FRAMELESS FICTIONS:

EMBODIMENT, AFFECT, AND UNRULY ENCOUNTERS IN VR AND VIRTUAL ENVIRONMENTS

by

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Abstract

This thesis considers the embodied and affective potentials of Virtual Reality (VR) and virtual environments in contemporary technoculture. Focusing on VR's 're-emergence' in the consumer market (2016-present), the thesis addresses and examines some of the more ambivalent and unruly encounters that this technology makes possible. In so doing, it defines taxonomies of the kinds of unruly experiences users might have of digital media more broadly, including compromised agency, boundaries of access, displacement, proximate glitches, and embodied horror—experiences which are incredibly varied despite the increasing appeal to a homogeneous 'immersion' in their marketing, and the cultural and even academic discourses which surround them.

There remains an incapacity to frame experiences of VR in a way not yet prescribed through familiar experience, embodied grammars, or sufficient grammars of discourse. Offering a reconfiguration of the popularisation of 'framelessness' in the VR space as being synonymous with the transparency of hardware interfaces, *Frameless Fictions* instead speaks back to the concept of frames and enframing in philosophy and phenomenological enquiry (e.g. Heidegger 1954), which describe the human tendency to cognitively frame things for an ordering of use within the bounds of (inherently reductive) human understanding. VR's popular 'frames' maintain focus on transcendence, transparency, limitlessness, and user empowerment. This work argues that we might learn more about VR's unique capacities if we consider its potentials for looking beyond, and unsettling, human subjectivity.

The work evaluates and interprets a number of multimedia texts, including fictional representations (novels, films, advertising materials, VR applications, and videogames) to argue for a critical approach to virtual environments which considers how framelessness emerges through specific affective experiences. To this end, the work explores VR through a number of different lenses, including body-horror, the flesh, glitch and error, the unhuman, the weird, and proximal horror.

This thesis' focus on embodied affect attempts to forge the production of some of the grammars relating to disorientating, unanticipated, and ontologically complex experiences of virtual environments which pose generative challenges to human agency and access.

For my Nan, Betty Brown.

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Contents

Introduction

From eyeglasses to artificial hearts, from hearing aids to bioengineered proteins, the body becomes hybridized. These prostheses offer both potential for liberation and the menace of enslavement. The cyborg, mixed-breed offspring of the body and machine, is tailored for an era of ***ambivalence, slippage,*** *and* ***technological ubiquity****.*

Peter Lunenfeld, *The Digital Dialectic*[1]

In 2016, the game developer and publisher *Capcom* released the demo for the first full-length Virtual Reality (VR) compatible videogame from a major studio: *Resident Evil 7.*[2] This meant that an entire "AAA" videogame, from the popular *Resident Evil* franchise, could be experienced in its entirety through a Virtual Reality headset. It also meant new encounters with the world of the game could be actualised from a first-person perspective; this changed the way the game world looked, the way it felt, and the way it could be interacted with. The *Resident Evil 7* demo, entitled 'Kitchen,' teased at the potential of the full game, providing approximately five minutes of sheer terror, beginning in a darkened room in an abandoned house.

Image 1 Resident Evil 7 Demo, Kitchen, uploadvr <https://uploadvr.com/kitchen-demo-resident-evil/>

[1] Peter Lunenfeld, ed. *The Digital Dialectic: New Essays on New Media* (Cambridge, MA: MIT Press, 2000) pp.64-5

[2] *Kitchen [demo]*, Capcom (2016).

You are given a short period of time to absorb the space you see around you after putting the headset on. You can see cluttered kitchen countertops, open drawers, a litter-scattered floor, and are surrounded by eerie looking pieces of furniture like old lamps and a tabletop fan. Straight in front of you, amongst the rubble in the room, a single bright light and a camera faces you – behind which a male body in a suit lies on the floor surrounded by a pool of blood. Looking straight down at the floor, you can see the body of your presumed male avatar whose hands are tied together. Movement of the hand controller calibrates with the movement of the avatar's hands; should you move the controller up and down, the hands move in synchronisation, though they are restricted by the ties. Dialogue appears on the screen, instructing you to push the camera in front of you over. The sound of the camera crashing to the floor awakens the man in the suit, who sits up and utters in fright "where the hell are we?" He proceeds to struggle and get up, walking towards you, breathing heavily. With the affordances of the headset's binaural sound, you hear different noises emerging from all around you. You hear a clock striking in the background, as the man attempts to cut the ties from your hands. At this point, unsettling sounds can be heard coming from behind the man, and without warning, a ghoulish female figure emerges from the darkened background of the room and stabs him through the chest.

After uttering shrieks, the ghoul looks directly at you, and proceeds to stab you in the leg, and your avatar wails in agony; the ghoul then approaches the suited man and drags him outside the room. After hearing screams coming from the other side of the doorway, the man's head rolls into the room. You are left alone in the dark, awaiting the ghoul's return. You can only look around to try and place the array of binaural sounds, which are predominantly heard as coming from behind you. After the anticipatory build up, you hear the ghoul's ghastly laughing emerge from somewhere behind your head. Two bloody hands appear and smear across your field of vision, after which the ghoul emerges from over the top of your head with the knife, and the demo ends.

The felt proximity of this final encounter is truly frightening. Your body senses proximity when the hands come towards you, and the unexpectedness of each event makes them even more visceral. When trying out the 'Kitchen' demo for the first time, my very first experience of a horror game built specifically for VR, I was shaken by a wholly new sense of ambivalence and slippage where my own embodied reaction to this frightening scene impacted the way the experience played out. I am referring to

ambivalence and slippage as that prefaced by Peter Lunenfeld in *The Digital Dialectic*.[3] Lunenfeld states that to embrace ambivalence "is to sacrifice neither rigor nor sense. It is to lodge oneself in the dialectic, where reversals are not simply expected but required."[4] Ambivalence will be a recurrent theme throughout this work; in line with the above, I use ambivalence to refer to a reversal of expectation, where a user's experience of an immersive environment sits in an in-between space of surprise, anticipation, shock, obscurity, and revelation.

