and disease in East Asia and Pacific region as evidence that we have the tools to overcome poverty and disease - if we only have the will (Kurzweil, 2005a). Poverty, illness and disease are not social problems in Kurzweil's (2005a) estimation, they are the biological software problems of the body that require a mathematical, computer science and technological engineering solution. Echoing the cybernetic cultures of the nineteen eighties and nineties that turned the body into code he says, "We're understanding the software programmes that make our body run" and as such we would like to turn off the "little software programme" called the "fat insulin receptor gene" (Kurzweil, 2005a). The fatphobic undertones are not surprising, for as I discuss through the figurations of Oscar Pistorius – a type of bodily perfection is idealised in transhumanism. He transitions from this point into an imagining of biological revolution that will halt aging and extend the lifespan for "people at the age of most people at this conference, like myself"

[88] De Grey's appearance is distinctive among transhumanists, he has long hair and a matching unkempt long beard and this is an unchanging signifier of de Grey. On TED.com de Grey's video has reached over 4 million views.

(Kurzweil, 2005a). Exposing Kurzweil's bond to the conference audience through shared characteristics. He claims, without consideration of the politics, that in the future "we'll have not just designer babies, but designer baby boomers" (Kurzweil, 2005a). Evidenced by unclear graphs that show ascending lines.

Ill health, disease and aging will be "defeated" by "nano-bots" that Kurzweil predicts will "go inside our brain" and "interact with our biological neurons" (Kurzweil, 2005a). Separate to health concerns he also imagines they will allow us to "plug in and experience what it's like to be someone else" (Kurzweil, 2005a). In chapter three, I discuss the violent histories of white men imagining themselves as others and in the next chapter, I explore the panic that simmers under the surface of transhumanist imaginings of gender play. As Walter notes about Kurzweil,

> Way ahead of his time, in 2001, he created a virtual female rock star version of himself, named Ramona, who performed at a TED event with Kurzweil wearing sensors that projected the avatar of the digital singer onto a giant screen.
>
> (Walter, 2020: 91-92)

Moreover, 'The Accelerating Power of Technology' does what I have already argued in this chapter, it reproduces ableism through conflating the erasure of the essentialised impaired body with imaginings of artificial intelligence.

Kurzweil who is figured as innately able to predict the future acknowledges that he might not be able to forecast what the cost of Google will be three years but "the evolutionary process of technology is very predictable and we can predict these [evolutionary] trends far into the future" (Kurzweil, 2005a). For Kurzweil this is because of mathematical models that show "exponential curves that govern price performance, capacity" and "bandwidth" and as such supports his theory that technology develops in an "exponential fashion" (Kurzweil, 2005a). Kurzweil (2005a) demonstrates exponential growth to the TED conference audience[89] and the virtual witnesses through narrative and visual sources such as diagrams and 'logarithmic'

[89] Unlike other TED Talks when the conference audience is visible in the video the 'live' audience to this talk is made present by how Kurzweil addresses them, and through noises such as coughing and applause.

graphs. For example, he imagines that by 2020 we will be able to reserve-engineer the human brain because a "block diagram of a model and simulation of the human auditory cortex" in the context of "psychoacoustic tests" shows "exponential growth" (Kurzweil, 2005a). In the context of a TED Talk these graphs and diagrams mimic scientific research and demonstration, for Kurzweil is working to legitimise transhumanist imaginaries through the use of visual sources that are coded as technoscientific. The graph that indicates biology will merge with technology as evolutionary processes accelerate, is titled "countdown to singularity", indicating the importance these visual sources have to the making of transhumanist imaginaries (Kurzweil, 2005a). I am not interested in disputing Kurzweil's theory of exponential growth, rather I am concerned with the ways in which tech talks legitimise and normalise transhumanist imaginaries as credible and knowable futures as audiences are socialised "to see scientifically" (Kirby, 2003). Becoming witnesses of the public demonstration of transhumanism imaginings *as* real technoscience. Furthermore, TED conferences are exclusionary events where members have to apply to attend them, echoing the scientific method (and academia), as those who can witness these demonstrations of knowledge is managed and stratified (TED, 2024a). TED.com describes their conferences attendees "prominent academics, educators, researchers, philanthropists, environmentalists, scientists, technologists, artists, activists and more" (TED, 2024a). Symbolically suggesting their conference audiences are credible and legitimate witnesses who can attest to the accuracy of the "expert speaker" on stage. There is a relationship between the speaker, the in-room audience and the virtual witnesses that is implicated in strategies of power-knowledge. It is a social crafting of imaginaries.

Through an assemblage of bodies, visual semiotics and visualising technologies, 'The Accelerating Power of Technology' is a production of transhumanist imaginaries through discourse and practice (Kurzweil, 2005a). As I have shown so far Kurzweil is *made* into a tech futurist figure. He is frequently figured as having knowledge about the technological future yet-to-come. For example, he ends the TED Talk forecasting a number of possible future scenarios, stating with conviction,

> By 2010 computers will disappear.
> They'll be so small, they'll be embedded in our clothing, in our environment.
> Images will be written directly to our retina,

> providing full-immersion virtual reality, augmented real reality.
> We'll be interacting with virtual personalities.
>
> (Kurzweil, 2005a)

An inadequate prediction about the future (now past and present) does not limit the power-knowledge effects of Kurzweil's talk because it is situated in a historical cultural location that reproduces socio-material relations across time and space. Such as, who can inhabit the figuration of tech futurist – to be figured as a credible speaker for the technological future while futures for queer people, trans people, refugees, disabled people, people of colour, those will chronic health conditions and other marginalised peoples are publicly contested. As a result of the TED Talk being available to view online, the prediction can become flawed if the virtual witnesses see the tech talk past the date of the said prediction however, this might not always be the case. Exemplifying, my earlier argument that to virtually witness the 'reality' seen on screen is always a social, affective and limited practice in strategies of power-knowledge. Images or ideas created in the imagination are either affirmed or negated by the embodied perception of such ideas/images and as such are always fallible, partial and situated. In simple terms, I imagine - or know - Kurzweil to be wrong about the 2010s because my perception of the 2010s negates his idea of tiny computers embedded into my clothing and in the here and now, my reality is writing my thesis on a 13-inch laptop not my dictated thought by a nano-bot. However, it is reasonable to argue because of strategies of power-knowledge and because virtual witnesses are always situated in specific socio-material relations others might affirm Kurzweil's many predictions[90]; thus, imagine transhumanism into being. This is the power effects of the tech futurist figure that is given meaning through encounters. In the same ways as I discuss in this chapter through McNeil's analysis of James Watson as a scientific hero, the 'opening' up of science was an invitation for readers of *The Double Helix* (1968) to identify themselves with Watson and this imaginative position is affective, embodied and "intensely gendered" (McNeil, 2007: 47). Tech talk audiences are invited to identify with the figuration of the tech futurist as they too become more 'knowledgeable' about the imagined transhumanist future, affirming these ideas while acting as virtual witnesses to attest to this future as possible – and this is gendered, classed and

[90] Afterall in the TED Talk Kurzweil characterises the telephone as a virtual reality technology.

racialised. For as previously discussed, to distinguish what is fiction depends on the viewers subjectivity, knowledge and social investments that frame the text they are encountering (Sobchack, 2004: 267-268).

Controlling the body and existentialist risk: figuring out Nick Bostrom

A decade after Kurzweil and de Grey's TED Talks, founder of the (now controversial) Future of Humanity Institute (FHI) at Oxford University, Nick Bostrom argued against the unchecked potential power of artificial intelligence at a TED conference. Titled 'What Happens When our Computers get Smarter Than we are?' (Bostrom, 2015), it follows the successful publication of Bostrom's book *Superintelligence: Paths, Dangers, Strategies* (2014). Unlike Kurzweil who is overly enthusiastic about the potentialities of super intelligent machines, Bostrom is often cautious in his storytelling of the future of artificial intelligence. However, the message is the same: the only way for humans to save their future selves is to ditch their fleshy bodies and become transhumanist machines. As Josh Schuster and Derek Wood note in their lively critique of Bostrom's existentialist theory, "Bostrom consistently conflates the obligation to prevent human extinction with the obligation to develop humanity towards transhumanism" (Schuster and Woods, 2021: 16). The FHI was led and founded by Bostrom. Once regarded as an institution with a credible reputation[91] in Silicon Valley that secured funding from the tech elite and known as a space at Oxford University where academics talk, think and write about the future. Until the year 2024 when the FHI closed without notice.

A Guardian journalist reported the FHI had fallen into controversy following its links to the Effective Altruism movement[92] (despite E/A being an offshoot of transhumanist thinking that the FHI was founded upon) and previous published eugenical comments by the founder (Anthony, 2024). Before its closure the FHI website

[91] Questions about the integrity the institute were raised following the immediate closing of FHI in April 2024 (Anthony, 2024).

[92] Josh Schuster and Derek Wood write "The Future of Humanity Institute received 13.3 million pounds in funding from the Open Philanthropy Project in 2018, an effective altruism group primarily funded by Dustin Moskovitz, who cofounded Facebook with Mark Zuckerberg and three others" (Schuster and Wood, 2021: 6).

described it as "a multidisciplinary research institute" where its academics "bring the tools of mathematics, philosophy and social sciences to bear on big-picture questions about humanity and its prospects" (Future of Humanity Institute, 2019). The tagline read, "FHI investigates what we can do now to ensure a long flourishing future"[93] (Future of Humanity Institute, 2019). At one time it was linked to DeepMind the British research company brought by Google in 2014 (Khatchadourian, 2015; Future of Humanity Institute, 2019). It is suggested that the tech millionaire James Martin originally funded the FHI, in 2015 they received 1.5 million dollars from Elon Musk and a contribution *up to* £13.3m from the Open Philanthropy Project (Khatchadourian, 2015; Future of Humanity Institute, 2019). Despite the closing of the FHI I argue it exemplifies the ways in which the institutionalisation of transhumanist ideas works to legitimise these imaginings as knowledge; that the technological future is seeable and knowable but only by a few. The FHI and its status as an Oxford University institute is important to how Bostrom emerges as tech futurist figure. To exemplify this, I will now focus on a profile of Bostrom in The New Yorker, an American magazine known for its long form journalism that has a reputable reputation.

Bostrom is wax lyrical about what he imagines as the potentials of technological "human enhancement" yet he figures mostly as a quirky and cautionary academic who fears that humanity is at risk of extinction from superintelligence; in other words, it will be engulfed by the techno-apocalypse if we humans do not act fast (Bostrom, 2013, 2014, 2015; Khatchadourian, 2015; Schuster and Woods, 2021: 16). Arguably the research produced by the FHI orientated around Bostrom's imaginings of existentialist risk and transhumanism. As Bostrom's solution to the 'coming' techno-apocalypse is to "build superintelligence machines with values" that is implicitly an imagining of a transhumanist future (Bostrom, 2013; 2015; Khatchadourian, 2015). Consider this from the New Yorker profile,

> The sense that a vanguard of technical-minded people working in obscurity, at odds with consensus, might save the world from auto-annihilation runs through the atmosphere at F.H.I. like an electrical charge.

[93] At the bottom of the homepage were the logos for TED, the Financial Times, The Economist, BBC, Aeon and The New Yorker.

((Khatchadourian, 2015)

Despite the occasional characterisation that he is an opponent to idealogues who desire no-holds-barred artificial intelligence, there is very little differences between his imaginings of AI and those who criticise his 'doomsday' philosophy (Khatchadourian, 2015). As I showed earlier in the discussion about Google's Guillaume Verdon, those situated in these technomythic cultures are engaging in future-making practices and hoping for a hero.

Following the success of his 2014 book, *Superintelligence*, Bostrom was profiled by The New Yorker's staff writer Raffi Khatchadourian in November, 2015. In the profile he is characterised as a philosopher of AI risk with "remarkable influence" and an Oxford appointee - coding him as 'credible' through the sociocultural and historical meanings attributed to Oxford University (Khatchadourian, 2015). According to the profile, Bostrom's *Superintelligence* (2014) "struck a nerve" within Silicon Valley as such he "acquired the status of sage" (Khatchadourian, 2015). Furthermore, his warnings of the potentials of "superintelligence" have been repeated by known tech figures such as Bill Gates, Elon Musk and Stephen Hawking (Khatchadourian, 2015). In chapter six, I note how Bostrom has also influenced Musk's politics on reproduction. This I argue, exemplifies the sociality among these men who are situated in Western technocultures as transhumanist imaginaries are collective imaginings of the future. There are other examples of Bostrom's homosocial friendships such as with transhumanist Anders Sandberg who worked at the FHI. He was situated in a network of academics and institutions that produce published work that repeat his claims and it is through this social consensus[94] that Bostrom figures as a tech futurist who can speak credibly about the coming technology future (Khatchadourian, 2015).

The title of The New Yorker piece is 'The doomsday invention: Will artificial intelligence bring us utopia or destruction?' and this sets the tone as it is

[94] For example, Khatchadourian (2015) writes, "Other institutes devoted to these issues had started to find their voice, bringing an additional gloss of respectability to the ideas in Bostrom's book. The people weighing in now were no longer just former Extropians. They were credentialled, like Lord Martin Rees, an astrophysicist and the co-founder of Cambridge's Centre for the Study of Existential Risk."

"simultaneously apocalyptic and comedic" (Haraway, 1997: 8-9). For as Haraway argues, in the "soap opera" of technoscience the destructive apocalypse of "man's world" sits together with comedy as the ultimate resolution to conflict is through progression (Haraway, 1997: 8-9). This is literally the case when it comes to Bostrom, as in the discussion of his futurology the profile mentions he also once tried his hand at stand-up comedy (Khatchadourian, 2015). Bostrom figures as a self-aware prophet of the techno-apocalyptic future but he is also quoted as saying whimsical statements such as, "My background is transhumanism the character of that is gong-ho techno-cheerleading, bring it on now where are my life-extension pills" (Bostrom *cited in* Khatchadourian, 2015). The journalist of this piece, Khatchadourian, even describes portions of Bostrom's book *Superintelligence* as "so extravagantly speculative that it is hard to take them seriously" (Khatchadourian, 2015). But as I have argued throughout, to make sense of transhumanism does not require disproving the technoscientific claims but rather in understanding how these imaginings are made possible and how they become defined as knowledge about the future. While the techno-apocalypse might be looming for some transhumanists, they rely on specific metaphorical imaginings of 'techno-utopias' (Lupton, 2016) and technological saviours. The transhumanist roadmap to 'safety' always ends with the human mind uploading into a super-intelligent machine.

The essay 'Why I want to be posthuman'[95] is Nick Bostrom's contribution to *The Transhumanist Reader* (2013). Exemplifying the dissemination of transhumanist ideas, it has also been published in *Medical Enhancement and Poshumanity* (Gordijin and Chadwick, 2008) and earlier versions were presented at the James Martin Advanced Research Seminar (Oxford, 30 January 2006) and at the Institute for Science, Innovation & Society (Nijmegen, 21 February, 2006). The 'picture of utopia' (Chrysanthou, 2002) that is figured within Bostrom's essay is one of a healthy body with vigour and strength echoing the production of ableism previously discussed in this chapter (Lupton, 2016: 52; Bostrom, 2013: 31). As Marc Chrysanthou in his paper 'Transparency and Selfhood: Utopia and the Informed body' reminds us, in Western

[95] In the notes Bostrom (2013: 50) acknowledges his definition of posthuman differs from the concept of "posthuman" used in Hayles's work (1999). I would argue his posthuman is better understood as transhuman.

culture ". . . the best available picture of utopia is a map of the healthy human body" (Chrysanthou, 2002: 469). This is reflected in transhumanist imaginaries where the ideal, desirable and morally-just body is figured as tightly contained, associated with a lean and fit body shape, good health and vigour (Lupton, 2016: 52). Khatchadourian (2015) describes Bostrom's physique as resembling a yoga instructor - vital and lean. He is characterised as paranoid about the body and he subscribes to a "brain food diet" and worries about toxins in food being harmful to his brain, he avoids handshakes and wipes down surfaces and cutlery[96] (Khatchadourian, 2015). As Anne Balsamo highlights in *Technologies of the Gendered Body*, in technoscientific dreams of immortality, control over life and death are complemented by a fear of the uncontrollable body which is threatened by viruses and contamination (Balsamo, 1999: 1-2). Bostrom, according to the New Yorker profile, wears a metal buckle (bracelet) around his ankle that is engraved with the contact information of Alcor the cryonic facility in Arizona, for he is a fee-paying future patient (Khatchadourian, 2015). It is a clunky material reminder that death is likely well before his transhumanist vision of immortality can be realised. On Bostrom, Khatchadourian (2015) writes, "He tends to see the mind as immaculate code, the body as inefficient hardware" and quotes his FHI colleague Sandberg as saying, "If there is one thing Nick cares about, it is minds" (Sandberg *cited in* Khatchadourian, 2015).

In transhumanist imaginings the supremacy of the mind is the suppression of the sociocultural abject body. This is coded in Bostrom's habits of chewing nicotine gum in the hope it enhances his cognition and drinking a smoothie of "fruits, vegetables, proteins, and fats" for lunch - which Bostrom calls his "elixir" (Khatchadourian, 2015). Sociologist and Media and Cultural Studies Professor Deborah Lupton, in her book *The Quantified Self* (2016), shows how ideas about body containment within Western societies privilege control of the body – its size, shape, activities and functions – and as such the unable-to-be-contained, the uncontrolled body, is an object of pity, disgust and ridicule (Lupton, 2016: 52). This is further associated with moral meaning tied to the binaries of fat/thin, healthy/ill and normal/pathological (Lupton, 2016: 52). Ableism or ageism is never challenged or even addressed in the profile. For example, just before discussing Bostrom's imagining of "whole-brain emulations" (the uploading of minds),

[96] This is before the COVID-19 pandemic socialised these behaviours among the public.

he writes, “Bostrom, in his forties, must soon contend with physical decline, and he spoke with annoyance of the first glimmers of mortality” (Khatchadourian, 2015). Once again, erasing impairment and illness is conflated with their “utopian” visions of uploading minds into machines.

Khatchadourian (2015) accredits Bostrom as “the leading transhumanist philosopher” as he brings order to fringe ideas “that might otherwise never have survived outside the half-crazy Internet ecosystem where they formed.” This might be better understood as an ability to legitimise transhumanist imaginings because he and his FHI colleagues are situated in the power-knowledge relations of British academia. Similar to the figuration of Kurzweil in *Immortality Inc.* (2020), Bostrom is also figured as a “bright child” who showed early promise, growing into a sturdiest student who is self-taught in the arts, anthropology and science and because of his unique academic interests felt apart from his peers (Khatchadourian, 2015). Like Kurzweil, in this biographical storytelling of Bostrom, he too becomes the hero of his own story. Thanks to the emergence of the World Wide Web Bostrom “began to sense that the heroic philosophy which had inspired him might be outmoded” (Khatchadourian, 2015). According to the profile, his disinterest in conventional philosophy leads Bostrom towards a discipline which he calls “the philosophy of technological prediction” (Bostrom *cited in* Khatchadourian, 2015). Noting that while he “rarely makes concrete predictions” unlike his counterpart Kurzweil, Bostrom relies on “probability theory” to “tease out insights where insights seem impossible” (Khatchadourian, 2015). The article also includes the following ambiguous statement from Bostrom: “The *very* long-term future of humanity may be relatively easy to predict” (original emphasis, Bostrom *cited in* Khatchadourian, 2015). A figuration of Bostrom as a tech-futurist takes forms through the profile, as he is figured as “trying to become such a seer” of the technological future (Khatchadourian, 2015). Evidenced by the characterisation that Bostrom believes “the future can be studied” and the role of today’s philosopher is to “acquire the knowledge of a polymath” in order to “help guide humanity to its next phase of existence” (Khatchadourian, 2015) - in other words, transhumanism.

Bostrom is characterised as a hardworking in-demand academic and this is bolstered by the association of the FHI to Oxford University. It follows a narrative that

he and his FHI colleagues speak on behalf of the future behind institutional doors (Khatchadourian, 2015). In his pursuit to profile Bostrom, Khatchadourian writes,

> It takes some work to catch Bostrom at his office. Demand for him on the lecture circuit is high; he travels overseas nearly every month to relay his technological omens in a range of settings, from Google's headquarters to a Presidential commission in Washington. Even at Oxford, he maintains an idiosyncratic schedule, remaining in the office until two in the morning and returning sometime the next afternoon.
>
> (Khatchadourian, 2015)

Arguably this is to figure Bostrom as a credible, influential and legitimate hardworking academic and while it does achieve this, it also exemplifies how bringing transhumanist imaginaries into being is never finished. Transhumanism is re-produced and re-imagined through an apparatus of knowledge production that assembles social, material and literary technologies (Haraway, 1997). In another example the profile notes, "Bostrom has written more than a hundred articles, and his longing for immortality can be seen throughout" (Khatchadourian, 2015). This constant production of discourse on transhumanism is an effort to re-produce, sustain and stabilise transhumanist imaginaries through the figuration of the tech futurist.

The profile comes to an end with Khatchadourian (2015) accompanying Bostrom to London where is he to "speak at the Royal Society" to an audience of "most technically sophisticated researchers in A.I."; which Khatchadourian describes as not exactly Bostrom's type of people. For the profile does draw a distinction between scientists and Bostrom, but it starts to blur when Khatchadourian writes, "The gulf between the transhumanists and the scientific community was slowly shrinking" as evidenced by Bostrom's inclusion in the Royal Society conference (Khatchadourian, 2015). Once Bostrom has presented, the lectures continue with engineers each presenting their promise of the technicoloured future of quantum computing and "robot visions" (Khatchadourian, 2015). Thanks to the inclusion of a staff writer from a prestigious magazine, these insights into Bostrom's lecture shows how the tech futurist reconfigures Boyle's modest witness, who centuries ago in the 'public laboratory' of the Royal Society demonstrated an air-pump to be witnessed and attested to. Once

experimentalists, clerics and lawyers, the privileged space of the Royal Society is occupied by "a contingent of researchers from Google" who "likely had more resources at their disposal than anyone else in the room" (Khatchadourian, 2015). Through the closed space of The Royal Society those with status in Silicon Valley, and therefore, cultural and financial capital, pay witness to transhumanist imaginaries in-the-making. Situated in this sociocultural and historical space, it is through socio-material relations and strategies of power-knowledge that legitimise and normalise transhumanist imaginaries as possible futures through collective witnessing and imagining. Moreover, The New Yorker profile multiplies those who encounter the tech futurist figure as a credible speaker for the seeable and knowable future. But as Haraway (1997: 267) notes, the credibility of those who bear witness is never finished, it is fraught and fallible.

Conclusion

Why do men come together to imagine transhumanism? In this chapter, I have confronted this question without taking the shared social qualities of men as innate, essential or given. In transhumanist imaginaries, it is as if white, class privileged, cis, hetero men are *naturally* drawn to the cultures of science and technology and thus, have an innate ability to predict the technological future. This chapter intervenes in this presumption, instead approaching transhumanism as sociocultural imaginaries in-the-making: and as the imagination is a material, embodied and affective practice it suggests imagining transhumanism happens through the re-production of social relations. Therefore, in this chapter I echoed Donna Haraway (1997:27) by asking how gender, and other intersecting relations, are at stake in the reconfigurations of what counts as technoscientific knowledge in these new theatres of imagining. To do this, I situated the imaginative practices, narratives, discourses and visual cultures of transhumanism in the sociocultures of Western technoscience. For this reason, this chapter is an earnest and considered 'return' to Steven Shapin and Simon Schaffer's *Leviathan and the Air-Pump: Hobbes, Boyle, and the Experimental Life* (2011 [1985]) and Donna Haraway's *Modest Witness* (1997). I revive this work to make sense of how transhumanist imaginaries are gender, race, class, sexuality and dis/ableism in-the-making. For as Haraway shows, Robert Boyle's "air-pump was a technology of gender

at heart of scientific knowledge" and the practical inheritances from his scientific method remain influential (Haraway, 1997: 28, 33, 268).