My own experience of the 'Kitchen' demo illustrated to me that being between these realms actually revealed the truly novel, and necessarily ambivalent, affects that VR is capable of producing. Indeed, as the ghoul's hands swept across my line of sight, I jumped back in my seat in shock, and consequently disrupted the calibration between the headset and the PlayStation camera which monitors player movement.[5] Through the disruption caused by my frantic action, it suddenly appeared that my head had come away from my avatar's body. I was looking out towards the lower half of a male body which was now separated from where my head and vision were newly located in the simulation; the tied hands were now far away from where my vision was placed. Rather than looking down at a synchronised image of an alternative body, I was looking down into a glitchy void, and a body without a head lay in front of me. Trying to make sense of this *momentum*, I was under the illusion that I had been decapitated by the ghoul. "Momentum" is the key framework used by Rosa Menkman in her work *The Glitch Moment(um)* to "indicate the potential of any glitch to modulate or productively damage the norms of techno-culture, in the moment at which this potential is first grasped."[6] That is to say that unexpected system glitches can be productive counter events, momentary glimpses at a technology's otherwise hidden, disruptive potentials: the sensation that I existed in the simulation momentarily as a head without a body felt genuinely strange and disorientating, yet somewhat revealing of VR's unruly potential. Initially, I assumed that the decapitation was part of the game, and relayed this experience to friends who were in the room with me. However, it became clear that the decapitation was not actually a programmed part of the demo; I had jumped back so abruptly that I had

[3] Lunenfeld, ed. *The Digital Dialectic: New Essays on New Media.*
[4] Lunenfeld, pp.xiv-xv.
[5] A more thorough outlining of VR's hardware infrastructures and set ups will be discussed later on in this introduction.
[6] Menkman's work will be described in depth in Chapter 3 of this thesis, which looks further at the potentials for analysing perceptual mediated error and the embodied and affective experiences of glitch.

disrupted the calibration of the simulation. I had *effected* a representation that had simultaneously *affected* me.

This emergent and unruly glitch,[7] that occurred through the co-operative action of my body, the material hardware and the programmed game, had incorporated my embodied action into the physical and perceptual corners of the simulation itself. This glitch was visceral, and it was proximal. It was caused by a combination of actions both outside (body; hardware; 'real' environment) and inside (character body; representation; virtual environment) the game. My embodied movement and the simulation felt completely intertwined, seeping in and through one another and simultaneously effecting and affecting one another. Whilst such a glitchy encounter revealed something about the kinds of system mechanics that are unique to contemporary VR systems, it also revealed elements of how my own embodiment functioned as part of the assemblage, how my actions had co-produced or facilitated some kind of unruly agency which broke the coded boundaries of the intended simulated environment. In the moment, this experience felt discordant and strange. Later, however, this experience continued to provoke my thinking about the disruptive potentials of bodies and immersive environments: the VR glitch translated into an odd, uncomfortable, yet strangely satisfying affective encounter. Trying to understand these phenomena further, phenomena that emerge through the ambivalent experiential collision of the body and the technological system, provides a key to better understanding this medium and its unique potentials.

To this end, this thesis offers an exploration of Virtual Reality (VR) technologies and focuses on the ways in which they offer new ways of experiencing and understanding embodied relations with contemporary new media. It will examine some of the more ambivalent slippages between embodiment and virtual environments, and define taxonomies of the kinds of experiences users might have of digital media more broadly, in order to plead the case for VR's disruptive potential, and the generative possibilities offered by experiences which exceed perceptual realism. These include compromised agency, boundaries of access (Chapter 1), displacement, proximate glitches (Chapters 2 & 3), and embodied horror (Chapter 4), experiences which are incredibly varied despite the increasing appeal to a homogenous "immersion" in the marketing of virtual

[7] I lay out what I refer to as "emergent" and "unruly" in the glitch taxonomy posed in Chapter 3 of the thesis. Emergence relates to unanticipated error, an experience that neither the player nor developer could have predicted. The "unruly" glitch, I suggest, marks a rupturing that completely alters the user's experience of the technology.

environments, and the cultural and academic discourses which surround them. It will evaluate and interpret a number of multimedia texts (novels, films, advertising materials, VR applications, and videogames) to argue for a critical approach to virtual environments which considers how *framelessness* emerges through specific affective experiences. Offering rich, entangled and affective interactions that have arguably not been possible for large audiences before, VR, specifically, reveals new hybridisations and unruly and ambivalent slippages between the human body and its intimate technological infrastructures. Such hybrid experiences, I argue, can be considered "frameless fictions," both in that they are inspired by narratives of extended realities, but also in the ways they are continually formed through real-time experiences which evade certain forms of capture. Such experiences push at the membrane of their intended infrastructures, pressing against the prescribed boundaries of their experiential capacities, and produce novel, unruly, and unanticipated encounters which deserve critical attention.

Frames, and the act of enframing, are considered throughout this work as reductive devices and acts that attempt to capture anthropocentric conceptions of what it means to be in a (technologically developed) world so permeated by new media technologies. As will be discussed more thoroughly in the thesis' first chapter, such an understanding of framing finds its roots in Martin Heidegger's phenomenological accounts of enframing, and the framing function, as a human dependence on technology in order to make the world accessible exclusively for human use.[8] Heidegger's work considers technology, or tools, as being a means for enframing the world within the bounds of human comprehension.[9] Philosophical accounts of enframing illustrate the ways that the world is only seen to be accessed for, and by, the human subject. In contrast, this work focuses on those frameless moments where agency and access, on the part of the human subject, or user, are challenged.

The concept of "frameless fictions" seeks to narrate the strange sensations of being *with,* as opposed to being *in,* virtual environments. As we will see throughout this thesis, VR is oftentimes narrated as the true realisation of the effacement of the screen, and even of mediation altogether. The blissful promises of otherworldliness indicate the desire for VR to create the experience of framelessness-as-non-mediation. In its supposed defying

[8] Martin Heidegger, *The Question Concerning Technology and Other Essays*, trans by W. Lovitt (New York: Harper & Row, 1997).
[9] Paraphrased from ibid.

of the frames of mediation (screens and interfaces), VR promises the potential to experience wholly new realities where users can leave the here and now, and enter realms that other media have thus far been unable to provide access to. Though popular representations of certain forms of framelessness in the VR space have led to its association with the removal of the screen, I will argue throughout this thesis that this particular 'framing of framelessness' tells us little about the actual experiences this technology makes possible; the allusion of non-mediation leads to an unnecessary and detrimental valorisation of the immateriality of VR, rather than critically assessing and embracing the materiality of its hardware infrastructures, and of its relationship to embodiment.

Unlike a representational frame that captures a still image, or the four corners of a computer screen which frames its content (a centre at which to gaze), VR demands that its users look around. It asks them to forget hardware frames, and consequently become part of the worlds presented on the other side. As this thesis argues, the push away from VR's inherent materiality ironically contributes further to black-boxing the infrastructures of VR. It is in this regard that I will consider glitch, and various other forms of mediated error, as disruptive opportunities that enable newfound proximities to the inner workings of VR, and the ways it interacts with users' bodies. Though errors do not inherently reveal how VR truly operates, they offer valid challenges to the dangerous urge towards total technological transparency; glitches, for example, allow novel access to the process of being *with* VR, producing new affective encounters which require further critical analysis.

In VR, representation and reality comingle. There are no neat borders, and being securely with*in* a space, I argue, is seemingly impossible. Instead, users become entangled and enmeshed *with* the technologies they interact with; sometimes this can produce unanticipated and uncomfortable sensations, posing new agential challenges where control is pulled away from the user. As my own experience above illustrates, the porousness evoked by VR technologies produces new, novel, and underexplored affective potentials. It is here then, for the purposes of my introduction that I (somewhat ironically) need to frame the concept of framelessness:

VR produces "new" simulated worlds that are perceived as fully present spaces. However, the body's place outside the simulated world causes a strange oscillation between the

here and there, the "real" environment and the "virtual" environment. Rather than regarding the removal of the frame (i.e. making frameless) as signifying the removal of the interface, the reference to framelessness here has more to do with a consideration of instances where human embodiment affectively encounters that which exists moderately outside our (human) comprehension— our everyday lived experiences. Framing, in the history of philosophy and in particular phenomenology, is used to describe the human tendency to cognitively frame the world, objects, and nonhuman others, within the bounds of human cognition and understanding. Framelessness, here, refers to that which exists outside the bounds of immediate comprehension and understanding.

The body's incapacity to frame experiences of VR in a way not yet prescribed through familiar experience, embodied grammars, or sufficient grammars of discourse, makes the body an uncanny site where fleeting sensations of otherness produced by VR can, in fact, highlight the body's own "alien materiality."[10] When the technology does not seamlessly correspond with the body, an experiential chasm between intended and unanticipated action opens up, leading the user to feel smeared between the physical and virtual environment. Such sensations might occur when, for example, the user is presented with the opportunity to fulfil the role of becoming another body within a virtual simulation. Alternatively, in an instantaneous simulation glitch – such as the one mentioned above – the sensation might be that of the space breaking away from the body—an incapacity to grasp the space which we perceive ourselves to be inhabiting.

This work focuses on moments where access and agency on the part of the human subject are challenged, and considers how new media, and VR technologies more specifically, produce new subjectivities through unruly encounters which go beyond our (human) comprehension. The approach taken here is, instead, a "multiply tiered ontology"[11] of digital media, inspired by New Materialism, a philosophical discourse which encourages the consideration of matter (both organic and inorganic) as "no longer imagined as massive, opaque plenitude but[, rather]…recognised instead as indeterminate, constantly forming and reforming in unexpected ways."[12] In this light, throughout this thesis I will

[10] Dylan Trigg, *The Thing: A Phenomenology of Horror* (Hants: Zero Books, 2014) p.77.
[11] Used to capture the approach to New Materialism in *New Materialisms: Ontology, Agency, and Politics* where subjectivities are "constituted as open series of capacities or potencies that emerge hazardously and ambiguously within a multitude of organic and social processes." Ed. by Diana Coole and Samantha Frost (Durham, NC: Duke University Press, 2010) p.10.
[12] Ibid.

be focusing on Virtual Reality (VR) both as a series of technological objects and as a philosophical conceptualisation of mediated environments more broadly, which expands upon and more truthfully captures the essence of what it means to *be with* new media. It will argue that frameless and unruly interactions enable us to reconceptualise the relationship between the body and new media objects as intrinsically corporeal and ontologically complex.

This thesis employs a number of methods in order to assess the implications for underexplored interactions in the VR space. It employs discourse analysis, close textual readings and real-time use analysis in order to interpret representations and lived experiences of VR, maintaining a central focus on affect and embodiment. Specific chapter outlines are provided later in this introduction; however, it is worth noting that the representations and experiences I have chosen to analyse in this thesis have a lay audience in mind. That is to say that the thesis focuses on texts that are easily accessible for audiences who might be new, or wholly unfamiliar, with the virtual reality. It begins with analysis of popular advertising materials from companies like Oculus and HTC, using still images and video snapshots that frame VR and user interaction in very specific and limited ways, maintaining an unwavering focus on technological transparency and absolute user agency. I also employ discourse analysis for advertising videos in order to illustrate what kind of language is persistently being used to describe VR experiences for new audiences, which, I argue, is insufficient for capturing VR's unique affective and embodied potentials. The second and third chapters move somewhat away from VR into close readings of fictional texts which narrate unruly interactions between bodies and imagined technologies on a broader scale; the texts analysed go from science fiction, through to videogame narratives and contemporary weird fiction. The texts, which are outlined later in the introduction, have been chosen specifically to capture a new lexicon for describing unruly encounters between human and nonhuman actors and worlds. I argue that these texts provide some of the grammars that are currently missing in popular VR discourse. The applications I have chosen to analyse provide some key examples which best illustrate the unique experiences VR enables for those trying it for the first time, particularly in the context of this thesis' focus on embodiment and affectivity. This is why horror (as an affect and as a genre) is a continued subject throughout the thesis, as it has truly found its place in mainstream use of VR – as we will see is reflected in statistics and downloads for horror applications. I refer to some of my

own experiences of VR simulations throughout the work as first-hand experiences of trying VR for the first time; I narrate some particular examples in order to put the phenomenological frameworks I employ into practice, analysing these interactions in order to further access, and critically assess, experiences that remain relatively underexplored in popular discourses of VR. Such interactions include those where the body interacts with the technology in unruly and ambivalent ways (disorientation, generative glitches, and error), where the presentness of the body, and the hardware, is particularly emphasised, contrary to popular representations (as we see in Chapter 1).

The well-established conceptualisations of the figure of the cyborg in the early 1990's, further popularised by the work of Donna Haraway, heralded new formulations and understandings of the complex and multifaceted relationships between human and machine. Indeed, Haraway's cyborg figure was defined through the ontological porousness of biological and machinic entities, and the ways they might coalesce and co-emerge with one another. Haraway's work marks one iteration of framelessness from which this thesis takes inspiration, where the frames of "human" and "computer" are seemingly broken to produce hybridised, unruly ontologies. Haraway's cyborg, a complex "hybrid of machine and organism,"[13] informed novel understandings of embodied encounters with digital tools as fluid and porous. Theorisations of expanding digital interactions moved beyond the "body left behind" dual ontology seen in fictional texts like the film *Tron* (1982),[14] where the body remained on the outside of the computer whilst a newly "freed" consciousness moved through the encoded, grid-like space on the other side of the screen. In such works, the frame of the computer interface was relied upon as the stable object, reinforcing the positioning of the body on one side, and consciousness free floating on the other. I argue that in the current era of consumer VR devices (2016-present[15]), where users seek (or are told they should seek) to become immersed in virtual environments as opposed to exploring them at a distance, novel forms of framelessness provide important insights into the ways our bodies instead meld with these environments through ambivalence and slippage.