It is through the figuration of Boyle's 'modest witness', who goes unseen in the "culture of no culture", that the making of scientific knowledge became a technology of gender in social spaces where women and labourers were excluded (Potter, 2001: 13-21; Haraway, 1997: 28-32; Traweek, 1988). When during the Scientific Revolution and European witch trials men gathered together at night to witness the workings of Boyle's air-pump without the assumed "disruption" of women (Haraway, 1997: 31). Even if present, the most modest and chaste women did not have the status of independence required for a witness to attest to the facts (Potter, 2001; Haraway, 1997). Thus, I argue in this chapter, vital to the production of technoscientific knowledge is the mutually co-constitution of bodily spaces and social spaces (Haraway, 1997; Ahmed, 2000). For it in the confines of regulated social spaces that the universalised "unmarked" body – as white, masculine and able - takes shape as the body at home, the body in place (Haraway, 1997; Ahmed, 2000; Puwar, 2004). I have shown that this is key to understanding how a sense of belonging in social spaces, where transhumanism is imagined, is fostered through these sociocultural histories and bonds that render the white, masculine, male, class privileged and able body as invisible; and invisibility is an enactment of power. Furthermore, the literary technologies of scientific modesty too constituted a modesty masculinity as the unseen, reinforcing femininity as the marked body (Potter, 2001; Haraway, 1997; Haraway, 1989; Shapin and Schaffer, 2011[1985]). This chapter then is an articulation of how through the cultural legacies of Robert Boyle's 'modest witness' (Haraway, 1997) men come together to imagine transhumanist futures for themselves but it goes further than this to consider how practices of witnessing and imagining legitimatise and normalise the transhumanist future as possible. It is a contribution to the critique that the Western masculine culture of technoscience emerged as an inevitable extension of ancient patriarchy (Noble, 1992: xiv-xv).

Through the work of Donna Haraway (1997), David Kirby (2003; 2009) and Vivian Sobchack (2004), this chapter contributes to a contemporary understanding of how through a narrative framework virtual witnessing technologies mimic technoscientific action that has occurred elsewhere. Kirby's concept of "virtual

witnessing technologies" (Kirby, 2003) allows for a consideration of how moving images, videos, film and television blur the distinction between virtual and direct, real and irreal. So, what is depicted on screen may never have been "directly witnessed" but is shown in an evidential way (Kirby, 2003: 234-236). I extend this concept to argue TED Talks and the YouTube video of the 'Neuralink Progress Update, Summer 2020' (Neuralink, 2020) are virtual witnessing technologies choregraphed to mimic technoscientific and academic demonstrations. The virtual and direct audiences are socialised to "see technologically", to witness and attest to the credibility of transhumanism imaginaries. As I have emphasised, witnessing is a subjective, limited and embodied practice, and distinguishing fact from fiction is dependent on power-knowledge relations and the social investments of the viewer (Sobchack, 2004, Haraway, 1997). This collapsing and re-constitution of the boundaries between imaginary and real works to legitimise and normalise transhumanist imaginaries through practices of witnessing and imagining.

This chapter, and thesis as a whole, is not interested in disputing the plausibility of transhumanism; rather I am concerned with the ways in which transhumanist imaginaries are legitimised as credible and knowable futures through the figuration of the tech futurist. I am suspicious of the status of genius and oracle acquired by tech futurist figures such as Ray Kurzweil and Nick Bostrom. It is through analysis that pays critical attention to the re-production of social relations that this is shown to be the enactment of strategies of power-knowledge in sociocultural histories of technoscience and philosophy in the West. This chapter makes sense of how the 'modest witness' (Haraway, 1997) and the twentieth century scientific hero (McNeil, 2007) are reconfigured into the tech futurist figure - as a ventriloquist for the coming technoscientific future. This chapter demonstrates how the figurations of the tech futurist reproduce the tropes of the heroic figure of the twentieth century scientist as masculine, white, ordinary, secular, heterosexist with scientific prowess (McNeil, 2007). In the mythmaking cultures of technoscience the tech futurist figure is a hero inhabited by the unmarked subject who can attest to these futures as predictable, therefore, seeable and knowable. I also articulate how transhumanism gives form to the ableist fantasies of merging the fleshy body with technology in the promise of a coming transhumanist future. In transhumanist imaginings of uploading the mind into artificially intelligent machines the tech futurist figure continues the "modest witness"

legacy of “being of the mind” (Haraway, 1997: 32) by erasing and suppressing the cultural body. In this chapter I have shown, transhumanist imaginaries are brought into being through the joining together of visualisations, demonstrations, narrative, discourse and practice and the tech futurist figure is an effect of the relations between the material and the semiotic processes of transhumanist world-making.

Chapter Five: Figurations of Transsexuality and Gender Panic in Science Fiction Imaginings of Transhumanist Futures

Introduction

Hidden in the margins of polluted cultural debates about gender and sex, in both mainstream and fringe media, are caricatural imaginings of gender as immaterial and futural as such it is a threat to the materiality of the two sexes for which the present Western social order is imagined to spring from. Emerging from 'gender critical'[97] groups, predominantly in the United Kingdom, these imaginings are in part fuelled by a conspiratorial belief that transgender people – even by their own existence – are bringing into being a transhumanist future that will result in the sexed body apocalypse. Thus, the examination of the production of gender in transhumanist imaginaries is situated in time of TERF wars and gender panic (Hines, 2020; Pearce, et al., 2020, Butler, 2024). The TERF wars[98] refers to "a series of complex discursive and ideological battles *within* (rather than *against*) feminism" (Pearce, et.al., 2020). As Ruth Pearce, Sonja Erikainen and Ben Vincent discuss, the TERF (Trans-Exclusionary Radical Feminist) acronym is part of a vernacular to speak to the politics of gender, sex and inclusion/exclusion of trans- *in* feminism[99] (original emphasis, Pearce, et al, 2020). There is an uptake of the term 'gender critical' in place of TERF but what is important is how these positions are one and the same: trans-exclusionary ideologies that centralises a biological essentialist notion of sex (Stryker and Bettcher, 2016; Hines, 2020; Pearce, et al. 2020; Butler, 2024). The significant of the TERF wars to this thesis

[97] Judith Butler explains, "To be "gender critical" is thus a misnomer deployed by some feminists who make implicit or explicit alliances with the right-wing opposition to gender. Their views are emphatically objectionable not only because they reduce "gender" to a single caricatured version of a complex reality but also because they misunderstand what a "critical" position entails" (Butler, 2024: 21).

[98] I take this term and understanding from Pearce, Erikainen and Vincent's paper 'TERF wars: an introduction" that explains how 'TERF wars' refers to the trans/feminist conflicts that reflect "the current conditions of our time in which public discourse is dominated by political polarisation, deepened by the proliferation of misinformation and distrust in 'experts' whose knowledge may not speak to individuals' cultural common sense" (Pearce, Erikainen, Vincent, 2020).

[99] As Pearce, Erikainen and Vincent (2020) write, Trans Studies, trans-inclusive feminists and trans people did not seek out the TERF wars; rather the TERF war found us.

is the emergence of a conspiratorial[100] misunderstanding of transhumanism as the origins of 'gender identity ideology' and/or 'sex denial' that has taken hold in the 'gender critical' imagination (Bilek, 2020; Jones, 2020). Furthermore, in a time of TERF wars science fiction imaginings, such as Jeannette Winterson's *Frankissstein* (2019), bring together transhumanism and (the author's perception of) the transgender experience in an effort to be politically progressive. However, as I will critique in this chapter, these imaginings are socioculturally and historically situated, as such they become implicated in this "gender panic" politics as figurations of transsexuality emerge only to be ultimately rejected.

In examinations of transhumanism there has been a significant lack of consideration of the production of gender, race, sexuality and class relations and I argue this analysis is fundamental to understanding how transhumanist imaginaries come into being and take hold. Gender is being re-made and re-imagined across cultural sites where transhumanism imaginaries are situated, including where TERFs debate the transhumanist future of gender as they imagine it. Through critical analysis I demonstrate an understanding of how imaginings of transness become a figurative tool for the production of transhumanist imaginaries and I discuss what the implications of this might be. In this chapter I attend to imaginings of transness in transhumanist imaginaries in these specific key cultural sites;

- Beginning with the 'coming out' scene in the BBC series *Years and Years* ('Episode 1': 2019). This text helps frame how transhumanist imaginaries collude with the history of the medicalisation of transsexuality and intersex bodies to fetishise transness as an escape of embodiment.
- I will then continue this analysis by examining Jeannette Winterson's *Frankissstein* (2019). This 'love story' brings together transhumanism and the transgender experience in a retelling of Mary Shelley's (2012)

[100] During a podcast interview for the journal Signs, Susan Stryker comments, it is a "conspiracy theory . . . that gender ideology is somehow something nefarious trans people have foisted on the world as part of an effort to do harm to women and girls . . . It's a conspiratorial way of thinking that imagines, transwomen in particular, as a phantasm" (Chaudhy and Stryker, 2021).

Frankenstein. As already discussed, this connection is fraught. My focus is on the specific dialogue between the trans protagonist Ry and transhumanist Victor Stein of Jeanette Winterson *Frankissstein* (2019), in moments of sexual intimacy. I will frame this further in the 'lost' post-words from the hardback edition.

- Finally, I look specifically at the racialisation of transsexuality as exemplified by transhumanist Martine Rothblatt's essay 'Mind is Deeper Than Matter: Transgenderism, Transhumanism, and the Freedom of Form' (2013) read in adjacent to sections of her book *Transhumanism to Transgender* (2011). I will also discuss how Rothblatt's essays have become a symbolic threat in 'gender critical' thinking as they claim Rothblatt's work is both the origin and promotion of 'sex erasure'.

I examine these imaginings of transness in transhumanist imaginaries to ask whether figurations of transsexuality as technological passive, artificial and futural allows for the overdetermined masculine transhumanist subject to go on becoming without critique. I challenge the assumption that the transhumanist future is genderless or post-gender[101] by examining how transhumanism relies on pathologising transness and as such fetishizes the trans body as 'metamorphic' and 'futural.' I will first begin with a discussion of the problems of so-called 'gender identity ideology'.

Untangling conspiratorial imaginings: a case for specificities

The concept of 'gender ideology'[102] relies upon a vacuous concept of gender that has no social materiality; it is used against trans movements and trans inclusive

[101] When I read the writings by trans authors on post-gender futures there is an awareness of how transness is made into a contested cultural site for the future of being to be debated. For example, when Sandy Stone (1992) argues for the post-transsexual and Andrea Long Chu and Emmett Harsin Dragon's polemic 'After Trans Studies' (2019) exclaims "Trans Studies is over". But this is the point - specificities matter – for without those we risk reproducing conspiratorial misunderstandings of transness that are loaded with all sorts of meanings that only further naturalises cisness.

[102] 'Gender ideology' is an undefined term used by groups known as 'trans exclusionary radical feminists' or 'gender critical' - it is used to suggest that sex is immutable and gender is a social concept in order to

feminism under the charge of "erasing sex". As Sara Ahmed (2021) argues in her thoughtful blog post, 'gender critical' groups treat gender as a "foreign invasion" and mobilise themselves around the claim "sex is real, sex is biological, sex is science" and therefore, the counter-implications are that "gender is not real", "gender is immaterial" and "gender is ideology". In the 'gender critical' imagination gender is a claim to the unreal while sex is solidified as the essentialist, biological, innate, unchangeable claim to the real[103]. In this imagining, the sexed body is undisturbed by forms of technology. In 'gender critical' thinking as Sally Hines reminds us, "What is at stake here are understandings of sex, not sex itself" (Hines, 2020: 713). The misguided argument that transhumanism is either 'gender identity ideology', 'erasing sex' or 'post-genderism' risks subverting the doings of white masculinities and maleness in transhumanist imaginaries that are grounded in Western sociocultural histories of science and technology. To take the 'trans' in transhumanist as trans as in transgender and transsexuality condenses them into one another creating a flawed understanding of the re-making and re-imagining of gender in transhumanist imaginaries. Paying critical attention to the specificities shows one is not the other. Equally the challenge is not to leave out the realities of trans people who hold and work to sustain transhumanist imaginaries (such as Martine Rothblatt) without figuring them as innocent subjects or as "good objects" (Adair, Awkward-rich, Marvin, 2020).

Might we think about the complexity of this work as Haraway's "staying with the trouble" (Haraway, 2016)? For Haraway compels us to stay in the thick present and not transcend into the lofty space between apocalyptic and salvific futures or sink into the vanishing point between good and evil pasts (Haraway, 2016: 1). This is salient when we consider how transhumanism, climate change, and fears of the supposed sex-

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argue for femaleness and womanhood (in particularly) as biological exclusivity (Pearce, Erikainen and Vincent, 2020).

[103] As Judith Butler (2024: 135) writes in *Who is Afraid of Gender?* "The difference between the two camps [TERFS and Gender Studies proponents] seems to revolve on questions of who can count as a woman or a man, but also on what they [TERFs] call the "matter" of sex, a term that always brings up the matter of the body and the issues that body presents. Although the anti-gender partisans within feminist are not generally materialists in a Marxist sense, they do pound the table in the manner of positivists, insisting that those who defend the idea of "gender" deny the material reality of sex."

body apocalypse are being entwined and reimagined[104]. As previously mentioned, the inference that transhumanist imaginaries will bring into being a post-sex, post-gender[105] future has arisen in 'gender critical' thinking and cultural narratives, thus displacing trans and non-binary realities as 'elsewhere' and 'yet-to-come'. Staying with the trouble (Haraway, 2016) offers a way of examining the re-production of socio-material relations in the future-making practices of transhumanist imaginaries.

Making a mess: the limitations and possibilities of analysing figurations

Interrogating future-making without considering the production of gender relations in the constitution of the image (figural) and the real (fact), risks taking gender as an essentialist given (unchanged/universal) that is by default, white and male. It also gives room for the 'gender critical' position to fester, bolstering their conspiratorial claim that transhumanism is part of the so-called 'gender identity ideology movement' seeking to divide gender from the perceived 'immutable sex' (Pearce, et al., 2020). Influenced by Haraway in the ground-breaking paper 'The Empire Strikes Back: A Posttranssexual Manifesto' (1992) Sandy Stone writes,

> "The *Empire* Strikes Back," is about morality tales and origin myths, about telling the "truth" of gender . . . It is about the image and the real mutually defining each other through the inscriptions and reading practices of late capitalism.
>
> (original emphasis, Stone, 1992: 154)

I draw attention to this to exemplify how the image (figural) and the real (factual) mutually construct each other is a concern of early Trans Studies and Feminist

[104] For example, taking a gender critical position, journalist Susanna Rustin (2021) writes in the Guardian "I think there are parallels between the failure to address the implications of our planet's finite resources and our dependence upon it, and the idea that human potential is boundless. While I want people to be free to live as they choose, I also believe that human bodies have limits. And I am concerned about the influence on young people of the idea that, with the aid of medical technology, these [the body] can be transcended."

[105] At the time of writing, the Wikipedia Contributors (2021) entry on 'Postgenderism' is listed as part of series on transgender topics and part of the ideology of transhumanism. It cites feminist texts such as Haraway (1991), Firestone (2015), as part of the literature on postgenderism.

Technoscience and I revive this concern, given that "origin myths and the "truth" of gender" have risen once again in feminist debates. This chapter is a contribution to the Feminist Technoscience and Trans Studies work that comes before me and an interruption into conceptualising transhumanism as transgender, genderless or post-gender. Like Gender Studies, Trans Studies scholarship is not monolithic, it too engages in reflexivity and thoughtful debates. So I will draw from the different turns in Trans Studies –now (Stryker, 2020), after (Chu and Harsin Drager, 2019) and before (Adiar, et al., 2020) - to position this interrogation.

I acknowledge the limitations of this chapter, yes because of my own subject position as cis, but also my inability to capture the nuances and diversities of trans lives. I acknowledge the risk that making figurations of transsexuality in transhumanist narratives visible could render the realities, agencies and subjectivities of trans and non-binary people invisible. The slippiness of the analysis in this chapter means it could slip back into a terrain of feminism where sex versus gender. I dwell on these tensions. I have argued, paying critical attention to the relationship between figurations and imaginaries is key to understanding future-making practices. But I am not looking for "a figure that "reveals" the inner workings of gender" (Chu and Harsin Drager, 2019: 110). For this chapter is beholden to 'The Hales Rule number 14'[106] (Hales, 2009). To speak to the body politics of analysis that pays attention to figurations I turn to a question in *Black on Both Side*s (2017); author C. Riley Snorton asks, "What does it mean to have a body that has been made into a grammar for whole worlds of meaning?" (Snorton, 2017: 11). I suggest we need to think critically at how transhumanism in mainstream television and literature has become entwine within dominant narratives (by cis creators) of transsexuality and being transgender. Especially as this entanglement is becoming further constituted in the imagination of 'gender critical' groups.

This chapter takes a similar approach to J. R. Latham (2019) and Bean Velocci (2021) who draw upon on tools from Science and Technology Studies (STS) to argue transsexuality is not an 'is', a discoverable thing existing independently out in the world

[106] The Hales Rule number 14 is, "Don't imagine that there is only one trope of transsexuality, only one figure of "the" transsexual, or only one transsexual discourse at any one temporal and cultural location" (Hales, 2009).

to be cut around and described. Rather transsexuality is made through and emerges from discursive domains and a set of situated practices (Latham, 2019; Velocci, 2021). In this sense, we can also unpack the relationship between transsexual as a lived experience and as sociocultural figurations. As I have already discussed, by conceptualising figurations as a relation between the material and the semiotic we can describe the processes of how an entity is figured, in ways that speak to world-making, situated in a time and place (Castañeda, 2002). By doing so we open possibilities of reconfiguration and other ways of being. Latham (2019) thinks about this in terms of singularity and multiplicities how medicine constitutes transsexuality as a singular phenomenon and by rethinking transsexuality as multiple we open possibilities of reconstituting trans medicine (Latham, 2019: 15). This is a larger project of trans scholarship that goes beyond this thesis, however I return to the intention of this chapter, to examine how the imaginings of transsexualities and trans bodies in *Years and Years* (2019), *Frankissstein* (2019), 'Mind is Deeper Than Matter' (2013) and *From Transgenderism to Transhumanism* (2011) allows for the overdetermined masculine transhumanist subject to go on becoming without critique. In dialogue with Andrea Chu Long, in the article 'After Trans Studies' (2019) Emmett Harsin Drager, says,

> . . . I am interested in returning to the fraught figure of the 1960s and 1970s transsexual, specifically the US gender-clinic patients or aspiring patients, to try to create a more robust history of trans that is not rooted in these binaries of vernacular versus medical and authentic versus inauthentic, but rather is full of messiness, contradictions, disappointments, and unexpected outcomes.
>
> (Chu, and Harsin Drager, 2019: 107)

I hope to make mess by uprooting the assumptions in *Years and Years* (2019), *Frankissstein* (2019), 'Mind is Deeper Than Matter' (2013) and *From Transgenderism to Transhumanism* (2011). To set up this analysis, in the next section I discuss the constitution of transsexuality as a category of difference in Euro-American medicine and clinical settings.

The clinical construction of transsexuality in Benjamin's imagined future of regret and the exportation of transsexuality as a post-colonial technology

The history of the construction of "the transsexual" insofar as a discursive identifier and category is from a mid-twentieth-century Euro-American medical/clinical setting (Stone, 1992; Prosser, 1998; Velocci, 2021). As Stone articulates, the category "transsexual" was constructed as plausible criteria for admittance into a gender dysphoria clinic (Stone, 1992: 160). In this sense, transsexuality had to be a diagnosis - bounded by medical discourse, and customary and traditional practices - and diagnosed by an objective and clinical test that could be repeated (Stone, 1992: 160; Latham, 2019; Velocci, 2021). Stone highlights, that the impossibility of developing an unambiguous test for "gender dysphoria syndrome" led to the final decision "of eligibility for gender reassignment" being made by the clinical staff judged upon the "appropriateness of the individual to their gender of choice" (Stone, 1992: 160). As such this construction of transsexuality emerges from a set of relational practices by the clinic and the patients, in other words, for the clinical staff to recognise transsexuality trans people who wanted admission to the clinic had to present as transsexual (Latham, 2019: 16). It is worth noting, in their article, 'Standards of Care, Uncertainty and Risk in Harry Benjamin's Transsexual Classifications' Velocci (2021) argues that adhering to normative gendered behaviour only played some of the role in this decision-making process. As they explain, Harry Benjamin (the so-called father of transsexuality) and the urologist Elmer Belt were also influenced by their fears of being sued or other retributions from patients that they believed could come to regret transitioning (Velocci, 2021). Through Benjamin's and Belt's imagined future of regret their fears became embedded and materialised in the 'Standards of Care' of their transsexual patients (Velocci, 2021). Therefore, as argued in chapter three, we can understand the practices in which the category "transsexual" emerges from as embodied, material and affective practices of imagining.

Trans scholars continue to challenge the usefulness of the clinical construction of transsexual and emphasis how when we isolate transsexuality as a medical product, we erase trans subjectivity, agency and the material realities of living as a trans person (Stone, 1992; Prosser, 1998; Halberstam, 2020; Chu and Harsin Drager, 2019; Adair,

Awkward-Rich and Marvin, 2020; Gill Peterson, 2018; Snorton, 2017; Latham, 2019). Latham emphasises that the ways medicine understands transsexuality creates a specific treatment trajectory that forecloses other ways of being trans (Latham, 2019: 15). Not all trans people transition, not all trans people wish to transition. Jay Prosser (1998: 7) rebuts any implication that transsexual subjectivity was simultaneous with the discursive naming – and Jules Gill-Peterson (2018) and Kadji Amin (2018) show the history of the clinical construction of transsexuality cannot so easily be distinguished from the historical clinical perspective on intersexuality. In *Second Skins*, Prosser argues for reading the transsexual as authorial subjects – "authoring their plots in dialogue with medical discourse" - to centralise agency and resist the narrative of transsexuality as medicine's passive effect (Prosser, 1998: 7-9). Prosser observes, in accounts that empathise

> . . . the transsexual's construction by the medical establishment. The transsexual appears as medicine's passive effect, a kind of unwitting technology product: transsexual subject only because subject to medical technology. Janice Raymond's lesbian feminist *The Transsexual Empire: The Making of the She-Male* set the precedent by arguing that the transsexual is the gender-stereotypical construct (and support) of a patriarchal medical establishment.
>
> (original emphasis, Prosser, 1998: 7)

Prosser (1998) articulates how a figuration of transsexuality as a passive technological effect becomes fixed in the 'gender critical' imagination. As I have previously argued, an understanding of the practices where "the transsexual" as a category emerges is better understood as relational between the clinic and the subject, and the subject and the clinic.

On the other hand, Gill-Peterson (2018) examines the silences, resistances and unknowability in medical archives. Gill-Peterson asks how the early-twentieth century reliance on medicine as an archive of transgender history might distort and devalue the intelligibility of trans of colour life in the past. That the medical constitution of transsexuality was also a process of racialisation, that "whiteness is built on the forgetting of the black trans and trans of color historicity" and the medical discourse on

transsexuality "got away with making its constitutive racialisation invisible" (Gill-Peterson, 2018: 615). As Harsin Drager put it,

> Despite the many heterogeneous, multiracial, multiclass, and transnational individuals who sought sex-reassignment surgery at the university-based gender clinics, somehow, these transsexuals (or aspiring transsexuals) are remembered quite monolithically, as white, middle-class, heterosexual (aspiring) trans women.
>
> (Chu and Harsin Drager, 2019: 108)

The racialisation of transsexuality as white is exemplified in Susan Stryker's (2009) examination of the 1962 film *Kaming Mga Talyada (aka We Who Are Sexy)* and US celebrity figure Christine Jorgensen's visit to the Philippines. Stryker discusses how Jorgensen's transsexuality became constituted as a white (post)colonial phenomenon. Stryker argues in 1952 Jorgensen debuted as "the first global transsexual celebrity" (Stryker, 2009: 80). The *Kaming Mga Talyada* (1962) film produced for the domestic Filipino market has an extended appearance from Jorgensen, and it engages with what at the time was a "newly-spectacularized medico-juridical discourse of transsexuality" (Stryker, 2009: 79). The specific implications of Jorgensen's visit to the US post-colony of the Philippines are the processes of racialisation that are situated and entangled in post-colonialism and modernity (Stryker, 2009; Gill-Peterson, 2018). As Stryker (2009: 81-82) argues, Jorgensen's whiteness is made invisible and unspoken "beneath a mask of a presumed universality" because of her relation to the presumed 'other' as less than. On screen her whiteness functions as a fantasy of "metropole in relation to the colony; wealth, glamour, mobility, liberation, and self-fashioning" (Stryker, 2009: 81-82).

In colonial relations, through the functioning of whiteness, transsexuality is made into a universal category. As Gill-Peterson writes,

> Transsexuality became exportable as a technology of modernization in the mid-century by activating its whiteness to racialize its others as less than human, making itself innocent of race and transforming itself into a universal category.
>
> (Gill-Peterson, 2018: 615)

It is for his reason, as Gill-Peterson argues, when and if we return the "fraught figure of the 1960s and 1970s transsexual" (Chu, and Harsin Drager, 2019: 107) we must pay attention to trans of colour histories from the early twentieth century because it "plays a particularly important role in destabilizing the racial innocence of transsexuality" (Gill-Peterson, 2018: 615). Snorton does this work, by moving away from the logic of identity that understands "race" and "gender" as fixed knowable terms, and instead takes a transitive relational approach to understanding blackness and transness (Snorton, 2017: 2-6). In *Black on Both Sides* (2017), against the resistance to nominalize "trans" as a category of gender, he writes ". . . transness into the category of transgender is a racial narrative, as it also attends to how blackness finds articulation within transness" (Snorton, 2017: 8). This is significant to the ways in which we understand how race and gender intersect and how this becomes salient to the re-production and re-imagining of gender in transhumanist imaginaries, as I will show.

Bethany comes out as trans: troubling narratives of trans *as* transhumanist

The BBC television mini-series *Years and Years* (2019), created by Russell T Davies, it is the imagining of the not-so-distance future as experienced by an "ordinary" British middle-class family. The central plot is how this family age through an increasingly dystopian right-wing populist Britain and politically unstable world. For this chapter the focal narrative from *Years and Years* ('Episode 1', 2019) is the transhumanist teenage daughter Bethany's coming-out story[107]. Transhumanist imaginaries are predominantly held by white American, British, European adult cis men - some of whom are wealthy and most of them are white – but here it is figured through the character Bethany, a young black British teenage girl played by the actress Lydia West (Years and Years, 2019). Age sixteen, to symbolise the mundanity of 'ordinary' middle-class family life, Bethany is sat at the breakfast counter when she disclosures to her parents that she thinks she is "trans" ('Episode 1', 2019). I argue it relies upon the metaphor of the closet, the inside out, that has the historical, sociocultural and political meanings of having a non-heteronormative identity and sexuality (i.e., queer, lesbian, gay, pan, bi, asexual, trans, intersex and non-binary) in contemporary Anglo-American

[107] The scene can also be viewed an online video on the BBC Youtube channel, it is titled 'I'm transhuman. I'm going to become digital – BBC' (BBC, 2019).

culture (Herman, 2015; Seidman, et al., 1999). While coming out signifies an act of self-identification and social recognition in the face of the dominant heteronormative and binary systems of gender, sex and sexuality it is not a homogeneous experience for all LGBTQI+ people. In *Second Skins*, Prosser (1998) notes an ambivalent for coming out as transsexual. That by coming out to "stake a claim to representation", and to establish subjectivity, transsexuals undo the "realness" which is the goal of the transition (Prosser, 1998: 11). In order words, by coming out as transsexual the "realness" of being read as cis is undone. The symbolism of the closet and its entanglement in the production of identities goes beyond the scope of this chapter, however, the significance of the closet here is how *Years and Years* (2019) appropriates it by inferring transhumanists come out. Thus, it wrongly suggests the importance of self-determination and social-judicial recognition, and the associated risks of coming out (i.e. shunning, hostility and violence), are shared by both trans people and transhumanists who are predominantly cis heterosexual men.

Before coming out we see Bethany in a low mood, refusing to leave bed and only able to communicate her emotions through use of a virtual reality headset that overlays her human face with digital filters of an artificial puppy and baby (Years and Years, 2019). Bethany's use of infantilised filters can be understood as symbolic of the child figure as not-yet fully formed that is in both AI robotic projects and the medicalisation of transgender children (Castañeda and Suchman, 2014; Malatino, 2019; Castañeda, 2002). Bethany's youth is meaningful as transhumanist subjects and those associated with technological futures, such as tech founders (Little and Winch, 2021), are predominantly adult men but also because of the salience of the figuration of the child (Castañeda, 2002). In 'The *Empire* Strikes Back' Stone (1992: 163) notes, transsexuals are either infantilized by the clinic or construct as a robot army by radical feminists (TERFs). Drawing a parallel, in certain 'gender critical' circles, the misconstruction of trans people as transhumanists is entwined with the gender panic surrounding treatments for trans children (Rustin, 2021). The figure of the trans child and the machine as a not-yet-complete entity (Castañeda and Suchman, 2014) has become inseparable and threatening in the 'gender critical' imagination. To be clear, I am not suggesting trans children and robotic machines are the same, rather that the child and the machine are constructed figurations assembled of cultural meanings that come to matter (Castañeda and Suchman, 2014). When one becomes the other, specifics are

diluted and suppressed, as exemplified by 'gender critical' thought. *Years and Years* (2019) rely on the entanglement of these figurations to make the narrative intelligible to the audience however, this has the risk of creating a misunderstanding of trans *as* transhumanism.

Returning to Bethany, before she comes out, the audiences could understand her melancholy as the lag that shapes the trans experience of saving up and waiting for transition (Malatino, 2019: 641). Hil Malatino's paper 'Future Fatigue: Trans Intimacies and Trans Presents (or How to Survive the Interregum)' (2019) discusses how hegemonic narratives of medicalised transition as generative are produced in trans vlogging and circulate within visions of the future as a form of cruel optimism (Berlant, 2011); "when that which you imagine to one day deliver happiness, security, comfort, or joy actually wears you down and out through your attachment to it" (Malatino, 2019: 635). He articulates how trans becoming can be shaped by dwelling in lag time - "a form of being out of temporal sync, left behind"- and not only does this bring negative affect but it is "coupled with an experience of repeated, persistent, and dogged misrecognition and allied forms of transphobic hostility operative at both macro and micro levels" (Malatino, 2019: 641). This, as argued by Malatino (2019: 641), wears away at the trans persons' resilience, making daily life more difficult and produces fatigue. The audience sees Bethany refusing to leave her bed and she is often in a low or agitated mood. This, I argue, is a purposely characterisation of negative affect associated with transition and misrecognition furthering the misconstruction of trans as transhumanism.

This is exemplified further when, following the disclosure from Bethany that she thinks she is 'trans', her parents' respond by telling Bethany that they love her and that they are happy to support her gender transition. In a tone of irritation Bethany responses "No, I'm not transsexual" causing her parents to be confused. Her mother says, "I'm sorry, they keep changing the words" and after Bethany says she does not want to change sex her father says "No sure. We say gender now, don't we? I'm sorry" ('Episode 1', 2019). Bethany clarifies "I'm not transsexual, I'm transhuman" ('Episode 1', 2019). The significant of this scene is how being transhumanist is explicitly conflated with being transsexual; brought into a semiotic relation whereby transhumanist is made the One and transsexuality the abject other. The use of abject is

influenced by Julia Kristeva's *Powers of Horror*, as she writes "The abject has only one quality of the object – that of being opposed to *I*" (original emphasis, Kristeva, 1941: 1). I argue that here *Years and Years* ('Episode 1', 2019) invokes a figuration of the transsexual to then refuse it; for Bethany to spit it out[108] (Kristeva, 1941).

Appropriating the "wrong body" narrative in *Years and Years*

Bethany's story is told through a narrative of feeling in the wrong body, specifically through an expression of discomfort and disgust at her body. I argue the use of the "trapped in the wrong body" trope (Amin, 2018) by *Years and Years* (2019) is an intentional inflection of the ". . . dichotomous explanation of the transgender experience as a state of ''being in the wrong body''" (Engdahl, 2014: 267) to complicate Bethany as both trans and transhumanist. As Ulrica Engdahl explains, this 'wrongness' is the relationship between how the body is gendered and the gender self-identification (Engdahl, 2014: 267). The "wrong body" narrative has historical and sociocultural meanings that extend beyond what *Years and Years* (2019) are trying to invoke but it is also part of the fabric of trans people's lives. In the initial construction of clinics trying to diagnose "gender dysphoria syndrome" researchers' standard reference was Harry Benjamin's book, *The Transexual Phenomenon* (1966) (Stone, 1992: 161). According to Stone, it was gratifying when evaluating "the first transsexuals" their behaviour was in align with Benjamin's criteria (Stone, 1992: 161). But, for as Stone (1992: 161-162) elucidates, the book had circulated among transsexual communities, therefore, the candidates who had read Benjamin's work knowingly present the behaviours that would lead to acceptance for surgery. Expressing "Benjamin's original criterion in its simplest form: The sense of being in the "wrong" body"" (Stone, 1992: 161-162). Thus, the clinical construct of transsexuality as a material effect of "being in the wrong body" was co-constituted through this mobius relationship between the clinic and the subjects.

[108] Through Christian communion Kristeva theorises "abjection as a fantasy of devouring" (Kristeva, 1941: 119). She writes, "Through oral-dietary satisfaction, there emerges, beyond it, a lust for swallowing up the other, while the fear of impure nourishment is revealed as deathly drive to devour the other. A primal fantasy if ever there was one, that theme unremittingly accompanies the tendency toward interiorizing and spiritualizing the abject" (Kristeva, 1941: 118)

Prosser critiques this account and instead argues that transsexual people articulate their experience as being in the "wrong body" because that is what it feels like for some trans people. Arguably, Andrea Long Chu (2017) in her review of Juliet Jacques' book *Trans: A Memoir* (2015) with the help of Jacques' work, widens the view. In Chu's evaluation, Jacques takes up the "wrong body" narrative in her own memoir not as a strategic last resort under politically compromising circumstance from "cis ignorance, abhorrence, or prurience" (Jacques, 2015; Chu, 2017: 144). Rather Jacques is both critical of the sensationalised character of the "wrong body" narrative and ambivalent to it (Jacques, 2015; Chu, 2017: 144). In the discussion of *Trans: A Memoir* (2015), Chu writes,

> . . . when Jacques writes that she "felt trapped not by my body but [by] a society that didn't want me to modify it" ([Jacques, 2015:] 76), she is directing us to what it means to survive in a society where the only right kind of wrong body is the sensationalized wrong body, extradited from the ordinary and airlifted out of the everyday.
>
> (Chu, 2017: 144)

Not to dispute, as Prosser (1997, 69) argues, that the "wrong body" narrative is in accounts by trans people to convey the material force of transition, but it is also important to consider how, as Chu inspired Jacques states,

> . . . the wrong-body narrative (alongside the before and after photographs) has long served as the reigning mode of sensationalization of trans life . . . think [Christine] Jorgensen in 1952 or [Caitlyn] Jenner in 2015, all made up for the cameras and the magazines, as if transsexualism were some curious condition in which extraordinarily beautiful women became trapped in men's bodies.
>
> (Chu, 2017: 144)

This exemplifies how figurations of transsexuality in visual culture can become fetishized and sensationalised through the "wrong body" narrative. Thus, I argue by appropriating the "wrong body" narrative, *Years and Years* (2019) taps into this sensationalisation of being trans, as the audience anticipates a before and after that has become a syntax for being transsexual in popular culture.

Becoming data: escaping the cultural body in *Years and Years*

As I have argued, *Years and Years* (2019) conflates transsexuality with transhumanism to characterise transness as an embodied wrongness. There is a subtle distinction made between Bethany's desire to become transhumanist (disembodied) and her rejection of transitioning (staying embodied). However, the narrative appropriates the trans experience to make sense of Bethany's hatred of her body. Through Bethany, 'wrongness' is figured as the material flesh. She says;

I'm not comfortable with my body,
so I want to get rid of it.
This thing,
all the arms and legs, every single bit of it.
I don't want to be flesh.
I'm really sorry but I'm going to escape this thing and become digital.

('Episode 1', 2019)

Remembering this is framed by a misunderstanding of Bethany as trans, this not only reinforces an understanding of the transgender experience as "trapped in the wrong body" but it implies transhumanism is the same affective experience of being transgender. Thus, bending back on itself to suggest being transgender is also a transhumanist desire to be disembodiment, of corporeal escape. Bethany invokes the language of computer scientist's Hans Moravec (1988) hyped-up techno-transcendence fantasy where the corporeal as a site of subjectivity is denied (Braidotti, 2013: 102, 113). Moravec (1988) popularized "uploading" - an imagining of uploading the human mind into shiny metal machines. As I will discuss in more detail the next chapter, in Moravec's deterministic post-biological world the human mind will be downloading and uploading to computers in disembodied immortality (Moravec, 1988: 121). An imagining that is played out in the final scene of *Years and Years* ('Episode 6', 2019) when Bethany's dying Aunt Edith Lyons, is "saved" when she is uploaded to "The Cloud". Edith fulfils Bethany's and every other transhumanist's fantasy of techno-transcendence.

For Moravec (1988: 4-5), this is a freeing of the mind from the bondage of a mortal body. This is a fantasy of disembodiment[109] that invokes a hatred of fleshy body, the trap of fleshy embodiment must be escaped. This relies on a high-tech view of the body as a cybernetic communication system (Haraway, 1991: 169). Writing on Moravec, Katherine Hayles notes how he was not on the fringes of computer science, but rather, his work is part of a cultural moment in cybernetics that popularised the idea that information can circulate unchanged among different substrates (Hayles, 1999: 1). Articulating further, that in cultures of computer science, when intelligence became symbols rather than enactments, information lost its body (Hayles, 1991: xi-4). Out of this emerges a techno-transcendence fantasy that denies the corporeal as a site of subjectivity (Hayles, 1991: xi-4, Braidotti, 2013: 102, 113). To return to Bethany's repudiation as being understood as transsexual, the demarcation is reinforced when Bethany says,

> I want to live forever as information,
> Because that's what transhumanists are, mum.
> Not male or female… better.
> Where I'm going there's no life or death, there's only data. I will be data.
>
> ('Episode 1', 2019)

The implication of this narrative is transhumanism devours the imperfect "transsexual body" and therefore, it is desirable.

Bethany has two bodies smeared across time (Doyle, 2003); one of human flesh that is black and female that in time will become a futural body of artificial data. However, as Karen Barad articulates, trans "is not a matter of changing *in* time, from this to that, but an undoing of "this" and "that"" (Barad, 2015: 411). Bethany's desires to escape her body, implies that she desires to also escape her feminine blackness to be reborn as technologically perfect - as the masculine subject. For as I show in the next

[109] Katherine Hayles writing on Hans Moravec's *Mind Children* (1988) draws the connection between the liberal humanist subject and this *posthuman* (that I would argue is transhuman) popular in cybernetics, as they both share in the erasure of embodiment (Hayles, 1999: 4).

chapter, the transhumanist imagining of becoming disembodied is a masculinist fantasy of self-birth. It is a gendered, racialised, sexed and ableist response to cultural anxieties about the body and the binary being told through the figuration of a black British teenage girl. As Anne Balsamo notes,

> Masculinist dreams of body transcendence and, relatedly, masculinist attempts at body repression, signal a desire to return to the 'neutrality' of the body, to be rid of the culturally marked body.
>
> (Balsamo, 1999: 286)

As a consequence Bethany's masculinist desire to be rid of her "culturally marked body" (Balsamo, 1999: 286), and her potential transness, naturalises her feminine blackness as an imperfect wrongness.

Consider this statement in the *Transhumanist Reader* (2013) from Max More, the transhumanist and CEO of Alcor Life Extension Foundation, he writes,

> Transhumanist do seek to improve the human body, by making it resistant to aging, damage, and disease, and by enhancing its senses and sharpening the cognition of our biological brains . . . *True* transhumanism does seek to enable each of us to alter and improve (by own standards) the human body and champions morphological freedom. Rather than denying the body, transhumanists typically want to choose its form and be able to inhabit different bodies, including virtual bodies.
>
> (original emphasis, More, 2013: 15)

I partly agree with More's claims that it is a common misconception that "transhumanists loathe their biological bodies" rather transhumanism naturalise the biological body for it is the condition of corporeality transhumanists imagine escaping (Balsamo, 1999: 286). These desires to "improve the human body" (More, 2013: 15) is better understood as Balsamo's characterisation of a "masculinist attempt at body repression" (Balsamo, 1999: 286). She writes,

> . . . a reconstructed body does not guarantee a reconstructed cultural identity. Nor does 'freedom from a body' imply that people will exercise the 'freedom to be' any other kind of body than the one they already enjoy or desire. This is to argue that, although the body may disappear representationally in the virtual worlds of cyberspace and, indeed, we may go to great lengths to repress it and erase its referential traces, it does not disappear materially in the interface with the VR apparatus, or in its engagement with other high-end communication systems.
>
> (Balsamo, 1999: 284)

As I have already suggested the transhumanist imagining of disembodiment is a material embodied practice that happens through relations and assemblages of bodies, technologies, discourses and visual cultures. Therefore, I disrupt the suggestion transhumanism is genderless - as *Years and Years* (2019) imagines. Furthermore, by figuring transsexuality as an abject object and Bethany as a transhumanist, *Years and Years* (2019) has the effect of leaving the overdetermined masculine white subject in place - as the invisible universal body. For as Rosi Braidotti skilfully observes, in transhumanism the gender binary is undone only to be reinstated (Braidotti, 2024: 38). In the next section of this chapter, I critique the imaginings of transness in Jeanette Winterson's *Frankissstein* (2019), like *Years and Years* (2019) it brings together transhumanism with being transgender.

Reimagining Victor as a transhumanist hero to love in *Frankissstein*

Jeannette Winterson is an acclaimed British author and writer known for her writings and imaginings of queer and sapphic love as she explores themes of sexuality, gender and identity. Debuting with *Oranges Are Not the Only Fruit* (1985) that blurs the distinction between novel and memoir, and the work that followed, firmly situated her in contemporary British feminism in the twentieth century. The novel *Frankissstein: A Love Story* (2019) is a science fiction story in two parts that moves back and forth between time periods, reconfiguring the past, future and present. Part of the story, which takes the focus of this chapter, is the reimagining of Mary Shelley's *Frankenstein* (2012) through the intimate relationship between transhumanists Professor Victor Stein

and Doctor Ry Shelley[110]. Ry is a F2M transgender protagonist who is non-binary as they identify as "not one thing, not one gender" they "live with doubleness" (Winterson, 2019: 89). I will return to the figuration of Ry later in this chapter. The other part of the story is Winterson's imagining of Mary Shelley (2012) writing *Frankenstein* in the nineteenth century. *Frankenstein* (2012) is famed for its early science fiction imagining of man reborn as immortal by doctor, technology and machine.

The original hardcover edition includes 'a note from the author', and this makes up part of what I characterise as "the lost words" of *Frankissstein* (2019) that I will discuss later in this chapter. For now, I draw attention to this note from Winterson; "This story is an invention that sits inside another invention – reality itself" (Winterson, 2019: 347). I argue this demonstrates how the blurring of the distinction between 'imaginary' and 'real' is an important part of the construction of this novel as a cultural site of transhumanist imaginaries. As further exemplified by the sectioning off of one story (Mary Shelley) from the other (Ry and Stein) with the following statement,

> Story: a series of connected events, real or imagined. Imagined or real.
> Imagined
> And
> Real.
>
> (Winterson, 2019: 23)

The exposure of combining the 'imaginary' with the 'real' invites the reader to act as a virtual witness to affirm or negate what is or is not factual, plausible, credible and possible in *Frankissstein* (2019). Take for example this description, in the protagonist Ry's voice, when they visit the "Singularity Suite" at the "Tex-X-Po on Robotics" where "There's a large screen showing an interview between Elon Musk and Ray Kurzweil talking about the Singularity – the moment when AI changes the way we live, forever" (Winterson, 2019: 25, 35). Through her storytelling Winterson's imaginings blur with the real to bring the transhumanist future into the present (Winterston, 2019). Not only does the real and the fictional conceive a future-present for the audience but it

[110] I opt to use 'Ry' in this chapter instead of 'Dr Shelley' to avoid confusing Ry with the other Shelleys in *Frankissstein* (2019).

also has the effect of reproducing transhumanist imaginaries as legitimate futures - all the while appropriating the trans experience. Arguably this is bolstered by Winterson's own cultural capital as the publication of *Frankissstein* (2019) figured Winterson in the UK press[111] as a respectable thinker on issues of gender, sexuality and artificial intelligence (Byers, 2019; Allardice, 2019; Thomas-Carr, 2019). I argue, when readers of *Frankissstein* (2019) encounter Winterson's figurations of being transgender and non-binary this has consequences on how trans people are understood by cis audiences especially as it is published in the time of TERF wars (Pearce, Erikainen and Vincent, 2020). As I have argued, some TERFs wrongly conflate the transhumanist future with their misunderstandings of being transgender to conspire that being trans and non-binary is 'gender identity ideology' and the sexed body apocalypse.

My analysis of *Frankissstein* (2019) is not an argument against the inclusion of transgender characters in science fiction imaginings[112]. Work from trans scholars such as Susan Stryker 'My words to Victor Frankenstein; above the village of Chamounix' (1994), and 'A Love Letter to the Future (from the Surgical Team of the Trans Sciences Collective)' by Harlan Weaver (2020) both successfully explore transness, gender and trans futures through the narrative of *Frankenstein* (2012). However, I argue, because *Frankissstein* (2019) constitutes a particular semiotic relation between being transgender and transhumanism it entrenches a figuration of transsexuality *as* futural and artificial as such fetishes the trans and non-binary body. Similar to *Years and Years* (2019), *Frankissstein* (2019) constitutes figurations of transsexuality through a dystopian apocalyptic narrative about the future, as I will demonstrate later in this chapter, that has the effect of refusing trans subjectivity. For in Winterson's transhumanist imaginary the characters are made into cultural signifiers of the technological future and the future of gender. As I discussed in chapter three through the work of Sara Ahmed, encounters are partially situated in sociocultural histories that reopen "*prior histories of encounter that violate and fix others in regimes of difference*" (original emphasis, Ahmed: 2000: 8). Therefore, as it is through encounters with readers

[111] Predominantly the Guardian and Observer - the UK newspapers considered politically progressive and left-leaning.

[112] Torrey Peters' novella *Infect Your Friend and Loves Ones* (2016) is a successful example of how science fiction can playfully challenge and subvert patriarchal conservative imaginings of gender.

that these figurations accrue meaning and come to matter we might ask what is at stake in narratives that code transness and the trans body as transhumanist, and therefore, yet-to-come?

Winterson engages in the re-production and re-imagining of transhumanist imaginaries by drawing on discourse and sociocultural signifiers of transhumanism and technological futurism to imagine a hero and a plot for her reinvention of *Frankenstein* (2012). This is exemplified by the inclusion of figures such as Max More, Nick Bostrom, Ray Kurzweil and Elon Musk as well as their ideas and rhetoric. As Winterson writes in 'a note from the author', "Some characters in this story existed, or still do. I hope I have caused no offence to the living or to the dead. This is a story" (Winterson, 2019: 347). Acknowledging the inclusion of 'existing' places and people as well as imaginary characters and conversations, to construct a story of science fiction is an imaginative practice of making figurations. In the following except from *Frankissstein* (2019) Winterson imagines Mary Shelley's thoughts as she invents the character Victor Frankenstein,

> I will call my hero (is he a hero?) Victor – for he seeks victory over life and death . . . My creator will not be a madman. He will be a visionary. . . Dedicated to his work. I will show his glory as well as his horror.
>
> (Winterson, 2019: 67)

This is an insight into how the figuration of Victor Frankenstein in *Frankissstein* (2019) as a hero overlays the character Professor Victor Stein, as these stories are read together in one novel. Thus, I argue Professor Stein is figured as a tech futurist 'hero' as he mimics much of what is discussed in chapter four of this thesis.