[13] Donna Haraway, 'A Cyborg Manifesto: Science, Technology and Socialist-Feminism in the Late in the Late Twentieth Century' in *Simians, Cyborgs and Women: The Reinvention of Nature* (New York: Routledge, 1991) p.117.
[14] *Tron,* dir. by Stephen Lisberger, *Buena Vista* (1982).
[15] I will discuss the relevance of this time period in relation to the VR market in the next part of the introduction.

In approaching VR as its central object/concept, this thesis speaks back to and develops similar concerns about embodiment, affect, and immersion that can be seen from its development in the early 1990's, as a means of further understanding the technology's nuanced relationship to perception and the body.[16] In particular, Ken Hillis' 1999 work on *Space, Identity and Embodiment in Virtual Reality* provides a useful platform for thinking about the ways Virtual Reality might produce new kinds of *Digital Sensations.*[17] His research provides a unique insight into the mutual affection of embodiment and virtual environments, which was often trumped by a dualistic ontological model of a "here" and "there". However, given the changes in VR technology since the time of Hillis' writing, the subjects of "identity" and "embodiment" referenced in the title of his work need to be revisited in order to grasp how these modes of being are informing contemporary experiences and our expectations of VR today. I will demonstrate the validity of, and extend further, Hillis' earlier claims that embodiment and virtual environments are not disparate ontological realms, but rather seep into one another, i.e. how "digital technologies affect the 'lived world'"[18] (and vice versa). Hillis argues, in the late 90s, that VR captures what it means to live in a postmodern world, in that it combines a plurality of experiential worlds, with various segregated conceptions of space and time. Hillis writes:

> Although I have stated that the "Author" (or modern self, or 'I') remains important – despite the fragmenting impact on identity formation such spatial segmentation may effect – a principal result, even goal of such segmentation within a virtual world involves divorcing the sense of self from one's own flesh.[19]

This 'segmentation' is a notion that this thesis seeks to avoid. Its focus is not the ways we seek to segment our selves from our flesh via technological means, but the ways

[16] The focal point of early consumer VR development was perhaps the Visual Programming Lab, who developed what was called the "Eyephone" in 1987. In addition, headsets like the Nintendo Virtual Boy (1995) entered the consumer market, but were not successful; the Virtual Boy has been dubbed as "one of Nintendo's worst failures" (see <https://www.cbr.com/nintendo-virtual-boy-turns-25/>). Commonly, comparisons of VR technologies 'then' and 'now' cite the development of contemporary VR's immersive realism, and reflect on the comparable "bulkiness" of VR technology of the 90s. See, for example, <https://www.wareable.com/vr/virtual-reality-then-now-why-it-wont-fail-this-time>.
[17] Ken Hillis, *Digital Sensations: Space, Identity, and Embodiment in Virtual Reality* (1999).
[18] Ibid, p.xiv.
[19] Ibid, p.xxxiii.

technologies, particularly digital media, are instead becoming more proximal to our flesh, our being, and our understanding of what it means to constitute a 'self'. The flesh, I will argue in Chapter 2, marks the realisation of new kinds of selfhood and subjectivity that exceeds the pre-empted selves imagined within the VR space.

Since the time of Hillis' writing, virtual environments have become *fleshy*: they have taken on new shapes, definitions and textures, mimicking, extending, and questioning the enclosed, unified, and embodied self typically associated with humanist thinking (as will be discussed in Chapter 1). Humanism is premised upon anthropocentric notions of subjectivity, elevating "man" as "the universal representative of the human,"[20] and promoting the uniqueness of the human species.[21] Indeed, Jaron Lanier argues that VR is "the most humanistic approach to information" and "suggests an inner-centred conception of life and computing."[22] Throughout this work, however, I maintain an "outward oriented" approach to VR subjectivities which, as Rosi Braidotti calls for in her *Transpositions* (2006), "shoot[…] through the humanistic frame of the subject, exploding it outwards."[23] I attest that virtual environments challenge the essence of a unified bodily selfhood as truly being able to capture contemporary modes of subjectivity: we are now smeared subjects—flesh is drawn between the organic and the technological. Throughout this work, I trace a trajectory of modes of being *with* immersive digital tools, tools that we feel, that continually to embed themselves into our daily practices, and consequently mould our understandings and experiences of social, political, and cultural 'selfhood.'

VR is a particularly timely subject matter, given its rise in popularity since its re-emergence in the consumer market from 2016.[24] In his work *The Re-Emergence of Virtual Reality* (2019), Leighton Evan's refers to this 're-emergence' as the medium's presence in contemporary commercial electronics and popular discourse,"[25] where VR has previously been caught in a "technological lag" and culture has taken time to catch up with such

[20] Rosi Braidotti and Maria Hlavajova, *Posthuman Glossary* (London: Bloomsbury, 2018) p.3
[21] Rosi Braidotti, *Transpositions: On Nomadic Ethics* (Cambridge, MA: Polity Press, 2006) p.100.
[22] Jaron Lanier, *Dawn of the New Everything: A Journey Through Virtual Reality* (London: Bodley Head, 2017) p.55. Lanier's approach to humanistic VR will be discussed in more detail in Chapter 1.
[23] Braidotti, *Transpositions*, p.157.
[24] An article written for *Venture Beat* (2017) notes that an estimated 6.3 million headsets were shipped during 2016, 'Superdata: VR's breakout 2016 saw 6.3 million headsets shipped' <https://venturebeat.com/2017/02/04/superdata-vrs-breakout-2016-saw-6-3-million-headsets-shipped/> [accessed March 2019].
[25] Leighton Evans, *The Re-Emergence of Virtual Reality* (London: Routledge, 2019).

technological innovations. Evans' book focuses on the positioning of VR in the specific cultural context of "the current digital world, its economics, the environment and the intentions of VR development."[26] This thesis focuses on relatively recent developments in VR devices and applications from 2016 onwards, where a significant shift has occurred in VR development: some of the biggest global corporations, including Facebook, Google, Sony and Samsung, have been investing in VR systems,[27] and, as a consequence, the boundaries between VR and pre-embedded devices and applications (including mobile phones and social media) have become increasingly porous.