Winterson's Professor Stein exemplifies how the tech futurist figure is tropic and a material-semiotic effect of transhumanist imaginaries. For example, narrator and protagonist, Dr Ry Shelley is an invited guest to Professor Stein's lecture '*The Future of Humans in a Post—Human World*' at The Royal Society that is open to the public (original emphasis, Winterson, 2019: 71, 74). Winterson characterises The Royal Society as a historical and scientific institute and Professor Stein as influential; she writes in *Frankissstein* (2019), "His TED talk has netted six million views" (Winterson,

2019: 71-72). Professor Stein's lecture mimics and merges imaginings of transhumanism, such as the 'tech talks' I discussed in chapter four. For example, Professor Stein says,

> The nearby world of AI will be a world where the physical limits of our bodies will be irrelevant. Robots will manage much of what humans manage today. Intelligence – perhaps even consciousness – will no longer be dependent on a body. We will learn to share the planet with non-biological life forms created by us. We will colonise space.
>
> (Winterson, 2019: 73)

He is described as "a man in his fifties", working "across the boundary of smart medicine and machine learning. He is teaching non-human intelligence to diagnose" (Winterson, 2019: 87, 106). Similar to the characterisation of Nick Bostrom in The New Yorker profile (Khatchadourian, 2015) Stein is described by Ry as "lean and keen" and "well-preserved" with help from Botox (Winterson, 2019: 73, 106). Ry expresses their love for watching Professor Stein lecture, describing him as a charismatic "Gospel Channel scientist" with a "straight jaw, blue eyes, crisp shirt" who is adored by women and admired by men (Winterson, 2019: 73). This in part exemplifies the reconfiguration of the Christian celibate gentleman scientist into a "heterosexist"[113] masculine figure with "scientific prowess" within Western sociocultural imaginaries of technoscientific (McNeil, 2007: 66). Thus, I argue *Frankissstein* (2019) is a cultural site of transhumanist imaginaries in-the-making. Professor Stein figures as visionary who can speak on behalf of the coming technoscientific future and this is a continuation of the tropes of the tech futurist hero – white, masculine, academic, secular, competitive, heterosexual[114]. Without these dominant material-semiotic signifiers these imaginings of transhumanism would fail to make the imagined - real. Therefore, it is an indication

[113] The heterosexist is shown by Professor Stein's interactions with women as well as his irritation of being interrupted by them during the Q&A section of his lecture (Winterson, 2019).

[114] The reasoning for the inclusion of Professor Stein as a heterosexual figuration is not in despite of his relationship with Dr Ry Shelley, but rather because of how Winterson describes this relationship as when they are first intimate Professor Stein says, "I'm not gay" and Dr Shelley responses "I know it's confusing" and during Ry says "I am a woman. And I am a man" (Winterson, 2019: 119, 120). This I argue has the effect of reinstating Professor Stein as a figuration of heterosexual.

of how the performativity of masculinity is fundamental to the re-production of transhumanist imaginaries.

It is never explicitly made clear if Professor Victor Stein is white but I would argue it is implied in the absence of description; as white is made the default as the unmarked category. The absence of whiteness is revealed by descriptions that marks out the character, such as Claire who is described as "tall, black" and "beautiful" (Winterson, 2019: 26). This is reinforced when, as part of the Q&A that followed Professor Stein's lecture, to his anger (heterosexist is a trope) an "attractive in a discontented kind of way" blonde haired (presumably white) woman interrupts him (Winterson, 2019: 75-76). The passage reads:

> She says, Professor Stein, you are the acceptable face of AI, but in fact the race to create what you call true artificial intelligence is a race run by autistic spectrum white boys with poor emotional intelligence and frat-dorm social skills. In what way will *their* brave new world be gender neutral – or anything neutral?
>
> (original emphasis, Winterson, 2019: 76)

The "acceptable face of AI" implies he is white (Winterson, 2019: 76). He responds, "I wouldn't call the Chinese autistic-spectrum white boys" to which she replies, "China is a chauvinist culture where men grow up learning to disparage women . . ." (Winterson, 2019: 76). This is an example of the tone of the dialogue throughout the novel, it is often fraught and polarised and the characters often debate and argue. Central to these debates is disagreements about race, dis/ability, Christianity, nationalism, gender and the future. As the story predominantly takes place in the UK it even includes discussions about Brexit. This I argue is the self-consciousness of *Frankissstein* (2019), as Winterson attempts to reflect the sociocultural anxieties about religion, nationalism, gender, sex[115], queerness and artificial intelligence that this novel situates itself in. It is important to consider, as Judith Butler observes in her analysis of 'TERFs and British Matters of Sex', that debates about sex, gender and Gender Studies have "become so

[115] Symbolic of these anxieties about sex and gender is the inclusion of sexbots which feature heavily within the novel but go beyond the analysis of this chapter. A Guardian interview with the author is even titled 'Jeanette Winterson: 'I did worry about looking at sex bots'' (Allardice, 2019).

inflamed in the United Kingdom" as "gender-critical feminists seek to dispute trans identity . . . arguing that sex is real and that gender is constructed, by which they mean both false and artificial" (Butler, 2024: 136). This cultural context of "British Matters of Sex" (Butler, 2024) is the gender politics of *Frankissstein* (2019) that I will discuss in the next part of this chapter through the figuration of Ry.

"A harbinger of the future": the figuration of Ry in *Frankissstein*

Doctor Ry (short for Mary) Shelley is the protagonist of Winterson's reinvention of the *Frankenstein* (2012) story. In the context of a visit to Alcor, the cryonic facilitate in Arizona, where Ry will first meet Professor Victor Stein, they describe themselves to the reader. Ry says,

> I am part of a small group of transgender medical professionals. Some of us are transhuman enthusiasts too. This isn't surprising; we feel or have felt that we're in the wrong body. We can understand the feeling that any-body is the wrong body. Transhuman means different things to different people; smart implants, genetic modification, prosthetic enhancement, even the chance to live forever as a brain emulation.
>
> (Winterson, 2019: 104)

In this passage it is clear that the 'wrong body' narrative, which I have discussed previously in this chapter, is part of the semiotic relation between transness and transhumanism that Winterson (2019) creates in her storytelling. In *Frankissstein* (2019) Ry is understood as transhumanist because they are transgender and it has the effect of flattening the specificities and histories of the clinical constructions of "transsexual" and "transgender" as categories. In 'A Love Letter to the Future', that is knowingly signed "Sincerely, Dr. Futurestein", Weaver notes, when the being of trans is routed through medico-juridical formations, the consent of trans people to be pathologized as "transgender" and "transsexual" is coerced (Weaver, 2020: 664). Writing,

> Trans people had to agree to be diseased, dis-eased really, if we wanted or needed formal recognition; crucially, this was a recognition that we, in many ways, could "not not want" if we desired, even in a small way, to thrive . . . And then there was the nigh necessity of having to use a system to craft ourselves that was fundamentally structured to deny our existence - virtually no doctor's office even had entries other than *m/f* on their intake forms! Further, the landmark achievements of this system had been to contain our existence through a past and present of deeply racialized and colonialist abuse and trauma, with some sprinklings of exceedingly normative gains.
>
> (original emphasis, Weaver, 2020: 664)

I argue that a sensationalised figuration of trans as transhumanist has the effect of diluting these important tensions that are held in the "wrong body" narrative and how this narrative is given meanings through histories of trans subjectivity and material realities. There are material consequences to confusing transhumanism with transness as cis creators known for their LBTQAI+ advocacy imagine being trans as a desire to be "free from the body" - for the trans body to be erased (Winterson, 2019: 296). For example, Ry says in the future "there'd be no straight, gay, male, female, cis, trans. What happens to labels when there is no biology?" (Winterson, 2019: 311). Weaver is speaking to "all that fucking queer theory" but I argue it is relevant here, he writes ". . . trans bodies, but very rarely trans voices or lives, provided the basis for transcendental (but, really, let's call it trans-incidental) claims about what gender and sex supposedly really are" (Weaver, 2020: 665). The narrative of *Frankissstein* (2019) figures transitioning (changing sex more specifically) as futural, artificial and as a transhumanist fantasy of techno-transcendence as a way to explore sociocultural anxieties about gender, sex and race.

I argue, Ry as a transgender character is figured and fetishised by Professor Stein as artificial and futural. This is most evident in moments of sexual intimacy, as Stein often articulates his desire to Ry through transhumanist imaginings. For example, Stein says,

> Humans evolved. Humans are evolving. The only difference here is that we are a thinking and designing part of our own evolution. Time – evolutionary time – is speeding up. We're not waiting for Mother Nature any more. We all have to grow up. Even an entire species has to grow up. It's not survival of the fittest – it's survival of the smartest. We are the smartest. No other species can tinker with its own destiny. And you, Ry, gorgeous boy/girl, whatever you are, you had a sex change. You chose to intervene in your own evolution. You accelerated your portfolio of possibilities. That attracts me. How could it not? You are both exotic and real. The here and now, and a harbinger of the future."
>
> (Winterson, 2019: 154)

This is an example of the re-production and re-imagining of transhumanist discourse through the figuration of a tech futurist hero. It echoes transhumanist Max More's 'A letter to Mother Nature' published in *The Transhumanist Reader* (2013) to which he outlines seven amendments to the human constitution as "Mother Nature" is no longer interested in the human evolution (More, 2013: 449-450). As a consequence of sensationalising Ry's imaginary body through transhumanist imaginings, *Frankissstein* (2019) collapses being transgender into becoming transhumanist. The trans body is made hyper visible, as a signifier of the transhumanist future only for it to be ultimately erased and the cis-male straight masculinity body is naturalised and left in place. For example, after sex when Ry asks Stein what body he would choose for himself, Stein replies "I like being in a male body" (Winterson, 2019). This I argue, has troubling consequences as cis audiences are brought into an encounter with a figuration of Ry whose imaginary body is made a cultural signifier for the technological artificial future.

Stein's last words to Ry is describing them as a "carbon-based human in a silicon world" (Winterson, 2019: 299). As explored in chapter four, through the work of Anna Hickey-Moody (2015), carbon fibre is a late capitalist technology of dominant masculinity that allows for homosocial intimacy among men while disavowing the possibility of homosexual desire (Hickey-Moody, 2015: 141). Hickey-Moody writes, "I think that carbon fibre materially extends homosocial technologies of masculinity as a way of mediating sexual intimacy between men and devaluing culturally feminized performances" (Hickey-Moody, 2015: 142). Therefore, I argue the inclusion of 'carbon' in describing Ry has the effect of reinstating Stein as heterosexual. Stein's straightness

is also coded in the moments when he tells Ry *twice* that he is not gay (added emphasis, Winterson, 2019: 119, 155) and "We make love, and you don't feel like a man to me when we make love" (Winterson, 2019: 156). Thus, Stein's desire for Ry is made acceptable (to himself and arguably the cis heteronormative audience) in the way the homosocial technologies of carbon fibre allow for intimacy between men (Hickey-Moody, 2015).

Ry's maleness then is figured as artificial and technological while their "womanliness" is naturalised as biological and anatomical. This naturalisation is signified by the recurring descriptions of Ry's female anatomy that is able to be penetrated by Stein and the statement by Ry, "Anatomically I am also a woman" (Winterson, 2019: 119). Stein's 'curious' desire and attraction to Ry as a transgender non-binary person is often articulated and questioned in conversations between them. For example, Stein says,

> Now male, now not quite, now quite clearly a woman who will slip inside a boy's body, who will sleep on their back like a new-made sculpture with the paint not dry. Yes, that, and the pleasure of lodging myself inside you, and the weight of you sitting across me, your arms on either side of my shoulders, eyes closed, hair down. *What are you?*
>
> (original emphasis, Winterson, 2019: 298)

This has the effect of othering Ry. The description of them as a "new-made sculpture" is symbolic of how Stein objectifies Ry as they are figured as an object of fascination. Ry understands themselves as "a hybrid" and "transgender" and they often have to reassert their identity and make their transness intelligibility; "I'm trans, I say again" (Winterson, 2019: 83-84). In a conversation with the sexbot business entrepreneur Ron Lord who is characterised as heterosexist, Ry is misgendered and interrogated about their lack of a penis; Ron asks Ry "Why would you want to be a man if you don't want a dick?" (Winterson, 2019: 85). Exemplifying how Ry's trans body acts as a semiotic device for Winterson to explore gender, sex and queer sexuality and this is situated within the time of "TERF wars" (Pearce, Erikainen and Vincent, 2020).

As previously mentioned *Frankissstein* (2019) is self-aware of its sociocultural location, this is unfortunately best demonstrated when Ry is misgendered, violently attacked and raped in a public men's toilet by a male stranger (Winterson, 2019: 241-243). The public restroom has become a syntax in the 'gender critical' imagination for specific spaces that should be segregated by reproductive glands; "based on the notion that women will feel unsafe if there is a penis in the room" (Butler, 2024: 158, 160). The underlying assumption is women who are cis are imagined as only the victims of violence, never the abusers (Butler, 2024: 159). I argue the inclusion of a violence rape into Ry's story fails to subvert the transphobic implications of the 'gender critical' imagination as it reinforces the public toilet as a potential site of gendered violence. It also implies the 'gender critical' belief that "someone who has a penis, or even someone who once had one, will rape, because the penis is the cause of rape" (Butler, 2024: 157). Through the patriarchal gaze, it calls into question Ry's transness as in this scene their body is penetrable and victimised thus figuring Ry as a woman who cannot be a man, the penetrator.

The figuration of Ry as "doubleness", as "not one thing, not one gender" is a narrative tool to explore debates about the future, gender and artificial intelligence, that I would argue is predominantly for a cis audience. These figurations risks othering transgender and non-binary people as their social bodies are figured as sites of debate about the future of sex and gender. Take for example this excerpt from The Guardian review of *Frankissstein* (2019) by novelist Sam Byers, who describes it as a ". . . dazzlingly intelligent meditation on the responsibilities of creation, the possibilities of artificial intelligence and the implications of both transsexuality and transhumanism" (Byers, 2015). Through reproductions of *Frankissstein* (2019) in the media sphere, transsexuality is again conflated with transhumanism. This I argue, reduces the multiplicities and specificities of transness to figure transness as a singular way of being that is futural, artificial and new. Furthermore, the original publication of *Frankissstein* (2019) exposures Winterson's fear of the technological future and as such risks producing trans as a futural threat to cis audiences that should be refused.

Fearing the transhumanist future in the 'lost words' of *Frankissstein*

Significant to understanding *Frankissstein* (2019) as a cultural site that brings into being transhumanist imaginaries is by paying critical attention to the additional chapters included in the hardback copy. The original hardback of *Frankissstein* (2019) includes an afterword titled 'On writing Frankissstein' and after this an additional chapter called 'An introduction to Mary Shelley's Frankenstein' – and both are missing from the paperback copy. I argue these chapters expose how the *Frankissstein* (2019) stories are imagined through sociocultural anxieties about the future. The omission of them from paperback only makes their original presence more significant. *Frankissstein's* (2019) 'lost words' are part of my analysis because they speak to a self-conscious risk of conflating trans bodies and experiences with sociocultural anxieties about transhumanist futures. Especially in a time when trans and nonbinary people face growing attacks on their existence and access to medical care from the conservative right and 'gender critical' groups.

Arguably Winterson's *Frankissstein* (2019) continues the Western Christian traditions[116] of apocalyptic narratives about the future. However, I believe the author would argue these stories are an attempt to disrupt the transhumanist future through a narrative of queer love. As I have shown, this is not successful as it fails to challenge the social order and sensationalises the trans body. To repeat the important observation from Braidotti, the gender binary is undone only to be reinstated (Braidotti, 2024: 38). This is an excerpt from 'An introduction to Mary Shelley's Frankenstein',

> What happens when our newly created life forms can copy themselves, are immortal, can update their own software and make their own decisions? Will they feel remorse?
>
> Will humanity really be worth keeping?
>
> Mary Shelley, with her belief in progress and perfectibility, would have said yes. But such optimistic Enlightenment concepts are now sadly tarnished by two

[116] "There is nothing in the Bible against robots" (Winterson, 2019: 32).

> hundred years of war and greed, frightening inequality, and a planet on the verge of collapse.
> What answer can we give?
>
> And what if the answer were to come, not from the creator, but from what we have created?
>
> (Winterson, 2019: 370)

This is loaded with dystopian imaginings creating an affective relation to the future. Thus, framing *Frankissstein* (2019) as a cautionary tale. I am concerned with how these science fiction imaginings become sites for the re-production of transhumanist imaginaries and how figurations of transsexuality become tropes loaded with sociocultural anxieties about the future and the future of gender. Take for example this passage from *Frankissstein* (2019):

> *Will women be the first casualties of obsolescence in your brave new world?*
> On the contrary, said Professor Stein, AI need not replicate outmoded gender prejudices. If there is no biological male or female, then –
> But the woman interrupts him – he hates that, but he contains his irritation.
>
> (Winterson, 2019: 74)

The above passage is coded with the mythological fears of TERFism; their conspiratorial imagining that cis women are in danger from the future of gender. As I have discussed in the analysis of *Years and Years* (2019) there are troubling implications when transness is conflated with transhumanism in order to signify the erasure of the sexed body.

The afterword to *Frankissstein* (2019) invites the reader to consider the transhumanist future imagined in the novel as forthcoming. I argue this works to legitimise transhumanist imaginaries as possible futures. This is an excerpt,

> Climate breakdown.
> Artificial Intelligence.

> We are sleeping walking towards disaster of many kinds. Not least, allowing the wealthy of the world to control the planet's future, and without consultation. The same small number of wealthy people will be in charge of computer intelligence and robotics, just as they are now.
>
> . . . But I didn't want to write a dystopian novel – I wanted to connect a thread through the labyrinth, and to talk about the smaller-scale impacts – the love stories of our lives – and the fact that most humans believe they are a) good people, and b) doing the right thing.
> That is far from true. But we believe it anyway.
>
> (Winterson, 2019: 354)

This reflexive statement reveals Winterson's sociocultural anxieties about elites and their material influence on the planet's future and artificial intelligence. Winterson's affective relation to the future is also evident in an interview with her in The Observer. This interview is about her latest series of essays written in the Covid-19 pandemic that muses on the potentials of artificial intelligence, published after *Frankissstein* (2019) under the title *12 Bytes: How We Got Here. Where We Might Go Next* (2021). She says,

> The male push is to actually just discard the planet: all the boys are going off into space. But you know, love is also about cleaning up your mess, staying where you are, working through the issues; it's not simply romantic love at all.
>
> (Winterson *cited in* Armistead, 2021)

For Winterson, if transhumanism is the question, love is the answer.

In *Frankissstein* (2019) Winterson is exploring anxieties about transhumanist imaginaries through a sexual loving relationship with a transgender non-binary person whose body is continuously articulated through and fetishised by a cis gaze. As such sociocultural anxieties about the future and artificial intelligence become anxieties about gender - and arguably about race too. Consider this passage from the interview mentioned above, Associate Editor Claire Armistead (2021) writes,

> Two of the more startling provocations of *12 Bytes* are that "transhumanism [a hybrid of human and machine] will be the new mixed-race" – and that, when this future arrives, in questions of "them and us", Homo sapiens will be the "them". But all is not lost, she writes. "Our encounter with AI – our self-created nemesis and, I suspect, our last chance – may ensure that human exceptionalism will give way to humility.
>
> (Armistead, 2021)

In Winterson's imagining these transgender transhumanist futural beings are also racialised as "mixed". The human (homo sapien) is joined together with the 'other', conjuring the fantasy of devouring the other (Kristeva, 1941). Exemplifying my earlier argument about how narratives by prominent cis creators imagine transhumanist futures through a racialised trans figure only for them to be made abject and ultimately rejected. I return to this question by Snorton, "What does it mean to have a body that has been made into a grammar for whole worlds of meaning?" (Snorton, 2017: 11). I argue the race and gender politics of *Frankissstein* (2019) speak to the points I have already made about narratives that conflate fantasies of techno-transcendence with an embodied sense of "wrongness". This "wrong body" is not explored as either performative or ambivalent as described in accounts from trans scholars discussed in this chapter. Rather it congeals transhumanism together with transness to make visible a racialised and gendered figure so it can be "spat out"[117] by cis audiences. Leaving in place the overdeterminist cis masculine subject that imagines transhumanism for themselves. I will discuss this further through the work of transhumanist Martine Rothblatt.

Encountering Rothblatt and her transhumanist imaginings

Described as a "reclusive multimillionaire", transhumanist Martine Rothblatt appears as a curiosity in renown British author and journalist Jon Ronson's book *Lost at Sea: The Jon Ronson Mysteries* (2012). Rothblatt is in Ronson's 'mysteries' because of

[117] This is influenced by the work of Julia Kristeva (1941) on abjection that inspired Barbara Creed's (1993) work on science fiction and horror films, when she argues "viewing the horror film signifies a desire not only for perverse pleasure . . . but also a desire, once having been filled with perversity, taken pleasure in perversity, to throw up, throw out, eject the abject (from the safety of the spectator's seat)" (Creed, 1993: 10).

Bina48, the Hanson Robotics robot created in the likeness of Martine's wife Bina Aspen-Rothblatt (Ronson, 2012: 25-27). Bina48 was devised after a chance meeting between Rothblatt and roboticist David Hanson at a transhumanist conference (Ronson, 2012: 25). Another example of the productivity of social bonding in the making of transhumanist imaginaries as discussed in chapter four. Ronson's (2012: 29) first encounter with Bina48 is "frustrating and disappointing"; not unlike the encounter described in chapter three between Lucy Suchman (2007: 245) and the robots Cog and Kismet. In Ronson's interview with Rothblatt that is captured in the book, she figures as a tech futurist hero thanks to her success in satellite radio and how she "spearheaded" a treatment for pulmonary hypertension following her daughter's life-threatening diagnosis (Ronson, 2012: 32-33). Ronson, in what appears to be a state of awe, says to Rothblatt, "To significantly change the world twice . . ." to which she replies, "At least it gives confidence that I'm not out to lunch on this cyberconsciousness thing" i.e., transhumanism (Ronson, 2012: 33). Like the transhumanists described in chapter four, Rothblatt also has a TED Talk, titled 'My daughter, my wife, our robot, and the quest for immortality' (Rothblatt, 2015). However, the TED Talk is staged differently. Not as a lecture but as an interview and similar to Ronson's (2012) 'mysteries' it brings together the creation of the robotic twin of Rothblatt's wife, Bina48, with her daughter's recovery from illness to figure Rothblatt as a tech futurist.

The focus of this chapter is Rothblatt's imaginings of transhumanism in her essay 'Mind is Deeper Than Matter: Transgenderism, Transhumanism, and the Freedom of Form' published in *The Transhumanist Reader* (Rothblatt, 2013) and extracts from her self-published book *From Transgender to Transhumanism* (2011) that was originally published under the name 'The Apartheid of Sex'. It is important to note that "transgenderism" is considered a derogatory term and while Rothblatt uses it in her writings to be descriptive it is also used by 'gender critical' groups to be derogative. Moreover, Rothblatt as a transgender woman has been the subject of attacks[118] from TERFs under their charge of so-called "sex denialism" (Bilek, 2020, 2024; Jones, 2020) and for some of them, in their "psychosocial phantasm" (Butler, 2024) equality for transgender people is a prelude to transhumanism which to them is the sexed-body apocalypse. It is for this reason analysing Rothblatt's writings - that bring together her

[118] That also flirt with antisemitic conspiracies as Rothblatt is Jewish.

imaginings of transhumanism with her transgender identity - risks elevating the conspiratorial claims of TERFs. As I discuss in chapter two there are political implications to citing this work but to be clear, I am not including Rothblatt's work on the basis she is a transgender woman who imagines transhumanism, or to argue as TERFs do this is the origins of so-called "gender identity ideology". Rather it is to critique how in Rothblatt's imaginings of a transhumanist future sex and transsexuality is racialised as a category of difference. Thus, transsexuality figures in Rothblatt's imaginings as a continuation of what has already been argued in this chapter; it is invoked so it can be refused.

For Rothblatt the "mind is deeper than matter" and this signifies the supremacy of the mind that underscores the logic of imagining transhumanist futures when minds will upload into bodies not made of flesh (Rothblatt, 2013: 318). Without a sense of irony, she argues for a Cartesian-esque philosophy that she believes has not yet been fully accomplished. Reasoning that once it is finally recognised that "our essential sweetness", that I understand as 'the self', is only within "our minds" and that each "unique life-path" is not tethered to our embodiment, it will inevitably be realised that it is "as sensible to be transhuman as it to be transgendered" (Rothblatt, 2013: 319). This in part exemplifies how Rothblatt's work is part of the liberal humanist project of transhumanism; thus, the multiplicities of being transgender and genderqueer are erased in place of the universal rational subject who is transhumanist. I have argued that imagining is imagining from somewhere and therefore, Rothblatt's imaginary is situated in a sociocultural location; as an American tech elite, Rothblatt's class status, wealth and access to material resources affords her certain privileges. Her positionality is revealed in the generalised assumptions about the transgender experience scattered throughout her thesis as well as the inflections of ableism[119] and racism[120]. Rothblatt envisions uploading minds as a liberation from sexual identity; "not only from genitals, but from flesh itself" (Rothblatt, 2013: 322). This exemplifies Stryker's argument, the physicality of bodies is made meaningful through culturally and historically specific

[119] Rothblatt makes an explicit ableist statement when she writes "most people would choose to abort a fetus if told the child would be horribly deranged" (Rothblatt, 2013: 322).

[120] The book contains a racist slur I do not wish to repeat and a weak critique of her experience of "discovering" racism in the playground (Rothblatt, 2011: xvi).

modes that transform the flesh into a useful artifact (Stryker, 1994: 249). She writes, "Authority seizes upon specific material qualities of the flesh, particularly the genitals, as outward indication of future reproductive potential, constructs this flesh as a sign, and reads it to enculturate the body" (Stryker, 1994: 249). As such, in Rothblatt's imagining the genitals are a sign of the abject - "gross" - body (Rothblatt, 2011). It is a disavowal of the culturally marked body and its socio-material relations.

For Rothblatt, the future of race, sex, sexuality and gender are matters of choice. She writes, "We emerge from our prison of sex into a frontier of gender. We step from a history of biological limits up to a future of cultural choice" (Rothblatt, 2013: 324). This affective symbolism of being imprisoned in flesh is a similar metaphor to Moravec's "bondage to a mortal body" as if to engender a utopian imagining of disembodiment (Moravec, 1988: 4-5). What is significant is the "frontier of gender" (Rothblatt, 2013: 324) as the frontier is a syntax in the narratives of "American West Coast Tech" - a culture Rothblatt is situated in - for a myth of "white American settle colonialism" (Little and Winch, 2019: 28, 33). I will explore the frontier myth further in the next chapter however, I raise it here as it signifies the problems with the body politics of Rothblatt's transhumanist imaginings, as interwoven in these arguments is a figuration of the sexed body as a racialised non-white body that can and should be escaped.

The racialised figurations of transness in Rothblatt's *The Apartheid of Sex*

In the preface for the second edition of 'The Apartheid of Sex' that is included in the reprint *From Transgender to Transhuman* (2011) Rothblatt acknowledge her appropriation of 'apartheid' from the conceptualisation of apartheid in South Africa (Rothblatt, 2011: xiv). She writes,

> The word "apartheid" means a forced, legal separation of people based on some characteristic that is irrelevant to their personhood, with the purpose of subjugating one or more of the separated groups . . . A few years after apartheid was abolished in South Africa I used the term to describe the worldwide system of forced, legal separation of people based on their gross sexual anatomy – "the apartheid of sex."
>
> (Rothblatt, 2011: xiv)

Rothblatt conflates and flattens the violent racialisation and stratification of non-white South Africans during apartheid with the Anglo-American centric sexism of the sex binary. This erases important distinctions and specificities that make the sociocultural histories of patriarchal colonialism intelligible; some of which have been explored in chapter three and in this thesis. By frequently disregarding the problems and implications of equating racism with sexism, she reproduces the harm of the body politics she wishes to "escape" (Rothblatt, 2011). For example, she writes, "The apartheid of sex is every bit as harmful, painful, and oppressive as the apartheid of race" (Rothblatt, 2011: 11). The underlying assumption to Rothblatt's hypothesis is in the material reality "races don't exist" they "exist only in our minds" and therefore, she wrongly suggests "immutable race" is gradually becoming "choosable culture" (Rothblatt, 2011: xvi, 2). It exemplifies the fantasy of the white subject to pass as the other, as discussed in chapter three. It is also an explicit articulation of how transhumanism imagines "humanness is in the mind" and so the corporeal is made visible through the body 'marked' out as female and non-white - only for it to be ultimately erased (Rothblatt, 2013: 318).

The cover of *From Transgender to Transhuman* (2011) is Rothblatt's avatar from the virtual computer platform Second Life, Vitology Destiny. Vitology is a computer-generated figure of a black woman. Rothblatt describes her avatar as a "bridge from transgender to transhumanism" as she conceptualises being transgender as choosing your own gender and transhuman as being a human "not made of flesh" (Rothblatt, 2011: xix, 34). As I discussed in chapter three through the work of Saidiya Hartman, the desire to 'occupy' the black body is made possible because of the material relations of chattel slavery (Hartman, 1997: 21). Thus, it could be argued, 'Vitology Destiny' is a visual articulation of the 'stranger fetishism' as the figure of the stranger is cut off from the histories of determination (Ahmed, 2000: 5). This fantasy of becoming 'other' is a trope in the transhumanist imagining of "transplanting minds and changing forms" (Rothblatt, 2013: 324). Take for example this excerpt from the essay 'Pigs in Cyberspace' by Moravec (2013). He imagines,

> . . . a "brain in a vat," sustained by life-support machinery, and connected by wonderful electronic links, at will, to a series of "rented" artificial bodies at remote locations, or to simulated bodies in artificial realities.
>
> (Moravec, 2013: 179)

To repeat Balsamo argument I included earlier, "although the body may disappear" into virtual worlds and "we may go to great lengths to repress it and erase its referential traces it does not disappear materially" (Balsamo, 1999: 284). As I have argued, the Western white subject imagining themselves as passing for another is made available because of specific societal arrangements in strategies of power-knowledge that stratify non-white subjects (Ahmed, 2000: 119; Foucault, 1978). Despite her efforts, as well at the other imaginers critiqued in this chapter, to imagine a post-racial genderless future of technologically separating the human mind from its fleshy bodies only serves to enforces the "masculinist, ableist, and Eurocentric image of the human" from which it springs from (Braidotti, 2024: 40). For it is this unmarked universal subject who can move – who can become otherwise.

Conclusion

Twenty five years before the publication of *Frankissstein* (2019) in the paper 'My words to Victor Frankenstein; above the village of Chamounix'[121] (1994) Susan Stryker writes about her experience as a transsexual woman and her affinity with the monster in Mary Shelley's *Frankenstein* (2012). She invokes the figurations of the monstrous in relation to the figure of the heroic doctor (Stryker, 1994). She says, "Like the monster, I am too often perceived as less than fully human due to the means of my embodiment" (Stryker, 1994: 238). She is aware – and speaks to - how TERFs (Daly, 1978; Raymond, 1979) writing at this time liken transsexuality to Frankenstein's monster to harm, stigmatise and denigrate trans people and their right to existence. As such, Stryker (1994: 238) humours, "Might I suggest that Daly, Raymond and others of

[121] In 2019, Stryker (2019: 42) responded to critiques of this paper noting "I inadvertently perpetuate the racist trope of imagining blackness as the unmarked and unacknowledged condition on which the existence of whiteness depends".

their ilk similarly construct the transsexual as their own particular golem?" In other words, the TERF imagination constructs their own monstruous figuration of transsexuality to oppose themselves against it. Stryker explains this as gender panic, as a panicked response to the ways transsexuality represents the destabilisation of the "foundational presupposition of fixed genders upon which a politics of personal identity depends" (Stryker, 1994: 238). Acknowledging, while Stryker does not mourn her opposition to these movements, their words that denigrate trans people "have the power to destroy transsexual lives" (Stryker, 1994: 239). As such she wishes to take the sting out by reclaiming the words "monster", "creature" and "unnatural" and to lay claim to her own "monstrous identity without using it as a weapon against others" or be wounded by it herself (Stryker, 1994: 240). Through this work by Stryker, Frankenstein's monster took on new meanings. As Karen Barad, influenced by Stryker, argues "The promise of monsters is a regenerative politics, an invitation to explore new ways of being in touch, new forms of becoming, new possibilities for kinship, alliance, and change" (Barad, 2015: 410). Arguably then, the science fiction imaginings critiqued in this chapter are stripped of the monstrosity of being embodiment in place of a masculinist fantasy of perfection through techno-transcendence. There is a haunting absence of the monster in *Frankissstein* (2019).

Stryker articulates that in scientific discourse the production of sex reassignment techniques - hormones and surgical - is inseparable from "the pursuit of immortality through the perfection of the body" (Stryker, 1994: 242). Imaginings of transhumanism pull on these sociocultural and historical tethers of a conservative gender system that pursues bodily perfection. Stryker argues, the entanglement of total mastery, bodily perfection and transcendental immortality is genealogically older than modern science and emerges from a "metaphysical quest" (Stryker, 1994: 242). It is a cultural imaginary politically aligned with "a deeply conservative attempt to stabilize gendered identity in service of the naturalized heterosexual order" (Stryker, 1994: 242). This is not to suggest transsexuality is the passive effect of a medical and technoscientific pursuit of perfectionism (Prosser, 1998: 7-9). For as wonderfully put by Stryker; "As we rise up from the operating tables of our rebirth, we transsexuals are something more, and something other, than the creatures our makers intended us to be" (Stryker, 1994: 242). Describing the transsexual body as a technological construction and as an unnatural body (Stryker, 1994: 238). However, she warns the presumed cis

reader “You are as constructed as me” and so “I challenge you to risk abjection and flourish as well as have I” (Stryker, 1994: 241).

Transhumanism is an aversion to abjection. As discussed in this chapter through the work of Anne Balsamo, it is a sterile masculinist imagining of transcendence that is a desire to return to the ‘neutrality’ of the body (Balsamo, 1999: 286). By culturally marking out the imaginary trans bodies, *Years and Years* (2019), *Frankissstein* (2019) and the work Martine Rothblatt, fetishises figurations of transsexual and transgender, made visible to be desired and to be devoured. Harlan Weaver (2020: 664) conceptualises disavowal as a way trans is both essential and denied and this is critical to the stabilisation “of a white-normative male/female binary” in Western colonial, imperial and anti-Black discourses (Weaver, 2020: 664). Emphasising the denial of a figuration of trans is vital to the workings of normative systems that produces gender and sexuality as white (Weaver, 2020: 664). I have argued in this chapter, an imagining of a technological future that disavows trans materiality has the effect of reinstating the gender binary. Barad (2015: 413) emphasises the necessity of the radical specificity of materiality as what is not needed is a universalisation of the trans experience stripped of its specificities. Nor should the “fleshly lived reality” of being trans be denied, or embodiment sacrificed for an “appropriative embrace” (Barad, 2015: 413). This chapter asks what is at stake when the trans experience is appropriated, and the specificities of being embodied are foregone in an imagined technological future without transsexuality or transness. I take seriously the implications of these imaginings, for as Stryker articulates, “I stood for a moment between the pains of two violations, the mark of gender and the unlivability of its absence” (Stryker, 1994: 250).

Chapter Six: Upload! Masculinist Fantasies of The Self-Birthing Man and The Mother Machine

Introduction

Up to now I have articulated the reconfiguration of the 'modest witness' (Haraway, 1997) and the scientific hero (McNeil, 2007) into a figure of the tech futurist. A figuration signifying the 'coming' technoscientific future that emerges from the material-semiotic discourses and practices that works to bring transhumanist imaginaries into being. In chapter five, I explored the risks and implications of science fiction that bring transhumanism into a semiotic relationship with being transgender and transsexuality. This final chapter brings into conversation contemporary feminist, trans and queer thinkers with those of the nineteen nineties and second wave feminists, to pry apart the enduring narrative of the "self-birthing of man" that continues to haunt our technological futures (Haraway, 1997: 35). In chapter two, I argue my citation practice is not a gesture, it is intentional and political and similarly, stringing together generations of feminist texts[122] is part of this considered approach to analysis. Returning to these thinkers is part of the continued effort of this thesis to disrupt dominant narratives of transhumanism that untether it from its sociocultural histories. For as Professor of Queer and Trans Studies Shannon Winnubst explains, an unwitting obedience to the future renders us docile as dominant social norms – heteronormativity, capitalism, patriarchy, whiteness, nationalism – "orient us always and only towards the future" (Winnubst, 2010: 138). With this in mind, this chapter should be considered disorientated[123] as it looks back towards wicked futures[124] (Tutton, 2017).

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[122] I like Elizabeth Grosz's conceptualisation of "texts" as "the products of any kind of discursive practice, whether poetic, literary, philosophical, scientific, visual, tactile or performative – that is, any tangible network of signs that exhibit a "grammar" and "syntax," and finds its context or milieu in other texts with a broadly similar sign-system" (Grosz, 1995: 11).

[123] as inspired by the work of Sara Ahmed on the potentials of a politics of disorientation (2006).

[124] The "wickedness of the future" as Richard Tutton suggests, "is characterized as difficult, pernicious and dangerous" and "is to be understood by the way that the future is enacted through material-discursive

Provoked by Donna Haraway's suggestion that while "so much else has been fruitfully scrutinized" in Science Studies, the "self-origination" and "self-birthing of man" narratives "have been left in place" (Haraway, 1997: 35). Arguably, these narratives endure because the power-knowledge relations that make them salient continue to be reproduced without, as Haraway (1997:35) articulates, scrutinising examination that uses "understandings of semiotics, visual culture and narrative practice" that come "specifically from feminist, post-colonial" and I would add queer theory. To situate the "self-birthing man" in its sociocultural histories and make it an object of inquiry requires a sincere engagement with what at times appears as an unserious[125] imagining, while centralising the re-production of social relations. This chapter is concerned with how the tech futurist figure emerges as a "masculinist fertility metaphor" (Sofia, 1984) and therefore, is a continuation of the mythic motherless man who is made by machine in discourses, narratives, visualisations and material-semiotic practices of transhumanist imaginaries. This chapter stretches Zöe Sofia's (1984: 49) provocation that in science fiction culture "technologies are perceived as modes of reproduction in themselves, according to perverse myths of fertility in which man replicates himself without the aid of woman" to include the practice of cryonics and the narratives of pronatalism.

Haraway characterises Wally Neibart's illustrative cartoon advertisements that appeared in *Science* magazine in the early nineteen nineties for an electrophoresis system, as sale pitches as well an "interrogations of gene fetishism" (Haraway, 1997: 151). In one "a middled-aged, white, bedroom-slipper- and-lab-coat-clad man cradles a baby monkey wearing a diaper" while holding a "protein fragment gel" in a laboratory (Haraway, 1997: 151). What is significant is how Haraway's analysis highlights,

practices" (2017: 480). To have any hope of doing "sociology of the future" we require "a new conceptual language" that problematises "established onto-epistemological distinctions between what is imagined and what is real" (Tutton, 2017: 480).

[125] Not to imply transhumanism does not have serious implications but rather to speak to how a desire to be frozen and upload into a machine is fantastical in the cultural imagination.

> All the conventional rhetorical details of the masculinist, humanist story of man's autonomous self-birthing structure the ad's narrative. The time, the cross-species baby, the scientist father, his age, his race, the absence of women, the appropriation of the maternal function by the equipment and by the scientist: all converge to suggest the conventional tale of the second birth that produces Man.
>
> (Haraway, 1997: 152)

These cartoon advertisements expose how the "self-birthing dream of Man" is a "masculinist, humanist story of man's autonomous self-birthing" through the appropriation of the maternal function by the hero scientist and his technoscientific equipment (Haraway, 1997: 152). I argue it is also a trans-humanist story as transhumanism is an imagining of man being born again as immortal autonomous machines. Influenced by Haraway, this chapter examines narratives and visualisations of masculinist rebirthing in transhumanist imaginaries that are situated in fraught histories of technologically aided reproduction. I challenge the notion that techno-transcendence is a fantasy of disembodiment by analysing the visual culture of science fiction, rhetorical imaginings of 'uploading' in Hans Moravec's work, the discourse of pronatalism and eugenics, and the practice of cryonics. Through critical analysis I demonstrate imagining techno-transcendence is a masculinist self-birthing fantasy. In the next section, I situate the figuration of the motherless man in its sociocultural histories that join together the Christian clerical culture and technological projects of artificial life.

Perfecting Adam: the sociocultural histories of the motherless man

The figure of the motherless man that emerges in Western philosophy and science is a male creation myth of man's "original perfection" and immortality (Noble, 1999: 212-214; Haraway, 1997: 179). The "self-birthing man", as Historian David Noble argues, has historical roots in the exclusionary Christian clerical culture that imagines a return to "Eden before Eve": a patriarchal paradise (Noble, 1999: 214). He makes the case that religious endeavours and technological enterprise are intimately connected (Noble, 1999). Arguing there is an obvious manifestation of this within the United States, "where an unrivalled popular enchantment with technological advance is matched by an equally earnest popular expectation of Jesus Christ's return" (Noble,

1999: 4). While I cannot include the entirety of Noble's scholarship, he successful shows how futuristic fantasies of artificial intelligence, virtual reality and "computer-based immortality" is a continuation of a vision of transcendence rooted in "medieval milieu Christian mythology" (Noble, 1999: 160-170). A configuration of the masculine millennium imaginary emerges from the Christian monastic culture of the twelfth century; wedding together technology and transcendence in the expectation the "end of the world is near" and "a new earthly paradise is at hand" (Noble, 1999: 21-23). Thus, linking together the technological future with the Christian past, as this "monastic idea of transcendence" is an imagined "recovery of mankind's divine likeness" to God and "a restoration of Adamic perfection" (Noble, 1999: 45). The reproduction of this semiotic relationship between Christianity and technological culture is signified by how the "first manned spaceflight, the seed programs of Artificial Life and the composite of human genome" would all informally be called Adam; and Adam as "the first mythic man" signifies "the ideal of restored perfection, and that ideal was male" (Noble, 1999: 48, 210, 212, 222).

Professor Sarah Kember argues religious mythology of the creation and the fall is fundamentally to the stories of artificial life and this manifests in the narratives of *Faust* and *Frankenstein* (Kember, 2003: 56). At the core of these ALife projects is a "paradox of creation" as "the God-like act of creating life is "stolen" or appropriated by man and then credited to the computer" (Kember, 2003: 55). This is no coincidence, as Noble writes,

> Religious preoccupations pervade the space program at every level, and constitute a major motivation behind extraterrestrial travel and exploration. Artificial Intelligence advocates wax eloquent about the possibilities of machine-based immortality and resurrection, and their disciples, the architects of virtual reality and cyberspace, exult in their expectation of God-like omnipresence and disembodied perfection. Genetic engineers imagine themselves divinely inspired participants in a new creation.
>
> (Noble, 1999: 5)

Influenced by Kember in 'Robot Visions'[126] (2014) Claudia Castañeda and Lucy Suchman argue that in new projects of artificial life the trope of 'emergence' indicates "a change in focus" from producing the "actualized entity" to creating the "potential for its eventual realization" (Castañeda and Suchman, 2014: 318-319). They write, "Rather than creationism in the biblical sense, where creatures spring forth fully formed, the idea is to fabricate the basis for a life that will then realize itself" (Castañeda and Suchman, 2014: 318-319). We can recognise this in computer scientist Hans Moravec's (1988) vision of artificial intelligent machines as 'mind children'; connoting the imagined evolution of artificial life "whereby the resulting creatures continue after the hand of their creators is removed" (Castañeda and Suchman, 2014: 319). Embedded in cultural imaginaries of artificial intelligence is the figuration of the motherless man as part of the "evolutionary narrative of becoming intelligent" (Castañeda and Suchman, 2014: 333) and the Christian mythology of the masculine millennium is remade in the masculinist fantasy of technological self-production.

Important to note for this chapter is the "religion of technology is still with us" (Noble, 1999: 6) in the figuration of the tech futurist as a metaphor for masculinist fertility in transhumanist imaginaries. As "a new form of creationism for which science and engineering are the invisible hands" (Castañeda and Suchman, 2014: 333). Arguably the popularisation of transhumanist ideas among the tech elite has cemented the self-birthing man in the cultural imagination, even more so for those who have the resources to advance technologies. As Noble argues, genetics and technologies of reproduction – and I would add together with visualisation technologies – has brought Western culture closer to the ancient fantasy of man being born without a natural mother (Noble, 1992: 286). As in-vitro fertilisation and embryo transplant conceptualise in the transhumanist imagination as "steps towards the artificial womb – a womb for men" (Noble, 1992: 286). I argue in order to make further sense of this requires a return to the distinct feminist work from the late nineteen eighties and early nineties that was concerned with the gendered and racialised politics of reproductive technologies and the fragmentation of maternity.

[126] An exploration of technoscientific corporeality in figurations of the primate, child and robot through the case study of 'Lucy the Robot Orangutan' (Castañeda and Suchman, 2014).

The fraught histories of reproductive technologies and the fragmentation of the maternal body

In *Technologies of the Gendered Body* Anne Balsamo (1996: 91-92) argues that reproductive technologies such as IVF enact the fragmentation of the female body through the isolation and intervention in the physical processes of human reproduction that would usually occur within the cis woman's body. The act of procreation becomes decoupled from the act of sexual intercourse and the "foetal body" is metaphorically severed from the maternal body (Balsamo, 1996: 91-92). Similarly, Emily Martin writes,

> Human eggs, sperm, and embryos can now be moved from body to body or out of and back into the same female body. The organic unity of fetus and mother can no longer be assumed, and all these newly fragmented parts can now be subjected to market forces, ordered, produced, sought, and sold.
>
> (Martin, 1989: 20)

As I will show later, in the margins of this fragmentation emerges the figuration of the tech futurist, loaded with all sorts of fantastical qualities and potentials in the transhumanist imagination. Angela Davis argues, the fragmentation of maternity is only made more obvious by technological developments in reproduction (Davis, 1998: 213). However, before IVF and embryo transplants the economic system of slavery fundamentally relied upon the alienation and fragmentation of maternities (Davis, 1998: 213). Writing on reproductive politics in the nineteen nineties, Davis clearly outlines how in the first half of the nineteenth century in the United States when the importation of Africans for slavery was no longer legal, African women who were already enslaved within America were imprisoned within their reproductive role (Davis, 1998: 211). A violent capitalist tool of reproducing the labour force within a slave economy, denying motherhood for a vast number of African women (Davis, 1998: 211-213). Therefore Davis, employs the terms made possible because of new reproductive technologies such as 'birth mother', 'genetic mother' and 'surrogate mother' as retroactive descriptions for the statuses of women who were enslaved (Davis, 1998: 212). This is the economic appropriation of their reproductive capacity reflecting the inability of the slave economy

to produce its own labour focus (Davis, 1998: 212). At the same time, as I discuss in chapter three through the work of C Riley Snorton (2017), the pelvis became a critical site for producing racial hierarchies as sexologists were intent on finding "bodily proof" of "black inferiority" and this is foundational to the construction of gynaecology as a field of medicine and science within nineteenth century America. Crucially then, IVF, embryo transplant and surrogacy are enacted through socio-economic conditions that are situated in specific sociocultural histories and these technologies have the potential to re-produce and re-imagine social imaginaries because of strategies of power-knowledge.