This situation has emphasised the fact that VR does not exist in a vacuum; it builds out of, and relies upon, the grammars of use already established in a variety of existing media objects. Looking at the contemporary environment of digital tools beyond that of VR, our media are consistently and increasingly engrained and embedded into everyday life; we feel the presence (both materially and psychologically) of our media objects more than ever before. The affective presence of digital media is simultaneously at the centre of both the advertising campaigns and designs for consumer hardware, and yet there remains a difficultly to narrate our phenomenological experiencing of the very new, and sometimes ambivalent, embodied experiences, they make possible. Whether we see billboards of faces photographed on the latest iPhone,[28] or spend time choosing the most satisfying animated screensavers that seem to defy the flatness of a screen, our media continually seek to produce new sensations which bridge the gap between user and tool– all of which seemingly rely on the seamlessness of interaction and communication with their users. Yet contemporary framings of VR push the users' desire for sensation even further, offering blissful promises of transcendent experiences of being somewhere else, or even being some*body* else.

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[26] Ibid, p.3][

[27] Facebook bought VR company Oculus in 2016 for $2billion. Google began to create new applications for android devices that were VR compatible, producing new headsets including the *Google Cardboard*, where users could use their mobile phones as VR devices. With the release of the *Google Cardboard* headset in 2016, developers took advantage of the ubiquity of smartphones, enabling users to place their phones in a crafty make-it-yourself style cardboard frame which transformed a 2d image into a low-fi encompassing image space. Then followed releases of the *Samsung Gear VR* (making similar use of smartphones in a more hardwired headset), the *Oculus Rift, HTC Vive,* and *Playstation VR* which became well known and consumer friendly headsets, bridging into experiences of videogames and navigable spaces.

[28] See iPhone's 'Shot With iPhone' ad campaign where the company crowdsourced images from iPhone users across the world which would then be displayed on billboards from 2015-present. Apple emphasises the sourcing of images from 'amateurs and pros alike' using the social media hashtag #ShotoniPhone (source: Apple, 'Shot on iPhone Xs: Users share their best' <https://www.apple.com/newsroom/2018/10/shot-on-iphone-xs-users-share-their-best/> [accessed December 2018].

During the last few years of its 're-emergence,' VR has relied upon other tools in order to become successful in the consumer market. Yet, as Evans also notes, the entanglement of VR with contemporary tech monopolies means that the medium contributes to the operational goals of companies like Google and Facebook, forming part of "an eco-structure of data collection."[29] VR's particular closeness to the body, and to the environments in which it operates, has raised newfound concerns about what kinds of data it is capable of collecting.[30] Its systems allow for the collation of biometric and environmental data through a combination of cameras, microphones, body sensors, trackers, and facial recognition systems.[31] VR systems map the body of the user in order to 'place' them within virtual environments; they can also track head and eye movement through the collection of gyroscopic sensors. For example, HTC note that the Vive headset can "track and analyse eye movement, attention and focus" as a means for "creat[ing] more immersive virtual simulations."[32] In addition, they add that they are able to "gain insights about user performance and interaction" in order to "open the door to deeper data analysis."[33] Oculus' privacy policy also outlines that the company (owned by Facebook) can collect information about "your physical features and dimensions" and "your environment, physical movements and dimensions."[34] In the name of improving their systems, companies harness a huge amount of data about their users. Such intimate realities emphasise the need to turn towards the materiality of VR systems, and consider their ethical implications in relation to the body. Such ethical considerations are premised throughout this work, and I use the analysis of affect in order to make the case for moments where such systems are momentarily disrupted; glitches, for example, can

[29] Evans, p.44.
[30] See, for example, Elissa M. Redmiles Think Facebook can manipulate you? Look out for Virtual Reality,' *The Conversation* (2018) <https://theconversation.com/think-facebook-can-manipulate-you-look-out-for-virtual-reality-93118> [accessed September 2020].
[31] For further reference, see Sol Rogers, 'Seven Reasons Why Eye Tracking Will Fundamentally Change VR,' *Forbes* (2019) <https://www.forbes.com/sites/solrogers/2019/02/05/seven-reasons-why-eye-tracking-will-fundamentally-change-vr/?sh=48726a483459>, Janus Rose, 'Virtual Reality allows the most detailed intimate digital surveillance yet,' *The Intercept* (2016) <https://theintercept.com/2016/12/23/virtual-reality-allows-the-most-detailed-intimate-digital-surveillance-yet/>, Rory Mir and Katitza Rodriguez, 'If Privacy Dies in VR, It Dies in Real Life, *EFF* (2020) <https://www.eff.org/deeplinks/2020/08/if-privacy-dies-vr-it-dies-real-life>.
[32] Vive ProEye, Propel Your Business With Precision Eye Tracking,' *HTC* blog <https://enterprise.vive.com/us/product/vive-pro-eye/?utm_medium=Blog&utm_source=Tobii_Blog&utm_campaign=Tobii_ProEye_Blogpost/>.
[33] Ibid.
[34] 'Supplemental Oculus Data Policy,' *Oculus* <https://www.oculus.com/legal/privacy-policy/>.

provide moments of release from the black-boxed mapping of bodies that VR systems enable.

Inherently, VR is part of a wider black-boxed infrastructure, and this is not something wholly new. That is to say that like many other technologies, the systems and functioning of the hardware are generally obfuscated from their users. Ken Hillis, as one example, noted in the 90s that:

> Users seeking pleasure by recourse to virtual worlds consent to engage with the technology at a bodily level, and more so than in the case of watching TV or listening to the radio, users are complicit in, and yield to, their disciplining by the machine […] within virtual environments, pleasure and surveillance are in an as yet underacknowledged dialectical, and not oppositional, relationship.[35]

There is something to question, then, about the agency of the user when engaging with immersive tech – but there is something more to ask of the agencies the technology, and its manufacturers, wield over their users. The dialectical relationship between surveillance and pleasure is built into VR infrastructures; with this shift comes new ethical implications, and the prevalent discourses surrounding VR do little to address these concerns: masked by the illusions of speed and seamlessness, users are left with little to say for the moments when VR feels arduous or uncomfortable. Hillis' work noted that the approach to VR as a "transcendence machine supports thinking about our bodies as somehow in the way of a capitalist future discursively positioned as one of globalised 'flows' of information and data."[36] As this thesis argues, the push for blissful immersion only contributes further to the unique black-boxed infrastructures of VR. It is in this regard that I will consider glitch, and various other forms of mediated error, as valid challenges to the urge towards total technological transparency. Glitches allow access to the process of being *with* VR, producing new affective encounters which deserve critical attention.