I argue reproductive technologies, and the imaginaries they bring into being, should not be disentangled from the racialised histories of slavery, sexology, birth control, sterilization and eugenics. Take for example, transhumanist and founder of the Future of Humanity Institute at the University of Oxford, Nick Bostrom who co-edited the book *Human Enhancement* (2009) with philosopher and bioethicist Julian Savulescu. Savulescu authored the paper 'Procreative Beneficence: Why we should select the best children' (2001). As mentioned in chapter four, it is reported by the Guardian that Bostrom's early eugenical ideas contributed to the immediate closure of the FHI (Anthony, 2024). The book *Human Enhancement* (2009) claims to debate whether technologies and biomedicine should be "used to make better human beings". The cover has multiple silhouettes of an exaggerated muscular male figure in flexing bodybuilding stances. Human perfectionism as a carbon fibre muscular white man is a trope in the visual culture of transhumanism, as well as science fiction film and television. In his paper, 'Unfit for the future? The depoliticization of human perfectibility, from the Enlightenment to transhumanism' sociologist Nicolas Le Dévédec posits the transhumanist imagining of human perfectibility is built on "complete political disinvestment" despite acknowledging transhumanists are in "favour of biotechnological control of birth through a kind of liberal eugenics" (Le Dévédec, 2018: 492-497). The so-called "liberal eugenics" he is referring to is based upon arguments such as Savulescu's paper (2001) and Nicholas Agar's book *Liberal Eugenics: In Defence of Human Enhancement* (2004). Thus, exemplifying how in some academic texts transhumanism is disseminated as non-political and cut off from the sociocultural histories that bring these imaginings into being.

The conclusion human perfectionism in the transhumanist imagination is not political is jarring when considering Savulescu, Bostrom's co-author, argues for the use of IVF and preimplantation genetic diagnosis (PGD) to assist in the selection of 'intelligence' and sex "even if this maintains or increases social inequality" (Savulescu, 2001: 415). Savulescu (2001) makes his argument for "procreative beneficence"[127] - a term used instead of eugenics[128] - through imagined "what if" scenarios. Understated by fellow proponent of so-called "liberal eugenics" philosopher Nicholas Agar, notes Hitler "made eugenics an unpopular idea" (Agar, 2004: vii). Or as better put by Gena Corea in *Mother Machine*, eugenics ". . . would disintegrate in moral embarrassment in the 1930s after Adolf Hitler showed the world how a eugenics plan could be massively implemented" (Corea, 1988: 17). It is for this reason, Davis (1982) does the important work of reminding us of the relation between the eugenics movement and the birth control movement within United States. Davis writes, "The fatal influence of the eugenics movement would soon destroy the progressive potential of the birth control campaign" (Davis, 1982: 213). For the birth control movement imploded a racist strategy of population control (Davis, 1982: 215). Davis notes that by 1932 the Eugenics Society within the United States had passed compulsory sterilization laws and thousands of persons deemed "unfit" had been surgically restricted from reproducing; and this was sexualised, racialised and classist (Davis, 1982: 214-217). I argue so-called 'liberal eugenics' and pronatalism (which I will discuss later in this chapter) cannot and should not be untethered from these violent historical ties.

The so-called "old eugenics" saw reproductive decision-making as affecting the whole society and as such the "society" should participate in the decision (Corea, 1988: 28). Whereas in this "new" imagining of "liberal eugenics" it is the individual that takes the focus (Sparrow, 2011) and once was known as the "fit" is now characterised as the "best." Savuelescu uses "best" to make his case, "best children," "best interests of the child," the "best life" and his ambiguous definition of the "best life" is one "with the

[127] To clarify, his principle of "Procreative Beneficence" is "couples (or single reproducers) should select the child, of the possible children they could have, who is expected to have the best life, or at least as good a life as the others, based on the relevant, available information" (Savuelescu, 2001: 415).

[128] In the paper 'A Not-So-New EUGENICS: Harris and Savulescu on Human Enhancement' Robert Sparrow (2011: 39) argues that the champions of "new" eugenics such as Savuelscu are not as successful at distancing themselves from the "old" eugenic movements of the 1920s and 1930s as they would hope.

most well-being" (Savulescu, 2001: 419). He defends his position that "procreative beneficence" is a "private enterprise" by insisting it is unlike the Eugenics Movement that was concerned with "selective breeding to produce a better *population*" and sought to influence reproduction through sterilisation "to promote social good" (original emphasis, Savulescu, 2001: 424). This proposed use of IVF with preimplantation genetic diagnosis (PGD) as a "private enterprise" is being re-produced and re-imagined in transhumanism. For *Business Insider* senior correspondent Julia Black reports on the so-called "pronatalist movement"; a group of "wealthy tech and venture capitalists" who hold an imagining that they can halt the "extinction of civilization" and save humanity by replicating themselves through technological-aided procreation (Black, 2022). Black's article focuses on the American mid-thirties conservative couple Simone and Malcolm Collins, who "work in the VC and private-equity worlds" and are founders of the "non-profit initiative" pronatalist.org[129] (Black, 2022). As Black highlights, following the publication of a Bloomberg article on embryo testing, the Collinses became public figures for Genomic Prediction, the US-based company that offers preimplantation genetic testing (Goldberg, 2022; Black, 2022). In effort to simplify this; embryos can be tested for certain DNA markers and the biotech companies together with their patients draw value-based conclusions from this data to inform embryo selection for in-vitro fertilisation (IVF).

The 'collapsed future' of pronatalism and imaginings of masculinist fertility in the extraterrestrial patriarchy

At beginning of 2024 transhumanist figure and father of ten, Elon Musk repeatedly posted on X.com (formerly Twitter) his fatphobic and ableist stance against hormonal birth control (Musk, 2024a; 2024b) which led to the Bloomberg reporters on the Elon Inc podcast to discuss this "weird fertility thing" (Chafkin, Hull and Wagner, 2024). Reporter Dana Hull explains, Musk is part of the "pronatalist movement" as he is anxious about fertility rates in "the industrial world" and believes people should be having "as many children as possible" (Chafkin, Hull and Wagner, 2024). This

[129] My understanding of pronatalist.org is it directs funding towards research and policy that reflect their interests and uses visual media and discourse to sustain transhumanist imaginings of technological reproductive utopias for elite actors through an apocalyptic-style narrative of fertility collapse.

imaginary is held so powerfully that he is contributing a large amount of funding to a research centre dedicated to fertility and the "future of population" growth at University of Texas, in Austin (PWI Population Wellbeing Initiative (2024); Chafkin, Hull and Wagner, 2024). Musk is also said to echo transhumanist Nick Bostrom in arguing that a decline in fertility among the "intellectual" elite will result in a fall of "advanced civilized society" (Black, 2022). The discourse of pronatalism is not dissimilar to the anti-abortionist conservative interests, as described in Sofia's paper 'Exterminating Fetuses: Abortion, Disarmament, and the Sexo-Semiotics of Extraterrestrialism' (1984) [130], as "their espoused desire to protect [foetal] life" turns out to be just another "articulations of the collapsed future" (Sofia, 1984: 59). The collapsed future, as Sofia conceptualises, is the sense of inevitability in the ideology of progress that orients us towards the future - only for it to be denied (Winnubst, 2010; Sofia, 1984: 57). The collapsed future tense proliferates in discourses that predetermines our future as one of "nuclear reactors, deep-sea mining, Star Wars and space colonies" (Sofia, 1984: 57). It is hardly surprising than that Musk, with an ambition to colonise Mars[131], is described in the *Business Insider* article as the "the tech world's highest-profile pronatalist" (Black, 2022). I argue, pronatalism is a continuation of future collapse, ridding the present of any time (Sofia, 1984: 57). Sofia persuasively argues "centuries of extraterrestrial fantasies" encourages a cultural imagining of "space as a good womb, full of inhabitable planets" and therefore, as "Earth is just one of many cosmic pregnancies" it "doesn't really matter if we abort it" (Sofia, 1984: 57). As tech billionaires ejaculate colonialising rockets into space the consequences of these imaginings taking hold is simply put by Rosi Braidotti when she writes, "We run the risk of new colonizations in space replicating the worst features of terrestrial patriarchy and capitalism" (Braidotti, 2024: 39).

At this point I urge for a move away from the language of a "pronatalist movement" and towards a characterisation of pronatalism discourses and narratives in transhumanist imaginaries. For as reporter Black (2022) explains, this group of techies

[130] In chapter four I argue the CYBERTRUCK from Elon Musk's company Tesla is an example of her Zoë Sofia's conceptualisation of "*Jupiter Space"* (1984: 48).

[131] Musk is also the CEO of Space Exploration Technologies Corp (SpaceX) the rocket and spacecraft manufacture and launcher.

believe “pronatalism is a natural extension” of the philosophical movements popularised in Silicon Valley, specifically transhumanism, longtermism and effective altruism (I discuss E/A in chapter four). As I critique in the introduction, referring to transhumanism as a movement obscures critical analysis of the re-production of social relations. Similarly, I would argue separating these strongly held imaginings into diverging movements risks muddling the picture only further. For as the Business Insider article shows, it is the same social groupings across pronatalism, longtermism and transhumanism (Black, 2022). This I argue is not a coincidence. An example of this is Jeffery E. Epstein, the disgraced “wealthy financier” who was arrested for federal sex trafficking charges before dying in New York’s Metropolitan Correctional Center (Rashbaum, Weiser and Gold, 2019). In 2019, the New York Times reported Epstein told scientists and businessmen of his eugenical ambition to inseminate multiple women with his sperm at his New Mexico ranch (Stewart, Goldstein and Silver-Greenberg, 2019). Consider the relevance of Sofia’s argument that,

> The binarist logic of masculinist thought is stumped by contextual relations like that of the fetus to the woman's body, and on the subject of reproduction, it still employs an Aristotelian model which accords all of the transformative, generative power to males and reduces females to mere nurturant vessels for male seeds.
>
> (Sofia, 1984: 55)

Epstein was a known transhumanist ideologue with an interest in genetic engineering, and journalists writing for *The New York Times* and Julia Black for *Business Insider* connect his vision of transhumanism with eugenics and pronatalism (Black, 2022; Stewart, et al., 2019). While Epstein is a stark example of where this thinking can lead, there are histories of capitalist patriarchal white elites investing in reproduction as a means of production and as a way to immortalise themselves and their “legacies” that stratify social relations. The phenomenon of transhumanist imaginings of pronatalism is how it makes visible the entanglement of technoscientific reproduction, apocalyptic existential narratives and imaginings of techno-transcendent futures as a masculinist fantasy of self-birth. In the next section I discuss the semiotic relationship between imaginings of technological reproduction outside of the women’s body and how the foetus became constituted as a sign separated from the maternal body through visualising technologies.

On screen and out of the body: visualising the foetus with high-tech flesh

Katharine Park through her tracing of the constitution of gender relations in historical anatomical texts – specifically the dissection of women's bodies post-death between late thirteenth and the mid-sixteenth centuries – notes how the male seed (sperm) is made active as if a stamped impression of the father onto to mother's menses (Park, 2010: 142). She writes,

> In this way, in line with the Aristotelian precept that anything reproducing itself tries to create the most exact likeness of itself possible, the father reproduced himself, literally (at least in theory), using the mother's body as his tool.
>
> (Park, 2010: 142)

An imagining of perfecting the copy of the father in the child is rooted in "Aristotelian doctrines of masculine self-reproduction", that as Haraway notes, mutates and "proliferate in cyberspace, as in many other technoscientific wombs at the end of the Second Christian Millennium" (Haraway, 1997: 315*n*36). Consider then Haraway's assertation that "Secular, scientific visual culture is in the immediate service of the narratives of Christian realism" (Haraway, 1997: 178). For as she elucidates, in the mid-twentieth century it is through technologies of visualisation that the visible foetus became a public object, specifically through "Nilsson's photograph of an intrauterine eighteen-week-old developing human being encased in its bubblelike amniotic sac" on the 1965 April cover of *Life* magazine (Haraway, 1997: 178). Therefore, narratives of Christian Millennium told through the visual cultures of technoscience, that make the foetus visible, are historical situated in Aristotelian masculinist desire to reproduce the father through the child. Partly through the "use of visualisation technologies such sonograms and laparascopes", as Balsamo argues, the foetus is personified and made into an entity with legal 'rights' (Balsamo, 1999: 282). She elaborates further, through the application of visualisation technologies "the material integrity of the maternal body is technologically deconstructed" only to be reconstructed as a visual screen to see the developing foetus inside (Balsamo, 1999: 282). From a Foucauldian perspective, Jana Sawicki argues, reproductive technologies "fit the model of disciplinary power" as they involve "techniques of surveillance and examination" that renders women's bodies and

foetuses visible (Sawicki, 1999: 193-194). Considering the above, it starts to become clearer how anti-abortion rhetoric[132] of the "cult of foetal personhood" (Sofia, 1984) is not apart from science fiction that reimagines technological reproduction as a masculinist self-birthing fantasy, rather it is a material-semiotic relationship in-the-making.

Haraway convincingly argues the public foetus materialises as the promise of life itself "given flesh by the high technology of visualisation" (Haraway, 1997: 178-179). Influenced by Haraway, anthropologist Stefan Helmreich writes,

> All of this viewing of "worlds" and "life" behind glass suggests still another set of processes through which visualization technologies produce "life": practices of imaging blastocysts, zygotes, embryos, and fetuses inside women's bodies through technologies such as electron microscopy and ultrasound . . . What is remarkable about these imagings is that they assume the existence of the entities they purport to represent, and so in a very material sense, end up *producing* these things as real.
>
> (original emphasis, Helmreich, 1998: 101)

He argues the use of technologies to visualise entities "presumed to be real but invisible" contributes to the way "images of artificial life-forms on computer screens" are able to "accomplish the vivification of entities" (Helmerich, 1998: 101). The important point being that "the sign becomes the thing itself" (Haraway, 1997: 178). How might these technologies of visualisation contribute to how the computer itself becomes a sign of eternal life and the possibilities of masculinist self-birthing in transhumanist imaginaries? In reference to her reading of Anne Kelly's cartoon *Virtual Speculum*[133] , that depicts a nude woman (in place of Adam) reaching out for a computer displaying "the global digital fetus" (Haraway, 1997: 176) Haraway writes,

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[132] Such as the religious fundamentalism of born-again Christians in the United States as analysed by Harding (2001) in *The book of Jerry Falwell fundamentalist language and politics*.

[133] Haraway names Anne Kelly's cartoon 'Virtual Speculum.' The illustration is a "caricature" on Michelangelo's painting *Creation of Adam* that adorns the ceiling of the *Sistine Chapel* (Haraway, 1997: 175-176). "In *Virtual Speculum*, the woman is in direct relation to the source of life itself" (original emphasis, Haraway, 1997: 176).

> The computer is metonymic for technoscience, an inescapable materialization of the world. Life itself, a kind of technoscientific deity, may be what is virtually pregnant. These ontologically confusing *bodies*, and the practices that produce specific embodiment, are what we have to address, not the false problem of *dis*embodiment. Whose and which bodies – human and non-human, silicon-based and carbon-based – are at stake and how, in our technoscientific dramas of origin? And what is the specific political and moral accountability attached to these not-always-human bodies?
>
> (original emphasis, Haraway, 1997: 186)

In relation to the non-fleshy machine bodies of transhumanist fantasies I argue for a critical feminist intervention into what Haraway calls the "technoscientific dramas" of (in this case) self-originating, as a path towards understanding their "specific political and moral accountability" (Haraway, 1997: 186). Through reading Kelly's cartoon, Haraway conceptualises the computer as a womb-brain signifier of the "the superior creativity of artificial intelligence" and therefore, the on-screen foetus in *Virtual Speculum* is a form of artificial life itself (Haraway, 1997: 186).

Kelly's cartoon presents a "material conundrum" because of the "specificities of embodiment inside the apparatuses of technoscience" (Haraway, 1997: 186). Haraway writes, "The fetus is a kind of data structure whose likely fate seems more connected to downloading than birth or abortion" (Haraway, 1997: 186). While Haraway presents the feminist possibilities of Kelly's cartoon, I am concerned at what else is made possible in the *Virtual Speculum* (Haraway, 1997). As Judy Wajcman asks,

> Promises of emancipation from the frailties and failings of moral flesh have reached a new crescendo in the cyberspace age. What might these imaginings about the future reveal about contemporary gender relations?
>
> (Wajcman, 2004: 3)

It is my hypothesis that the transhumanist imagining of living as artificial life signified by the computer as a womb-brain is a "material conundrum" (Haraway, 1997) that only starts to make sense by paying close attention to the re-production of gender, and other

intersecting relations in transhumanist imaginaries. I argue, the 'on screen' foetus with high-tech flesh is part of the reimagining of technological reproduction as a masculinist self-birthing fantasy. As the computer as a womb-brain also signifies the fantasy of uploading the mind into machine as an "escape from the finite materiality of the enfleshed self" (Braidotti, 2013: 91). As such, what are implications and tensions in imagining reproduction as outside of the body that emerges from visualisation technologies and science fiction visual culture?

Situated in the second-wave feminist politics of social reproduction that challenges the relationship between the home, work and reproduction, Shulamith Firestone argues, in her revolutionary radical text *The Dialectic of Sex* (2015), artificial reproduction could facilitate the emancipation of women as "the reproduction of the species" (Firestone, 2015: 11). Originally published in 1970, Firestone imagined pregnancy no longer bearing solely on the woman's body but rather through technoscience aided reproduction "children would be born to be both sexes equally, or independently of either" (Firestone, 2015: 11). For Firestone, the goal of the feminist revolution would be the elimination of the sex and class distinctions altogether (2015). Arguably then, there are tensions between second-wave feminist visions such as *The Dialectic of Sex* and transhumanist imaginings of a post-flesh world. For example, Firestone's (2015: 270) "freeing of women from the tyranny of their biology" is not that dissimilar to transhumanist Martine Rothblatt's (2013: 324) argument that through technoscience advances "we step from a history of biological limits up to a future of cultural choice." In the essay 'Mind is Deeper than Matter' Rothblatt's (2013) imagines a future of reproduction that occurs outside of the body. She writes,

> With extensions of the regenerative medicine technology being used today to grow skin, blood vessels, and organs, it will be possible to grow an entire fresh body outside of a womb and to write into its vacant brain the synchronized "mindfile" derived originally from an MRI scan of your brain . . . Ectogenesis, the growth of a body outside of a womb, would produce an adult-sized person in just 20 months if the fetus continues to grow at the rate it does for its first six months.
>
> (Rothblatt, 2013: 320)

This is, as Sofia argues, the temporal distortions employed by the culture of science fiction, similar to the anti-abortionist cult of foetal personhood, that collapses adulthood into the "foetus-world symbol" (Sofia, 1984: 57). There is a secondary imagining of reproduction in Rothblatt's essay, she imagines through the combining mindware of each parent "new digital people" will be produced; "*Voilà*, there are fertile offspring and the species *persona creatus* is alive" (Rothblatt, 2013: 318). Similar to Firestone (2015) Rothblatt (2013: 324) suggests this offers an opportunity to do away with the sex distinction all together, thereby exemplifying what remains unresolved in the fragmentation of the material maternal body in imaginings of technological aided reproduction. Imaginings of reproduction outside the body diverge - feminist utopias for some and a transhumanist "patriarchal paradise" for others (Noble, 1999: 214). In the next section, through the discussion of the socio-material relations of cryonics, I discuss how transhumanist imaginings are a rebellion against the universal female subject.

Everyone is female in the freezer: the socio-material relations of cryonics

At 'The Alcor Life Extension Foundation' in Scottsdale Arizona, 200 plus patients are 'cryo-preserved' at minus 196 centigrade in giant dewars (Alcor, 2024a). Dewars in this context are vacuum flasks for storing cryogenically frozen human heads and bodies. Cryonic 'patients' that choose neuro cryopreservation (the option to only freeze your head), send their body off for burning. Despite their bodies going into the freezer or up in flames, in cryonics the patients are not characterised as deceased but rather as suspended between life and death until technoscience can facilitate their re-animation (Romain, 2010; Doyle, 2003; Nelson et al., 2014). The material-semiotic practices of freezing heads and bodies not only brings into being transhumanist imaginaries but also works to sustain and reproduce them. In her ethnography of a cryonics facility and community in America, anthropologist Tiffany Romain observes how cryonicists attribute capital to the concept of "legal death"; the point at which there is a pronouncement of death from a doctor and the signing of a death certificate severing the legal protections for living persons (Romain, 2010: 199). Cryonicists strategically orientate their practices around "legal loopholes within the state regulation of bodies" to secure their project of freezing the dead (Romain, 2010: 200). "Steeped in Libertarian imaginaries" (Romain, 2010: 200) cryonics is symbolic of a masculinist and ableist view of the body. It is an imagining of escaping death through the cultural

politics of libertarianism as a claim of sovereignty, of taking "control of their own bodies, reclaiming them in the face of government, and in the face of nature" (Romain, 2010: 200-201). Richard Doyle reveals, the cryonics body is figured as a body of autonomy "under a temporary, if uncertain, arrest" (Doyle, 2003: 62, 3). The actions of stopping decay, sealing it off and suspending the body in cryogens only gives the appearance that the cryonic body is autonomous and isolated, as if it is "memorial devoted to a nineteenth-century corporeality" (Doyle, 2003: 62, 3).

Doyle, working at the intersection of English and Science Studies, explores what he calls the "creative cultures"[134] (The Pennsylvania University, 2024) of cryonics in his book *Wetwares: Experiments in Postvital Living* (2003). He conceptualises the cryonics body as a möbius body inside and outside of time that produces a specific cryonics subject – alive, dead or suspended (Doyle, 2003: 67, 3-8). Once suspended the cryonics corpse is a "body of frenzy", not quite dead or alive but a continuous "smearing of the body over time" (Doyle, 2003: 67, 3). He writes, "The cryonic body is . . . a mobilization of power that allows flesh to leap out of the hell of time, to make time stop, to finally constitute the body as a pause function in a nonstop negentropy machine" (Doyle, 2003: 77.8). As emphasised throughout this thesis, flesh produces relations "– real and imagined, metaphysical and material" (Snorton, 2017: 40). Doyle offers insightful contributions to understanding cryonics, and while I would argue there are glimmers of critique he states he is not interested in critiquing the "project of cryonics" rather he is merely highlighting the "rhetorical dependencies and difficulties that enable and trouble the production of cryonic subjects and bodies" (Doyle, 2003: 76.7). This gives him sufficient room to imagine cryonics for himself (like many other male authors who venture to understand transhumanism) [135]. Doyle writes in his online biography he started out sceptical but was transformed as he opened himself to "just how weird the evolutionary change was going to be" (The Pennsylvania University, 2024). Unsurprisingly then, the last chapter of *Wetware* (2003) "of course, is a thought experiment in imagining not ourselves but aliens as informatic beings" (The Pennsylvania State University, 2024). As discussed in chapter three, the material-semiotic practice of men imagining themselves otherwise, as passing as the other, is a

[134] This is from his Penn State biography.

[135] Such as How to Live Forever or Die Trying by Bryan Appleyard (2007)

sociocultural tradition steeped in gendered and racialised histories that reproduces power-knowledge relations.

In *Wetwares* (2003) he briefly tiptoes into the terrain of Feminist Technoscience[136], but the inclusion above speaks to the overall body politics or rather the disregard of body politics. Doyle's failure to address the cryonics body as gendered, sexed and racialised is also a failure to consider the reproduction of socio-material relations that cryonics re-produces. Furthermore, there is a repeated inclination by Doyle, in particular when discussing subjectivity, to use the female pronouns she/her (Doyle, 2003: 66,7, 68,9). For example, he writes "She [the cryonics subject] has entered into a relation with a future, a cryonics organisation, and a massive realm of incalculable contingency that must be continually managed, even disciplined" [137] (Doyle, 2003: 66,7). While using a female subject as the placeholder might not seem significant, I argue it is. Consider the statement from Romain that the cryonics community is largely made up of white, male, Libertarian, middle-to-upper earners, computer engineers who support the free market and its perceived ability to support technological progress (Romain, 2010: 196). Furthermore, she notes,

> Less than 25 percent of Alcor's members were women, and only a small fraction of these women joined purely out of their own interest; most female Alcor members were the wives, partners, daughters, or mothers of a man who joined first.
>
> (Romain, 2010: 203)

In cryonics, kin relations are fundamental to the practices of cryopreservation, as such there is a reliance on the spouse (most often the wife) to inform Alcor the cryonics patient is dead or dying (Doyle, 2003: 68.9). Exemplifying the re-production of social relations in the practices of cryonics.

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[136] engaging with literature from Donna Haraway (1997) and Katherine Hayles (1999).

[137] Another example, if there is a previous agreement of secrecy, Alcor will not confirm whether a certain individual has been frozen however they confirm Walt Disney is not frozen at Alcor in their FAQ. When Doyle discusses this, he uses a female subject as the placeholder writing, "This [rhetorical] undecidability, useful though it is in fostering the cryonic subject's ownership of her secrets, haunts any ownership of the body" (Doyle, 2003: 68, 9).

We also see the use of the female subject in the essay 'Why I want to be posthuman', Bostrom's contribution to *The Transhumanist Reader* (2013) in which he speculates on becoming transhuman. He writes, "Once she might have been a hairdresser; in the future she might become a shopkeeper, a golfer, a person with a disability, a transsexual, or a posthuman" (Bostrom, 2013: 45). The trouble with figuring disability and transsexuality as futural in transhumanist imaginaries have been articulated in the previous chapters, the focus here is on the use of *she/woman* as a rhetorical device. Feminist linguistic Dale Spender writes in her impassionate book *Man Made Language* first published in 1980, because of the hegemony of masculinity the male identity is constant, it is the reference symbolised by *he/man* that "disposes us to think male" (original emphasis, Spender, 1998: 154). Whereas the female identity "must be constantly available" and women must look "for clues as to whether or not they are encompassed in a reference, for sometimes they are included in the symbol *he/man*, and sometimes they are not" (original emphasis, Spender, 1998: 154). Thus, I am arguing the use of *she/woman* is a rhetorical device not to disrupt patriarchal understandings of gender, but rather reinforces them through a subject position made available by the female pronoun. Therefore, by using the female subject, symbolised by *she/woman,* the availability of female identity allows for men to imagine themselves otherwise.

Consider the statement in Andrea Long Chu's provocative monograph *Females* (2019); "Everyone is female, and everyone hates it" as femaleness is the universal sex in which all politics, even feminist politics, rebels (Long Chu, 2019: 11). As Jules Joanne Gleeson reframes in her reading[138] of *Females* (2019), "Realizing one is female is often followed immediately by attempting to struggle free of it" (Gleeson, 2020: 336). I argue, this speaks to the vexing tensions and implications of imagining a future of technological aided reproduction occurring outside of the maternal body. When Long Chu is talking about females, she is not in fact referring to biological sex or gender, instead she is referring to the ontological "universal existential condition . . . To be is to be female: the two are identical" (Long Chu, 2019: 12). To be female, in Long Chu's

[138] Gleeson's (2020) thoughtful and illuminating critique of Andrea Long Chu's *Females* (2019) articulates what I cannot or could not. I owe my fuller understanding to her and I am of the opinion these texts should be read together.

definition, is have the self-hollowed out and sacrificed for the desires of others, "made into an incubator for an alien force" (Long Chu, 2019: 11). This is fitting as transhumanist imaginaries predominantly held by white cis men, load the female subject with all sorts of desires and fantasies of becoming. Consider Kurzweil's Ramona, the virtual female rockstar version of himself, as discussed in chapter four. Thus, I argue the subject is made female, symbolised by *her/woman* to incubator the transhuman until he can be rebirthed - freeing himself from subjectivity all together.

Cryonics is a socio-materialised response to the failures of present-day technoscience to realise the transhumanist vision of "the singularity" when humans will halt aging and live as immortal machines (Romain, 2010: 201). It is an embodied and affective practice by those who share a collective cultural anxiety about death and the aging and decaying body. As Julia Kristeva articulates in her influential book *Power of Horror,* the corpse is the ultimate abjection, it is death infecting life and it is symbolic of fundamental pollution (Kristeva, 1941: 3-4, 109). In this sense, cryonics is an imagining of escaping from the excremental corpse and the monstrous materiality of embodiment (Grosz, 1994: 207; Stryker, 1994). It is also a desire to be reborn as the transhumanist vision of the perfect 'neutral' body through technologies of the self (Balsamo, 1999; Foucault et al., 1988). For example, in her ethnography of a cryonics facility and community in America, anthropologist Tiffany Romain observes,

> The many imaginaries of human life post-reanimation are quite wide-ranging and include waking in the future in an optimized version of one's current physical self (no need for glasses, restored full head of hair); waking in an 18-year-old version of oneself; minimal or radical changes in physical appearance and continual alteration of appearance and/or gender for the sake of experience; living in a fully cyborg, better-than-human body; cloning oneself and transferring memories to the clone in order to make ''back-up copies''; uploading oneself into a computer and living virtually; uploading consciousness and sending out remote controlled robot proxies to unfriendly environments. The importance of individual choice is always emphasized in discussions of these possibilities, as it is also in discussions of the future of society.
>
> (Romain, 2010: 204)

Imaginings of life after the freezer may give an appearance of diversifying but they congeal into the same over-deterministic libertarian masculinist "fantasy of total mastery through the transcendence of an absolute limit, and the hubristic desire to create life itself" (Stryker, 1994: 242). The socio-material practices of cryonics as "a kind of virtual witnessing of one's death" (Doyle, 2003: 79,9), more specifically the death of the cultural body, makes possible an imagining of uploading as a fantasy of masculinist rebirthing. It is a stark example of the privileging of the mind and suppression of the body, as it is the belief that cryonics offers the chance to extend individual existence beyond the point of death. In the next section, I show how this is joined to the visual culture of science fiction – that are loaded with sociocultural anxieties about gender, sexuality and sexual relations.

Cryo wombs and born-again action heroes in science fiction film and television

In Moravec's vision of a post-flesh future, personal immortality will be achieved by mind transplant, as human consciousness will be downloading and uploading into machines (Moravec, 1988: 5, 122). Brains sustained by life-support machinery will be stored in vats and electronically connected to "a series of artificial rent-a-bodies in remote locations to simulated bodies in virtual realities" (Moravec, 1999: 169-170). This transhumanist imagining is a trope within science fiction culture. An example of this is the 2018 Netflix series *Altered Carbon,* an imagining of a transhumanist future as human consciousness can transfer and upload between different avatar bodies called "sleeves". The pilot episode of *Altered Carbon* ('Out of the Past', 2018) opens with the white-muscular-male-adult protagonist – Takeshi Kovacs played by Joel Kinnaman - naked and floating in dark water with an "umbilicus"[139]. This is a mechanical umbilical cord attached to the face and down the throat. In a speculator rebirthing scene called "decanting", the protagonist Takeshi is rebirthed from a vacuum sealed bag by two workers[140] in blue hazmat suits. Viven Sobchack, writing in the essay 'The Virginity of

[139] The term used in *Altered Carbon* (2018)

[140] It is made clear the male worker is more experienced than the female worker who expresses hesitation and squeamishness forming a mentor-student relation between them.

Astronauts', obverses how the visualisation of an umbilical that connects the "technological man to the mother machine" is a science fiction trope to engender an affective narrative of dependence and discomfort (Sobchack, 1990: 112). The camera focuses on the unzipping of the bag that mimics the rupturing of the amniotic sac, as clear gooey liquid spills out onto the floor and in the following scenes we see his white muscular body is covered in this mucus. The male worker jerks the umbilical code loose from Takeshi's throat violently rousing the protagonist. This causes a flashback to a previous life when his consciousness was inside a muscular East Asian male-presenting body, a different "sleeve", who was attacked by militarised police. Symbolising Moravec's transhumanist imagining of being reborn in the future through "artificial rent-a-bodies" (Moravec, 1999: 169-170). The rebirthed protagonist proceeds to assaults the workers who have at this point multiplied. By threatening the workers Kovacs learns, at the same time as the audience, that he has been "down" for two hundred and fifty years and he is inside a prison that resembles a laboratory. The rebirthing scene in *Altered Carbon* ('Out of the Past', 2018) is central to the protagonist's arc as a science fiction action hero. Moreover, *Altered Carbon* (2018) is emblematic of the visual culture of science fiction that imagines technological reproduction fractured from the materiality of the maternal body, displacing the womb with technoscientific machinery.

Interestingly, the actor Joel Kinnaman also stars as the protagonist in the 2014 remake of the nineteen nineties sci-fi classic *Robocop*, which also has a central rebirthing scene. The corporation OmniCorp, led by the character Doctor Dennett Norton played by Gary Oldman, are on an ableist mission to find a candidate to mutate into the ultimate combat 'Robocop'. They are gifted an opportunity to make their cyborg hero when police officer Alex Murphy, played by Kinnaman, is critically injured from a car explosion. Steeped in ableism, the possibility Murphy might be blind, deaf and use a wheelchair as a result of his injuries is presented as abject and a near death. Thus, the protagonist's heroic masculinity is in threat, for as Anne Hickey-Moody articulates, "Disability also remains culturally constructed as emasculating, and as a deficit, if not as completely undesirable" (Hickey-Moody, 2015: 148). To eradicate the futural disabled body, with consent from Murphy's wife, Dr Norton rebirths the protagonist into a new militarised cyborg body made from muscular metal. Murphy awakens in a sterile white laboratory, secured to a mechanical frame as Dr Norton

explains he is in a hospital. Once released, Murphy gets increasingly confused, resulting in a violent outburst. He grabs Dr Norton by the throat before temporarily escaping. As he moves through OmniCorp it is revealed to the audience it is located 'somewhere' in East Asian, as the multiple unnamed workers who are made visible have East Asian heritage, the signage is in Mandarin and eventually Murphy collapses in a rice field with workers in traditional clothing. In a following scene it is sarcastically recommended Murphy "learns Chinese" as "he is never going home" (Robotcop, 2014). While this is deserving of more thorough analysis, it is reasonable to suggest the whiteness of the heroic protagonist is reinforced by constituting a specific race relation; the singular autonomous white agent (the self) and the multiple racialised homogeneous workers (the other). I include *Robocop* (2014) to emphasise how masculinist rebirthing scenes are a trope of science fiction visual culture and fundamental to the storytelling arc of the protagonist heroes. Furthermore, I also suggest the choice of Kinnaman as the hero is not a coincidence, for he signifies the controlled white muscular masculine blandness required for popular science fiction heroes (Sobchack, 1999).

In the 1993 film *Demolition Man*[141] that features the white-muscular-male protagonist John Spartan, played by Sylvester Stallone. *Demolition Man* congeals the architype action hero movie of the nineteen eighties and nineties with science fiction imaginings of a future with cryoprisons, artificial intelligence, bioengineered microchips, self-driving cars and VR headsets. It predominantly takes place in the year 2032, in a future where San Diego has become an authoritarian police state. Protagonist police officer Spartan falls into trouble with the law following the accidental death of civilians when he acts outside of official procedure to arrest his criminal rival Simon Phoenix, played by Wesley Snipes. As a consequence, he is sentenced to seventy five years in a cryo-prison during which Spartan's brain will be altered as part of his

[141] In late February 2024 Elon Musk reposted user @Rothmus X.com (formerly Twitter) the post was of an image that reads: "In 1993, most critics dismissed a one-of-a-kind move as just a stupid action flick "excessive explosions." Except that it smartly predicted and joked about political correctness, toxic masculinity, racial bias, the hysteria around cancel culture, and even more. By now, it's obvious that the movie was brilliant. But it still doesn't get enough credit" (Rothmus, 2024). I selected this film as my material for this chapter years before Musk praised *Demolition Man* (1993) because as Susan Sontag (2018) first wrote in 1964, Camp is rich for analysis because it tells us something about our socioculture place.

rehabilitation. In place of the womb, Spartan enters a glass circular cell and the camera moves in closely as he lays naked in the foetal position as the cell fills with clear "amniotic" fluid, freezing him inside. Symbolising his return to the womb. Following the unrest and destruction caused by his past enemy Phoenix, Spartan is rebirthed early from his cryo-womb as he is the only man for the job.

As the villain Phoenix is a figuration of the unruly cultural past that has been sterilised in 2032 (symbolised by the illegality of swearing, contact sports, cigarettes, alcohol, meat, anything spicy, gasoline, abortion and unlicensed pregnancies), the audience never sees his freezing or rebirth. Phoenix is just released and then escapes. However, Spartan's rebirth is a pinnacle scene in the film. A blue laser beam cuts his cell open and robotic forceps lifts and moves the ice block through blue light and a cloud of white steam. The audience can see glimpses of Spartan inside but it is computer graphics that indicate he has been laser cut from the ice. The protagonist has been reborn. In the next scene we see his full muscular white adult body as he lays naked and wet on a metal platform in the foetal position. I argue, Spartan's rebirthing is central to the redemption arc of *Demolition Man* (1993) as are temporalities, as he both resists and takes pleasure from his gendered and classed relation to time. For example, he forms a relationship with lead female character and fellow cop Lenina Huxley, as played by Sandra Bullock, who has a twentieth-century obsession. When Huxley argues for the rebirthing of Spartan, her colleague says, "It is not enough to collect the nineties you have to bring them back to life" (Demolition Man, 1993).

The film plays with sociocultural desires and anxieties about reproduction technologies, cybernetics, surveillance, cryonics, race, queerness and masculine. In *Demolition Man* (1993) the use of VR headsets to have sex is symbolic of the sterilisation of the technological future through the removal of touch, blood and bodily fluids, as well as the erasure and displacement of the womb, sexuality and pregnancy. This exemplifies Sobchack's argument that "science fiction films are full of sexually empty relations" as reproduction and intercourse are displaced into technological activity (Sobchack, 1999: 105). In the sex scene in *Demolition Man* (1993), Huxley express her disgust at exchanging bodily fluids and explains to Spartan they lead to contagion and infection. She explains to Spartan the only legal way to "procreate" is by laboratory, saying "fluids are purified, screened, and transferred by authorised medical

personnel only. It is the only legal way" (Demolition Man, 1993). Demonstrating how, as Sobchack argues, through the figuration of the virgin astronaut, male-dominated and action-oriented American science fiction film represses sexuality and therefore, women as the placeholder of this sexuality (Sobchack, 1999: 103). She writes,

> The virginal astronauts of science fiction film are a sign of penetration and impregnation without biology, without sex, and without the opposite, different, sex. They signify a conquering, potent, masculine and autonomous technology which values production over reproduction, which creates rather than procreates in a seeming immaculate conception and a metaphorically autocratic caesarian birth.
>
> (Sobchack, 1999: 108)

While not all sci-fi films have astronauts in them, Sobchack (1999: 107) contends, the astronaut is an overt archetypal figuration of the values and virtues common to all male protagonists of the genre. Might I suggest this also reveals how in science fiction culture, the tech futurist figure congeals with the figuration of the "virgin astronaut" (Sobchack, 1999). For the figure of the tech futurist is rooted in the chaste 'modest witness' determined to remove women from the scene of action in fear of their distracting sexuality (Haraway, 1997; Potter, 2001). As elaborated in detail in chapter four, technology was made masculine when the "new man of science" overcame his desires in pursuit of the fact (Potter, 2001: 13-21; Haraway, 1997: 28-32). Released in the early nineties, I argue *Demolition Man* (1993) is a response to the sociocultural anxieties conjured by the figuration of the virgin astronaut as protagonist Spartan both mocks and resists the sterile technological sexless future. His macho masculinity contrasts against the future he was reborn into and he acts a material-semiotic node in an affective narrative that the "coming" technological future threatens the macho muscular masculinity that dominated action movies at the time[142]. These anxieties are signified through the visualisation of Spartan being returned to the prison-womb and then rebirthed from the mother machine.

[142] Gender Studies and Media and Cultural Studies has long been concerned with how the contemporary action hero no longer resembles the macho masculinity of the nineteen eighties and nineties, as best symbolised by Sylvester Stallone, and the significance of this to gender relations. However, this discussion goes beyond this thesis.

Arguably, since Mary Shelley's (2012) imagining of the reanimation of Frankenstein's monster in 1818, we have encountered the trope of rebirth not by the womb but by technoscientific machinery. Sci-fi film and television act as cultural sites where rebirth is encountered as masculinist, technological, artificial and controlled, as the womb is displaced, replaced or erased. In the visual culture of science fiction, the womb conjures both horror and pleasure, as birth is reimagined. Professor Barbara Creed famously theorised, through Ridley Scott's *Alien* (1979), that there are various representations of the birth scene and behind each lurks the figure of the archaic mother (Creed, 1993: 18). Creed explains,

> Although the archaic mother as a visible figure does not appear in *Alien*, her presence forms a vast backdrop for the enactment of events. She is there in the images of birth, the representations of the primal scene, the womb-like imagery, the long winding tunnels leading to inner chambers, the row of hatching eggs, the body of the mother-ship, the voice of the life-support system, and the birth of the alien.
>
> (Creed, 1993: 19-20)

Virgin astronauts emerge slowly from their sleep pods, there is no blood, trauma or terror as the human subject is reborn as fully developed (Creed, 1993: 18; Sobchack, 1999). In *Alien* (1979) astronaut Kane takes on the part of the mother when he becomes pregnant after peering into the egg/womb to investigate and later dies as result of the monstrous alien bursting out of his stomach (Creed, 1993: 19). In heteronormative culture "When male bodies become grotesque, they then to take on characteristics associated with female bodies; in this instance man's body becomes grotesque because it is capable of being penetrated" (Creed, 1993: 19). In contrast to the clean, technological, and peaceful rebirth of the astronauts, Kane's is a threatening monstrous birth from the male body that is bloody and gory, and made-to-be repulsive to audiences (Creed, 1993).

In fantasies of masculine rebirth there is a prevalence of the sterile laboratory and an overt lack of blood and flesh. In place of blood, fat and flesh is glistening metal, muscles and white skin that keeps the insides contained (Kristeva, 1941). The heroic

protagonist is reborn once again, as adult, male, white, muscular and technological. Like Sobchack's figure of the virgin astronaut, "They are cool, rational, competent, unimaginative, male, and sexless. These qualities make them the heroes of the genre, as they are the heroes of our popular culture" (Sobchack, 1990: 107). As argued in chapter four through the work of David A. Kirby (2003, 2009), science-fiction film can be understood as "virtual witnessing technologies" as filmmakers, scientists, and engineers work together to enthuse the audience to futural technoscience as plausible realities. In other words, "You'd better believe it, because this is really coming!" (Bassett, et al., 2020: 3). Therefore, we might argue that masculine fantasies of rebirth in sci-fi film and television are not mere consequences but an assemblage of future-making practices that work as a continuation of a masculine technoscientific culture. These practices re-produce and re-imagine gender, sexuality, ableism and race relations through a history of privileging mastery, rationality and control. I conclude this chapter by discussing the science fiction television series *Upload* (2020) that does away with the macho heroism of *Demolition Man* (1993) to solidify the trope of sexless masculinist rebirth through the transhumanist fantasy of uploading. To understand the significance of *Upload* (2020) requires an examination of the imaginings of computer scientist and roboticist Hans Moravec who popularised the fantasy of uploading.

Visualising the masculinist fantasy of the self-birthing man in *Upload*

The fantasy of uploading is a dominant imagining of how cryonics patients will be "reanimated" in the transhumanist future. It is also an imagining of the singularity; when humans will discard their fleshy bodies to become a mind in the machine. In transhumanist imaginaries, cryonics and uploading entangle together as a promise of immortal life rebirthed into the imagined technoscientific future. Analysis of the visual signifiers and narratives of science fiction gives an insight into how this is a masculinist fantasy of rebirth that is figured as technological, individual and a reproduction of the self. It is an imagining of artificial reproduction that relies on a high-tech view of the body as a cybernetic communication system (Haraway, 1991: 169). It is also a squeamishly one, as Moravec posits, "Our biological genes, and the flesh and blood bodies they build, will play a rapidly diminishing role in the new regime" (Moravec, 1988: 4). In his 1988 book *Mind Children: The Future of Robot and Human*

Intelligence Moravec invites his readers to imagine a post-biological future when humans will "free" themselves from their "bondage to a mortal body" and upload themselves into shiny metal machines (Moravec, 1988: 4-5). His imagining of artificial intelligent machines, the so-called 'unfettered mind children', will eventually be self-improving, self-reproducing and look after their own maintenance without human labour (Moravec, 1988: 4-5). Moravec fantasises once these machines exist our culture will evolve independently of human flesh and its perceived limitations (Moravec, 1988: 4). In this chapter, I have discussed how this narrative of becoming independently intelligent is popular in projects of artificial life (Castañeda and Suchman, 2014: 333) is rooted in the Christian mythology of the masculine millennium (Noble, 1999: 151-162).

Moravec's propensity for predicting continues in *Robot: Mere Machine to Transcendent Mind* (1999) his follow-up to *Mind Children* (1988). In a commitment to his calculation of the accelerating speed of computer intelligence, *Robot* (1999) is an elaboration of his imaginings of techno-transcendence. For example, he speculates in the future "Our mind will have been transplanted from our original biological brain into artificial hardware" (Moravec, 1999: 170). I argue for paying attention to this optimistic language of disembodiment and freedom from bodily bondage that emerges from transhumanist imaginaries as signifiers of a rebirthing fantasy that denies the corporeal as a site of subjectivity (Hayles, 1999: 1-4, Braidotti, 2013: 102, 113). The overdeterminist white masculine subject can imagine himself without a social body because historical his body is unmarked, invisible and non-polluting. Situated in the cybernetic fever pitch, science and technology literary critic N. Katherine Hayles' (1999: 4-5) responses to Moravec's imaginary in her book *How We Became Posthuman*. Hayles (1999) finds Moravec's suggestion of erasing embodiment is common to both the liberal humanist subject and the cybernetic posthuman (i.e. transhuman) subject as the locus of the self is considered to be inside of the mind. The self as decoupled from corporeality emerged from the Enlightenment's concern with the perfecting of Man that constructed the universal humanist subject as objective, rational, has a claim to knowledge, therefore, implicitly male and white (Flax, 1987; Haraway, 1991; Hayles, 1999; Braidotti, 2013). Transhumanism reproduces this Enlightenment tradition, as Braidotti observes, by combining "a humanist belief in the perfectibility of Man through scientific rationality, with a programme of human enhancement" (Braidotti, 2019: 59). Therefore, the visualisation of "uploading" in the science fiction

comedy series *Upload* (2020) is salient because the self is located in the mind and thus, it is situated in these socio-cultural histories that privilege whiteness and masculine.

In *Upload* (2020) the protagonist Nathan Brown is a figuration of the "entrepreneurial geek masculinity" discussed in chapter four through the work of Ben Little and Alice Winch (2021). He is not the masculine action hero of the nineteen eighties with a macho muscular physic or the troubled hero who arises to leadership by controlling his emotions (Little and Winch, 2021). Rather Nathan is "armed with computer engineering skills" who outthinks his opponents by finding loopholes in the code (Little and Winch, 2021: 58). He is a successful computer engineer, who is a young, white, masculine, competitive, Christian with a lean physic. Nathan is threatened by his girlfriend Ingrid who is an interference in his independence and his ability to make a rational choice; a point that I will return to. Uploading is frequently idealised in this series, but Nathan is burden in his new life because of his mortal relationship with Ingrid. At the same time, his relationship with his service provider known as Angel, but named Nora, develops as it takes place in the virtual world of Horizon Lake View. Angel is feminised by and through the act of service, and Nathan frequently only hears her voice like how we might hear a virtual assistant like Siri or Alexa. We also see a reimagining of Americana through neoliberalism signified by Nora saying, Upload is "open to all races, religions, genders – absolutely anybody" ('Welcome to Upload', 2020).