This is where this thesis makes a unique contribution to understanding VR away from its call to forms of "immersion" that do not take into account the technology's relationship to materiality. Evan's argues that:

[35] Ken Hillis, *Digital* Sensations, p.xxxviii.
[36] Ibid, p.xl.

> the overreliance on existing modes and forms of interface essentially prevents the development of VR-specific interfaces that would act to improve immersion as a part of the VR immersive assemblage.[37]

Much of its existing reliance on other media is inevitably due to the historical inaccessibility of standalone VR devices; the affordability and compatibility of VR devices with popular games consoles and devices, including PlayStation and android mobile phones, has allowed it to reach large audiences in a way that it has never has before. VR design has come to focus on transportability and 'friendly' functionality; its hardware manifestations have been significantly adapted to operate in domestic spaces, as well as shared cultural sites.[38] In particular, already-familiar technologies that we live with, and are intimate with, normalise VR's proximity to the bodies of its users. VR is emblematic of a cultural moment where bodily intimacy to our technological apparatus, and the consequent implications for bodily agency and access, are central to our use of them. Yet, it is VR's specific proximity to the body, and the relations between embodiment and technology it produces, that makes its affective potentials particularly unique.

This unique potential, however, is somewhat disguised by the urge towards seamlessness in the VR space. With the technology's dependence on the pre-existing embodied grammars and discourses of other new media devices has also come the prioritisation of realism and idealistic forms of immersion. Evans' articulation of the immersive assemblage above attests to the materiality of the body and hardware in VR experiences, but it also makes the claim for a "perfect VR experience" where "the body would be replicated in VR so our movements are replicated exactly in the virtual."[39] Though this thesis makes the bodily and affective realities of VR its point of focus, I argue throughout that we might look away from the idea of "perfect immersion," and that perfect immersion itself, particularly in this moment of VR's development, is not always

[37] Ibid, pp.70-1.
[38] The BBC, for example, took VR to a number of libraries around the UK – see 'BBC bringing Virtual Reality to more than 40 local libraries across the UK,' (2019) <https://www.bbc.co.uk/mediacentre/latestnews/2019/vr-local-libraries> [accessed October 2020]. Initiatives continue to develop: the Victoria and Albert Museum have partnered with HTC to launch a new VR experience called 'Curious Alice,' (2020) <https://www.inavateonthenet.net/news/article/london-museum-partners-with-htc-to-deliver-vr-experience> [accessed November 2020].
[39] Ibid, p.68.

achievable. This thesis contributes to evolving discourses around the ways "we might debate the rhetoric of immersive illusion that surrounds the VR apparatus,"[40] and instead should embrace the technology's unique capacities to produce experiences that embrace the unruly interactions that occur within the VR assemblage (the body, the hardware, software, and the represented virtual environment). Engaging with VR is an embodied process, and this process must be slowed down, analysed, and critiqued, especially in those moments where seamlessness breaks; this thesis argues for a rigorous focus on embodied relations with VR *in process*, in moments where we might slow down the immediacy of the interfacing between body and technology.

In moments of disruption or mediated error, VR users will necessarily find themselves in an ontological in-between, a critical space in which the body does not interface seamlessly with VR. Instead, small chasms are revealed— ethical chasms, affective chasms, chasms of strangeness, and chasms of the unknown. Such chasms emerge when the body and VR resist one another, and the interruption of seamless experiences faces users with a juncture where they are not given total access to a perfectly immersive world. Rather, in this moment of rupture and unexpectedness, the VR user is momentarily exposed to the technology's underlying contours and operational foundations. Though these chasms are not necessarily anticipated by their users, at this point in VR's development, where realism is a perhaps impossible feat, they are inevitable. I argue, however, that these moments of error actually allow us to learn more about immersion, or how we might reconceptualise immersion to include error. This is something the third chapter looks at in more detail, arguing that immersion and error can form a shared dialectic; VR's limits should be further considered and embraced.

As previously mentioned, real-time use of VR leads users to junctures where they are not given total access to the worlds presented to them. Access again is an important consideration in the promotion of VR as an "empathy machine,"[41] where access to the experience of "others" is given in a bid to encourage empathy in its users. In a recent article, Lisa Nakamura explored the creation of VR's "virtuous" image and the ways that experiences jar with its packaging as a "good product, one that promotes compassion,

[40] Adriano D'Aloia, 'Virtually Present, Physically Invisible: Virtual reality immersion and emersion in Alejandro González Iñárritu's *Carne y Arena*', *Senses of Cinema*, 87 (2018).
[41] CEO and founder of VR company *Within*, Chris Milk, refers to VR as an empathy machine in his widely cited TED Talk. See <https://www.youtube.com/watch?v=iXHil1TPxvA>. This talk, and his discourse around VR empathy, is discussed in more detail in Chapter 1.

connection and empathy."[42] Nakamura considers VR's branding as an "empathy machine" as "Big Tech's attempt to rebrand VR as a curative for the digital industries' recently scrutinised contributions to exacerbating class inequality, violating users' privacy, and amplifying far right fascist racism and sexism."[43] Referring specifically to the promotion of VR's capacity to produce novel modes of social connection and the production of "social good," Nakumura continues:

> Virtuous VR is a cultural alibi for a digital media culture that has taken a wrong turn, towards distraction, detachment, and misinformation. Hence its industrial strategy to represent it as inherently more ethical, empathetic, and virtuous than any other media has ever been.[44]

A whole host of applications[45] where users are offered an array of opportunities to affectively experience racial and gendered otherness imply a certain sense of "givenness" for VR's imagined user (white; male; able-bodied) and this is partly due to its promise to recreate lived scenarios that rely on total realism. VR documentaries about homelessness and post-war conflict zones,[46] as two popular examples, imply that users can embody experiences of otherness and can feel, and have a right to feel, wholly part of, and maintain total access to, the environments presented.[47] Users are asked to immerse themselves in the worlds of simulated "others" in order to perpetuate VR's virtuous narratives; its reliance on seamless bodily experiences prevails. It is in this way that this thesis resists the call to perfect immersivity. It is precisely in moments where unforeseen experiential chasms between the body and technology occur, moments which pull our access away,