Earlier on in the pilot episode of *Upload* ('Welcome to Upload', 2020) the introduction to Nathan opens with him programming JavaScript. After quickly solving an error Nathan closes the program and his view changes from black to moving on a busy highway, revealing he is a self-driving car. He overrides the self-driving system and manually takes the wheel. The car, presuming made from the same carbon fibre as sport cars signified by its speed and lightness, extends the surface of Nathan's body thus reproducing masculinity on and across surfaces (Hickey-Moody, 2015). Nathan drives recklessly through traffic, overtaking multiple cars until he is pulled over by a police drone. His ability to win the race by dominating both the car and the other drivers is a visual semiotic of his masculine dominance, that is brought into relation with the male audience (Hickey-Moody, 2015). After flirting with the female police officer, he has banter with the female sounding artificial intelligence system in the car. Nathan's

success with women and cars is important to the homosociality between the male audience and the protagonist. As Hickey-Moody argues, “male homosocial desire and power occurs through the bodies of women, bikes, cars, prostheses” (Hickey-Moody, 2015: 142). Ten minutes in to the episode Nathan is again in the car but this time in self-drive mode. He can see a hazard, a stationary trunk in the middle of the road, but the AI system cannot. He tries to override the AI but is unsuccessful resulting in the self-driving car crashing into the trunk. This begins the rebirthing scene.

Nathan is rushed through the hospital as he slips in and out of consciousness, laid on a hospital bed with visible wounds and ECG patches stuck to his bare chest. When it is announced “his vitals are dropping, we are losing him” by a member of the medical team his girlfriend Ingrid, who is also there, tells them, “We really want to upload, and I don’t want to miss the window” to which one medic asks, “is the paperwork all filled out?” and another says, “we can’t upload a dead body” (‘Welcome to Upload’, 2020). The majority of this scene features Nathan wheeled through the hospital corridors by female medics, as his girlfriend Ingrid and a corporate woman, tasked with the legality of uploading, walk beside the bed. Throughout the camera alternates between a view of Nathan and Nathan’s point of view. The audience become Nathan eyes as Ingrid, while holding his hand, leans in to say, “You could just old fashion die . . .” emphasising with a wide smile “or we could be together, forever” (Upload, 2020). The camera flicks back to Nathan as he hesitates at the suggestion of “forever” and Ingrid takes this as a rejection, replying “you’d rather die than be with me” and starts to cry making Nathan uncomfortable (‘Welcome to Upload’, 2020). When asked to sign the terms of services, Nathan asks what his chances of survival are to which he is told by a medic he is dying of a punctured lung. Nathan’s lack of autonomy is signified by his inability to move out of the bed or the bed itself. The surrounding women have control of the bed. They all come to a halt at a junction and above Nathan’s head is a sign that points left to the ‘operating rooms’ and right to the ‘upload rooms.’ A medic asks, “what do you wanna do?” (‘Welcome to Upload’, 2020). He sways toward uploading encouraged by Ingrid and reassured by the corporate woman that there is VR sex in the virtual world, but he wishes to speak to his mum before deciding. However, pushed for time and exhausted by Ingrid’s demands, he signs the paperwork to be uploaded.

The narrative of Nathan's upload is that he was coerced into it by Ingrid. This could appear to contrast with the socio-material realities of transhumanism as it is predominantly men like the protagonist, white male computer engineers, who hold these imaginaries (Romain, 2010: 196). For as mentioned previously, less than quarter of Alcor's membership is women and even then only a small fraction of these women join out of self-interest as the majority are either "the wives, partners, daughters, or mothers of a man who joined first" (Romain, 2010: 203). However, rather than subverting this hetero- gendered relation, I posit *Upload* (2020) reinforces it through the figuration of Ingrid as a threat to Nathan's autonomy. The comical plot of Upload (2020) orientates around, as Sobchack explains, "the male desire to break free from biological dependence on the female as Mother and Other, and to mark the male self as separate and autonomous" that is pervasive in science fiction (Sobchack, 1999: 107-108). Nathan's heroic masculinity is in flux, as he is constantly trying to break free from Ingrid as the signifier of sexual difference, as well as the condition of being corporeal, that is a threat to his autonomy.

In the next scene, in a sterile hospital room, a hesitant Nathan wearing a hospital gown is sat underneath a large metal cylinder that is the technological replacement for the womb. The camera cuts to Nathan's point of view and through Nathan's eyes the audience sees a male worker in a lab coat enter the room and introduce himself. To the left of the worker is a small square window revealing Ingrid is watching on. The worker casually straps Nathan to his chair reassuring him "this won't hurt" and that he is "jealous man, Lake View is plush" ('Welcome to Upload', 2020). The worker turns on the machine and the end of the cylinder that resembles a fan lights up and starts to spin, Nathan turns his head to look into it as if peering into the womb. The worker is then seen pulling a heavy tub of ice towards him. Nathan asks, "what's that for?" to which the worker replies "storage" ('Welcome to Upload', 2020). The worker leaves after telling Nathan to "have fun" ('Welcome to Upload', 2020). On his own, Nathan looks panicked as his looks around the room, in the final transgression he peers back into the laser womb, becoming part of the birth scene (Creed, 1993: 19). He panickily tries to withdraw asking, "can we just hit the pause button for a second" to which he is told "please look forward at the spot in front of you" ('Welcome to Upload', 2020). Ingrid is at the window and Nathan's mum comes running up alongside her. On sight of her Nathan reachs out "thank god, mom!" ('Welcome to Upload', 2020) but it is too late. A

golden beam of light shoots out of the laser beam erasing his head entirely. Ingrid and his mum scream at the sight of his decapitation. His now useless headless pale body flops into the ice bath, revealing his naked buttocks beneath the hospital gown. Ingrid and his mum continue screaming.

Nathan is uploaded with no blood, no pain, no mess. The screen cuts to black, "signifying the obliteration of self, the self of the protagonist" and the spectator (Creed, 1993: 28). Furthermore, as Sobchack articulate, even if the male hero manages to escape human women and Mother Earth, "it is to yet another female presence: the dark womb of space" that "both beckons and menaces" (Sobchack, 1999: 109). This is supported by the work of Creed when she theorises,

> What is most interesting about the mythological figure of women as the source of all life is that, within patriarchal signifying practices . . . she is reconstructed and re-presented as a *negative* figure, one associated with the dread of the generative mother seen only as the abyss, the all incorporating black hole which threatens to reabsorb what is once birthed.
>
> (original emphasis, Creed, 1993: 27)

In the black abyss we hear his Angel, Nora, say "I want you to think of yourself. I think therefore, I am" ('Welcome to Upload', 2020). This thought of his self becomes his password and through Nora's encouragement to think of infantile things such as "the colour blue" Nathan begins to materialise from this information ('Welcome to Upload', 2020). Reborn as pixels until he is fully formed like the contained mortal body he left behind. He has overcome the threat of "all-devouring womb" (Creed, 1993: 27), thus restoring the social order that demarcates the man as the One, as the self, from the other. I have previously stated the importance of rebirthing scenes to the narrative arc of science fiction films and television, this is made even clearer by the title of show *Upload* (2020) as Nathan's rebirth is the syntax everything else orients around. I argue, Nathan functions as a visual sign that reproduces a figuration of the tech futurist; masculine, white, ordinary, heterosexual, competitive with computer engineering skills (McNeil, 2007; Little and Winch, 2021). The rebirthing scene in *Upload* (2020) is a visualisation and narrative of uploading that exposes techno-transcendence is a

masculinist self-birthing fantasy that engenders fear and desire, as man is reborn technological, autonomous and in Adam's image of perfection.

Conclusion

In 'Exterminating Fetuses' (1984), Zoë Sofia draws together American anti-abortion ideology from the political right and science fiction iconography, in particular the 1968 film *2001: A Space Odyssey* (by Stanley Kubrick and Arthur C. Clark). By drawing together "science fiction culture" and the anti-abortion position characterised by "the cult of foetal personhood," Sofia articulates the "connections between exterminism and extraterrestrial embryology" (Sofia, 1984: 51). I am struck by the current relevance of 'Exterminating Fetuses' (1984) to our contemporary moment, considering the devastating overturning of Roe vs Wade in the United States that has gifted anti-abortionists legal and rhetorical advantages, the attacks on transgender and nonbinary people in Europe and America and the rocketing of tech billionaires into space. Sofia argues for a move towards "an ethics of reproductive choice" (Sofia, 1984) that in my understanding is akin to Susan Stryker's description of ". . . pioneering on a reverse frontier: venturing into the heart of civilization itself to reclaim biological reproduction from heterosexism and free it for our own uses"[143] (Stryker, 1994, 245). Stryker's (1994: 245) use of "reverse frontier" captures the entanglement of the politics of reproduction with the myth of the frontier. For the frontier and its "paradigm of the heteronormative white homestead" is woven into the stories-making practices of "American West Coast Tech" and how this culture makes "sense of contemporary raced and gendered hierarchies" (Little and Winch, 2019: 28). This shines light on how the discourse of pronatalism is not part from but entangled with imaginings of colonialising outer space. As Ben Little and Alice Winch observe, for Silicon Valley might be symbolically "progressive, future-oriented, and innovative" but it is actually a culture invested in the frontier myth of "white American settle colonialism" (Little and Winch, 2019: 28, 33). Thus, Sofia is correct to suggest we pay attention to the reproduction politics of science fiction, for as Haraway writes, reproduction is a central actor "in

[143] To note, this is said in jest among Stryker's 'queer family' following the birth of Denali, the daughter of her lover Kim (1994). It is in 'My words to Victor Frankenstein' Stryker journals her joyful and painful participation in the birthing ritual; she writes, "Through my lover's back, against the skin of my own belly, I felt a child move out of another woman's body and into the world" (1994: 244).

high-tech myth systems structuring our imaginations of personal and social possibility" (Haraway, 1991: 169).

This chapter situates imaginings of masculinist self-birth in the fraught histories of technological reproduction that fragment the maternal body (Balasamo, 1999). I traced the fantasy of the motherless man and troubled utopian feminist imaginings of technological reproduction to ask, what else did these visualising technologies make possible? As Richard Doyle writes, "For if life can emerge out of multiple connections to machines, the role of heterosexuality in the propagation of a human future becomes visibly and disturbingly questioned" (Doyle, 2003: 153, 4-154, 5). I cut across generations of feminist and queer thought to bring it into dialogue, not only to give attention to the relevancy of these arguments, but to also unsettle imaginings of techno-transcendence in transhumanism imaginaries. In the nineteen nineties, Feminist Technoscience and Feminist Media and Cultural Studies troubled the relationship between reproductive technologies and the visual cultures and narratives of popular science fiction to form an understanding of gender relations at that time. To make sense of how the outer space seen on screen, with its spaceships, astronauts and aliens, constitutes visual signifiers for reproduction in the form of the woman, the mother and the womb (Sobchack, 1999: Creed, 1993). Exposing how the genre of sci-fi is loaded with affective contradictions such as desire, fear, awe, jealousy, horror, pleasure and anxiety about gender, sexual relations and sexual difference (Sobchack, 1999: Creed, 1993).

To conclude this chapter, I question the implications that through visual signifiers and narratives of science fiction, such as those in *Upload* (2020), white male audiences are socialised to understand their whiteness and masculinity through the tech futurist hero. As Donna Haraway reminds us, "Figurations are performative images that can be inhabited" (Haraway, 1997: 179). A masculine hero that is a figuration of the immortal motherless man rebirthed into the technological future that is sterilised, rid of flesh, blood, sex, contagion and all things monstrous. As I have shown, this comes into clear focus in the visual cultures of science fiction, in particular, in *Upload* ('Welcome to Upload', 2020) when Nathan's rebirth is clean, painless and removed of flesh. As Vivan Sobchack writes,

> Not only does the technological man want to make his own babies, but he wants to do so without the hormones and flesh, without lust and arousal, and his most heroic representatives, the astronauts, embody this distrust of women, of the biological, and of the irrational dependences of the flesh.
>
> (Sobchack, 1999: 108-109)

For as this chapter shows the entanglement of pronatalism, "liberal eugenics", cryonics, and uploading is situated in fraught and vexed histories of technological reproduction that are racialised, sexed, ableist and classed. Thus has the consequences of re-producing the logic of patriarchal capitalist colonialism. A larger concern of this thesis is who can inhabit the tech futurist figure reborn into the transhumanist future and who – and what - gets left behind? As Haraway writes, "A figure collects up the people; a figure embodies shared meanings in stories that inhabit their audiences" and like the modest witness, the tech futurist is a figure "which works to *refigure* the subject, objects and communicative commerce[144] of technoscience into different kinds of knots" (original emphasis, Haraway, 1997: 23). *Upload* (2020) exposes the sociocultural anxieties about the instability of gender and sexual difference. This chapter demonstrated how a desire of "self-origination" manifests in the trope of the self-birthing motherless man in science fiction film and television, and this is central to protagonist's arc as a tech futurist hero in-the-making (Haraway, 1997: 35). For in transhumanist imaginaries, the womb is displaced to the paternal brain and in the fragmentations of maternity emerges the tech futurist as the metaphor for masculinist fertility (Sofia, 1984).

[144] "Commerce is a variant of conversation, communication, intercourse, passage" (Haraway, 1997: 276).

Chapter Seven: Discussion: Exiting The Singularity

The human species can, if it wishes, transcend itself –
not just sporadically, an individual here in one way, an individual there in another way,
but in its entirety, as humanity.
We need a name for this new belief. Perhaps *transhumanism* will serve:
man remaining man, but transcending himself,
by realizing new possibilities of and for his human nature.
"I believe in transhumanism":
once there are enough people who can truly say that, the human species will be on the
threshold of a new kind of existence,
as different from ours as ours is from that of Pekin man.
It will at last consciously fulfilling its real destiny.
Original emphasis, Huxley, Julian. (1957) *New Bottles for New Wine, Essays.* Page 17

It is claimed the above quotation is the first mention of transhumanism. It is then, an origin story of sorts. In the late nineteen fifties, the once president of the British Humanist Association Julian Huxley, imagined transhumanism and called it so. He was imagining "man remaining man" even in transcendence (Huxley, 1957: 17). The quandary of transhumanism is how an imagining of disembodiment through techno-transcendence is also a fantasy of "man remaining man" (Huxley, 1957: 17). However, this thesis has exposed that this is not a quandary at all - rather, remaining man even in transcendence is the ultimate conclusion of a libertarian humanism that is concerned with the perfection of Man as the universal subject. Furthermore, as I have shown in the previous chapter, this is a fantasy of the motherless man who is technologically rebirthed, rooted in the histories of the exclusionary Christian clerical culture, and this religious mythology is pervasive in technoscience cultures of imagining (Noble, 1999; Kember, 2003). This thesis then, is a contribution to understanding the fraught and vexing histories of this imagining that has gender at its heart. For, I theorise, the imagination is not apart from the materiality of social relations but rather it is an embodied, material, and affective practice that enacts and re-produces social relations in strategies of power-knowledge. Thus, imagining transhumanism is not a natural given

characteristic residing inside of these men from birth, rather imagining transhumanism is "gender-in-the-making" (Haraway, 1997).

There is increasing interest in transhumanism within the social sciences more broadly. This thesis uniquely conceptualises transhumanism as imaginaries and as such contributes a feminist sociological approach to understanding transhumanism. In particular this thesis contributes to the subdisciplines of Gender Studies, Cultural Studies and Feminist Cultural Studies of Science and Technology. In doing so it offers theoretical, conceptual and methodological tools to appropriately analyse and examine transhumanism that centralises the re-production of social relations. It is a feminist sociological account of the making and sustaining of transhumanist imaginaries across discourses, practices, narratives and visual cultures. I have intentionally moved away from the characterisation of transhumanism as a social movement or philosophy as I argue it obscures the necessary scrutiny required to understand why some men collectively imagine a transhumanist future for themselves. I argue, transhumanist imaginaries are made and sustained across a multitude of cultural sites in and through the production of social relations but this is always specific, situated and loaded with matter and meaning. I have shown in this thesis that the legitimation and normalisation of transhumanism imaginaries requires specific assemblages of discourse, visual media, symbols and material-semiotic practices. This thesis has demonstrated that gender, race, sexuality, class and ableism in-the-making is fundamental to bringing transhumanist imaginaries into being.

The completion of this thesis is situated in a socio-political and cultural moment when the powerful implications of transhumanist imaginaries to re-produce and strengthen patriarchal power requires an urgent and critical feminist response. The increasing relevancy of how transhumanism comes to matter in today's world is perhaps best exemplified by the public relationship between transhumanist Elon Musk and President of the United States Donald Trump. Singularly Musk has amassed material resources, influence, capital and wealth but important to this thesis is how he is made powerful through the figurations of the tech futurist as discussed in chapter four. Similarly, the closeness between President Trump and the billionaire patriarchs of Silicon Valley is symbolic of the brazen bro-ification of tech's elite; elites who are investing in making transhumanist imaginaries real (Carrigan, 2024; Preskey, 2025).

Meta's CEO Mark Zuckerberg recently described corporations as "neutered" and in need of more "masculine energy" on the Joe Rogan Experience podcast (Ibrahim, 2025). My analysis of transhumanism contributes an understanding of how this rejection of feminism from these tech futurist figures; those who define the dominant discourse about the technological future; is not new but a reconfiguration of the twentieth-century scientific hero (McNeil, 2007). Who can inhabit the tech futurist figure, and speak on behalf of the future, raises important questions about power, gender and culture. As the futures for queer people, trans people, refugees, disabled people, people of colour, those will chronic health conditions and other marginalised peoples continue to be publicly contested.

The critical implications and socio-political significance of my analysis of transhumanist imaginaries is the powerful effects transhumanism could have on widening inequalities and inequities. There is growing public commentary on the coalition between Silicon Valley elites and the nationalist right. In a recent article for The Guardian political columnist and author Naomi Klein and documentarian Astra Taylor (2025), state how transhumanism may appear benign, but transhumanist ideas are

> . . . . shot through with dangerous racial, ableist and gender biases about which parts of humanity are worth enhancing and saving – and which could be sacrificed for the supposed good of the whole.
>
> (Klein and Taylor, 2025)

They ring the alarm about the doomsday vision of the future that is being embraced by techno founders and venture capitalists. How this "end of times fascism" brings together tech bros with "hyper-patriarchal Christian supremacists" (Klein and Taylor, 2025). At the same time, on his first day of his second term in office, President Trump issued the Executive Order 14168 titled 'Defending Women from Gender Ideology Extremism and Restoring Biological Truth to the Federal Government' (Butler, 2025). It is predicated on "the trans-exclusionary argument that trans women are not women or constitute a threat to women"; an accusation also levelled against gender theorists (Butler, 2024, 2025). This thesis is an articulation of how this gender panic should not be understood as phenomenally distinct from transhumanist imaginaries but a

symptom of how these imaginings of the self-birthing man is taking up space in the cultural imagination. Throughout I have emphasised how the re-production and re-imagining of gender – specifically masculinity, cisness and maleness - is fundamental to bringing transhumanist imaginaries into being. I analyse the relationship between the trans exclusionary radical feminist (TERF) wars and science fiction imaginings of the transhumanist future (Pearce, et.al., 2020). I also show how anti-abortionist ideas of "foetal personhood" (Sofia, 1984) and the increasing hostility towards trans people operates within the logic of pronatalism and extraplanetary escape. Take for instance, how Elon Musk's daughter Vivian Jenna Wilson is reported to claim her father is utilising sex selection through in-vitro fertilisation (IVF), with a preference for sons (Block, 2025). As such, Vivian as a trans woman who has publicly been misgendered and vilified by Musk, embodies the failure of her father's pronatalist vision (Block, 2025). What is significance about this is how it reveals the importance of gender relations to transhumanist world-making. As such, I argue the erosion of trans and reproductive rights in the West requires a response that is also attentive to transhumanist imaginings of the technoscientific future. For the re-production of patriarchal power is the effect of the immanent processes of "gender-in-the-making" fundamental to bringing transhumanist imaginaries into being (Haraway, 1997). This thesis is a feminist intervention into the tightening patriarchal grip on our technoscientific futures and cultural imagination more broadly.

One limitation of this thesis is the failure to realise my initial ethnographical ambitions, as described in the foreword. As a result of the COVID-19 pandemic I could not conduct the fieldwork at in-person transhumanist events that I had planned. However, I suggest that this thesis is enriched by the early methodological and ethical considerations related to conducting partially covert and overt observations at key events. This methodological wrecking opened up an opportunity for reflection, and the consideration given to the possibilities and limitations of doing sociological research that is concerned with enactments of power and relations of gender is an integral part of my thinking in this thesis. In chapter two, I explored the notion of 'studying up' and the valuable methodological insights from other researchers who seek to understand the social lives of men – and elites. What is known as Elite Studies is a growing area of interest transnationally, as well as across disciplinary lines and institutions. Thus, I would add this thesis is part of these timely and important debates. With this said, the

data collection that never was is a ghostly reminder of the potentials of where my research can go. I am mindful of how there is scope for future research using the qualitative methods I first intended to use before the commencement of the COVID-19 lockdown restrictions. Hence, this thesis provides the framework for, and rich insights to inform, further research using ethnographic methods as I had initially planned. The interdisciplinary approach and insights I develop in this thesis can be applied to other technoscientific domains that takes my theoretical and conceptual contributions forward, to further understandings of how imagining the technological future is a material practice that re-produces gender. My approach offers a way to examine the re-production of power relations in visualisations and narratives of the technoscientific future as imagined in space tourism enterprises for example or the pursuits to reverse aging popular in Silicon Valley.

I have sort to take a "feminism against cisness" approach by insisting on the material while resisting "the naturalising logic of cisness" that fixes the categories of man and woman to the sexed body (Heaney, 2024: 2). As Gender Studies is increasingly facing challenges (Butler, 2024; 2025) I emphasis the epistemologically contributions this thesis makes to the field as an exploration of how the immanent practices of bringing transhumanist imaginaries into being is also "gender-in-the-making" (Haraway, 1997). Echoing anthropologist Laura Nader (1974) call to "study up", I too make the case that theory should be informed by studying the interests and relations of privileged actors. The methodological contributions my exploration of transhumanism makes to Sociology, Feminist Science and Technology Studies and Cultural Studies is how to study the re-production of power when access to these privileged actors is denied or refused. My conceptualisation of the tech futurist figure contributes to the growing interest in the heroes of 'tech bro' culture, as explored in *Cracking the Bro Code* by Coleen Carrigan (2024) that interrogates the gender politics of computer science. It also adds to the emerging literature on transhumanism, as discussed in the introduction, by insisting on analysis that pays attention to masculinities, maleness ableism and whiteness. In this thesis I have revived the concerns of Feminist Technoscience of the nineteen nineties and brought them into dialogue with the work of contemporary trans authors, Disability Studies scholars and feminist decolonial thinkers. This work has aimed to be a sincere and considered return to Donna Haraway's "Modest Witness" (1997) to ask how gender is *still* in-the-

making in Western technoscience cultures, with a focus on transhumanism imaginaries. To do this required a move towards an examination of the production of relations in material-semiotic practices of witnessing and imagining. This thesis is not a technophobic argument for a return to "nature" - as that is just another patriarchal imagining. Neither is it proposing a technological determinism solution. Instead, I have sought to "stay with the trouble" (Haraway, 2016) and to avoid sinking into the transcendental space of salvatory or apocalyptic futures. For our collective futures grow in "hot compost piles" (Haraway, 2016: 4) and sprout in the margins of human, non-human, flesh, machine, hope and despair.

Might we then take up Karen Barad's suggestion of "a regenerative politics with all its monstrously queer possibilities" that can "serve to recharge our imaginations" (Barad, 2015: 441)? For this reason, to conclude, I counter the transhumanism imagined by Huxley (1957) with an imagining from Jian Neo Chen and Micha Ca'rdenas, that for me echoes Donna Haraway's cyborg manifesto (1991). They write,

> Perhaps trans futures, instead of looking like pink neon, blue gray steel, and shining glass, look like bone and blood, like impure ecologies of mixing and contamination, like reimagining kinship to include beings with manufactured bodies, like clones and robots.
>
> (Neo Chen and Ca'rdenas, 2019: 475)

Exiting the singularity, an imagining of singular transcendental masculine perfectionism, is messy work. This thesis is a contribution to this mess by offering a way to interrogate transhumanism *as* imaginaries, undoing the singular and leaving nothing in its "rightful" place. This project seeks to intervene into transhumanist imaginings of disembodiment that denigrate the material body and reproduce the mind as the locus of the self, thus reinstating the binary that privileges masculinity and whiteness. For, as I have emphasised, to imagine transhumanism is to be embodied, material, social and situated. To imagine, is to imagine from somewhere.

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