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[42] Lisa Nakamura, 'Feeling good about feeling bad: Virtuous virtual reality and the automation of racial empathy,' Journal of Visual Culture, 19.1 (2020) p.48.
[43] Ibid.
[44] Ibid, p.49.
[45] See, for example, *Clouds Over Sidra* (2015) <http://unvr.sdgactioncampaign.org/cloudsoversidra/#.X6fw-i2cZQI>, *HOME: Aamir* (2016) <https://www.nationaltheatre.org.uk/immersive/projects/home-aamir>, and 'The Machine to Be Another' initiative, which describes itself as an "embodied virtual reality system that allows individuals to experience the world through the eyes and body of another." <http://beanotherlab.org/home/work/tmtba/>
[46] See *Becoming Homeless: A Human Experience* (2018) <https://store.steampowered.com/app/738100/Becoming_Homeless_A_Human_Experience/>, *Surviving Syria* (2018) <https://worldvisionexperience.leadpages.co/wca-surviving-syria-vr-exhibit/> and *Home After War* (2020) <https://www.oculus.com/vr-for-good/programs/home-after-war/?locale=en_GB>.
[47] The emergence of empathy experiences in VR and their ethical implications is explored in more depth in the first chapter of the thesis.

that we can momentarily consider the ethical implications of experiences which call on us to empathise and embody virtual others.

This thesis will address the timeliness of capturing the realities of "immersion" through the lenses of affect and ontology. It will focus specifically on the theoretical frameworks of phenomenology, affect theory, and New Materialism, in order to address the expansion of digital embodied experiences. The move toward affect studies has built continuously over the last two decades, out of larger poststructuralist movements, to consider modern phenomena beyond the realm of the linguistic and social; studies of affect account for an orientation towards the pre-conscious, and non-cognizable (affect is not something we logically apprehend but something our bodies *do*). Gregory Seigworth and Melissa Gregg define affect as the name given to forces "beneath, alongside, or generally *other than* conscious knowing […] beyond emotion."[48] Sara Ahmed argues that affect constitutes a kind of "surfacing" whereby emotions become more than private matter within the individual, but emerge as the "very effect of the surfaces or boundaries of bodies and worlds."[49] In both cases, affect enacts a set of phenomena which seek to *go beyond* in different ways – whether that is to form new theoretical practice, to extend philosophical thinking beyond the humanist subject, or to touch the surface of our encounters with world/s. Such worlds are ever more encompassing elements of the digital. Western culture is constantly pushing the world-building capacities of new media which consistently alter our habits and perceptions in an ever more "dynamic lifeworld."[50]

Affect and the digital, more specifically, have been approached through a number of different analyses of media use, users, media objects, and questions of agency. Affect has been dubbed a central facet of digital culture; it has considered within the realms of networked digital media as a mode of "giving shape to online connections and disconnections, to the proximities of love, desire, and wanting between and among different bodies."[51] Ken Hillis contests that affective encounters on the "multisensory web"[52] enables more intense and "telepresent forms of […] affective engagements"

[48] Gregory J. Seigworth and Melissa Gregg, eds. *The Affect Theory Reader* (Durham, NC: Duke University Press, 2010) p.1.
[49] Sara Ahmed, 'Affective Economies,' *Social Text* 79.22 (2004) p.117.
[50] N. Katherine Hayles, *Writing Machines* (Cambridge, MA: MIT Press, 2002) p.299.
[51] Ken Hillis, et al, eds. *Networked Affect* (Cambridge, MA: MIT Press, 2015) p.1.
[52] Ibid, p.78.

leaving "phenomenological affective traces of the individuals to whom they point;"[53] Hillis argues that users rely on virtual experiences of networked affect within an otherwise "disenchanted, disaffected, and overly financialized planet."[54] Mark Hansen's *New Philosophy for New Media* (2004) considers embodied interaction with digital information as a mode of enframing the body's "own affectively experienced sensation of coming into contact with the digital."[55] Digital affect has thus been explored through a huge span of multisensory encounters, including avatars, soundscapes, and Autonomous Sensory Meridian Response (ASMR).[56] Such analyses have led to the emergence of what has been labelled "digital affect culture(s)" as "relational, contextual, globally emergent spaces in the digital environment where affective flows construct atmospheres of emotional and cultural belonging by way of emotional resonance and alignment."[57] In regard to these notions, affect and the digital seem to ignite new understandings of the ways emotion, embodiment, and feeling manifest as multidirectional forces which create new phenomenological intertwinings of technology and bodies as assemblages. Inasmuch as human-human relationships over the web are an important central facet of digital affect studies, I would argue that affect also functions as a means of accessing the complexities of human and nonhuman relationships in terms of our embodied engagement with digital objects, VR included. These specific kinds of affect do not just constitute kinds of wanting between different (human) bodies, but rather account for proximal and unanticipated encounters with constantly emerging forms of unruly mediation, including glitches, bugs and *seeping* digital content that 'touch' our physical bodies, so to speak.[58]

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[53] Ibid, p.82.
[54] Ibid, p.86.
[55] Mark B. N. Hansen, *New Philosophy for New Media* (Cambridge, MA: MIT Press, 2006) p.12.
[56] See for example Joceline Andersen, 'Now You've Got the Shiveries: Affect, Intimacy, and the ASMR Whisper Community,' *Television and New Media*, 16.8 (2014) pp.683-700 and Rob Gallagher, 'ASMR autobiographies and the (life-)writing of digital subjectivity,' *Convergence: The International Journal of Research into New Media Technologies*, 25.2 (2018) pp.260-277.
[57] Katrin Döveling, Anu A. Harju and Denise Sommer, 'From Mediatized Emotion to Digital Affect Cultures: New Technologies and Global Flows of Emotion,' *Social Media & Society*, 4.1 (2018).
[58] It is with regards to the particular relationships between human and *non*human tactility, and the thesis' emphasis on narrative, storytelling and gaming VR applications that this thesis does not explore VR pornography. Though this may be considered perhaps one of the more affective interactive applications of VR, I instead pay attention to the unexpected and unruly encounters experienced via VR technologies that enable unanticipated interactions between the body and the technology in real-time. Some analysis in Chapter 4 speaks to the thematics of pornography and affect in the contexts of Carol Clover's *body genre* (see p.204).

Phenomenology, too, forms an integral theoretical framework for this thesis, particularly in further understanding the lived experience of being *with* immersive media. I argue that the phenomenology of the flesh (Merleau Ponty, 1964) plays a particularly important role in determining the embodied relations we maintain with technology. Crucial to the notion that certain kinds of 'fleshy' experiences are embedded within our use of new media technology is the novel affective experiences they make possible. Hillis' work retains a "scepticism about the erosion of conceptual boundaries between humans and machines,"[59] in his theorisation of the relations between embodiment and VR systems. Instead, he pays attention to the human and nonhuman elements which form part of its experiences. In addition, Hillis maintains a focus on the intersections of the technology, politics, and social relations. Yet, these relations and intersectional issues have expanded, and the phenomena of 'immersion' and 'presence' now need to be expanded to capture phenomenological experiences where movement between the organic and technological is fluid and porous. VR, as is framed through the phenomena of presence and immersion, is positioned as escaping any sense of interfacial framing, instead creating representations that surround and absorb its users. These commonly used terms have, ironically, become VR's predominant experiential frames; they have become synonymous with what VR is, and what it is capable of achieving. As a consequence, I argue, their meanings have been obfuscated in popular culture and understanding.

VR's blurry vocabularies and black-boxed infrastructures must be pulled apart in order to assess the technology's true impacts and potentials; this is where my own work opens up and challenges the idea of what it means to be *immersed*. A plethora of critical approaches to 'presence' and 'immersion' have circulated through academic writing since the 1990's – both in relation to VR and other mediums including architecture, books, films, painting photography, and videogames.[60] As we'll see in Chapter 1, immersion has since become the end goal for developers across the gaming and VR industries; success comes with the player feeling as though they are wholly part of the virtual environment

[59] Hillis, *Digital* Sensations, p.xxxvii.

[60] See, for example, Jonathan Steuer's 'Defining Virtual Reality: Dimensions Determining Telepresence,' which was originally published in 1992, and has been widely cited as beginning a discourse around VR phenomena. The work of Brenda Laurel, including *Computers as Theatre* (1993), considered the change to the viewers sensorium when users were surrounded by the representation, as opposed to viewing it on a screen. More recently, the work of Frances Dyson has explored the multisensory implications of immersion in *Sounding New Media: Immersion and Embodiment in the Arts and Culture* (2009).

presented to them. Marie-Laure Ryan noted in 2001 that immersion exemplifies "a playful attitude towards the medium."[61] A dialectic of *submersion* surrounds the process of immersion and embodied relations to digital media objects, stemming from the term's etymological roots of "being submerged in water."[62] The fluidity of immersion is tied to its association with watery metaphors, of entering new landscapes which require users to adapt their embodied actions to the sensory possibilities they enable. Yet, immersion also carries negative connotations of ignorance, complacency, and dangerous absorption. Looking at someone playing VR, for example, gives viewers a sense that the user's attention is elsewhere, and this critical absence has become a source of entertainment in the circulation of what are dubbed as 'VR fail' videos.[63]

Marie-Laure Ryan's work also acknowledges a lack of critical discourse around the concept of immersion due to its association with "semiotic blindness"[64] and its clashing with critical faculties. VR produces specific embodied experiences which further contribute to its potential to immerse, in non-typical senses of the word. This thesis wants to challenge the popular images of VR which valorise blissful immersion head on, arguing that its unique affective potential might actually say more about the ethical challenges of the embodied proximity implicated in VR experiences. In outlining VR's unique affects, immersion and presence can be considered in light of the ways they emerge through specific feelings and embodied relations. As I'll go on to show in the first chapter, immersion has become synonymous with every VR experience and represents VR's central contribution to contemporary new media experiences. To combat the banality of immersion across VR advertising and much of public and academic discourse, this thesis will consider the kinds of affective intricacies at play, and latent within contemporary VR experiences from a critical standpoint, asking what is required from users in order to achieve immersion, and if this should be their constant aim. Immersion can no longer simply be regarded as something that *happens to* users, but rather as something that users participate in, contribute to, and co-create.

Such co-creation is also applicable when thinking about the affective intricacies of "presence", or telepresence. Presence differs from immersion in that it does not

[61] Marie Laure Ryan, *Narrative as Virtual Reality* (Baltimore: John Hopkins University Press, 2001).
[62] Janet H. Murray, *Hamlet on the Holodeck: The Future of Narrative in Cyberspace* (Cambridge MS: MIT Press, 1998).
[63] See, for example, 'Funny VR Fails and Reactions [laugh cry emoji],' *Epic Laughs* (2017) <https://www.youtube.com/watch?v=bv7I8nMV914> [accessed June 2020]
[64] Ryan, p.10.

necessarily infer a submersion in a mediated environment, but rather marks the process of reaching that environment as a destination, an elsewhere. Matthew Lombard and Theresa Ditton note that presence implies a kind of transportation: users are transported to another place, and the environment and the objects contained within it are transported to the user.[65] An article written by Lombard and Ditton in 1997 acknowledged the importance of regarding the perceptual elements that factor into experiences of presence, noting that there is a requirement of "continuous real time responses to human sensory, cognitive, and affective processing systems to objects and entities in a […] environment."[66] They go so far as to suggest that presence may lead to the illusion of "non-mediation," where the medium becomes invisible or transparent as the user and objects they interact with seem to share the same physical environment. In many ways, as we will see in Chapter 1, the discourses built up around the phenomena of presence and immersion regard them as experiences only achievable when the hardware becomes transparent and its materiality is effaced. Such readings disengage from thorough consideration of the complex and material systems and assemblages that constitute VR technologies, and the ways such hardware infrastructures function, particularly in their processing of embodied movement within intimate and domestic spaces.

One of the ways it may be possible to break away from the somewhat obfuscated uses of presence and immersion in contemporary VR discourse is to consider their radical potential for breaking down the notion of the implied agential humanist subject: the current parameters of presence and immersion require that the hardware involved in their production is able to simulate real world spaces in such a way that forms neat ties between the somatic, the sensory, and the technological. Yet, presence and immersion can also produce messy and unruly interactions between these realms of experience, where the user's body is smeared between ontological realms of the 'here' and 'there.' This is to say that, at least to some degree, users have to adapt to the technology, in the same way that the technology adapts to the movements and responses of the user. In actioning the "transportation" between real and virtual environments, immersive technologies mark unique passages where the user simultaneously feels between the two. Presence in contemporary VR, I will contest throughout this work, marks an affective

[65] Matthew Lombard and Theresa Ditton, 'At the Heart of It All: The Concept of Presence', *Journal of Computer-Mediated Communication*, 3.2 (1997).
[66] Ibid.

sensation not of "being there," but rather of "I am here, but not quite." This kind of sensation offers a particular kind of spectrality, at the same time as it reinforces the presence of fleshy bodily materiality. To feel the antagonistic affects and pulls between a here and there aligns with various work on uncanny subjectivities which are strewn between tiered ontological planes, which form the basis of Chapters 3 and 4. In a similar vein, immersion is often experienced as a certain kind of abjectivity, as opposed to its more common alignments with comfort and blissful absorption.

Immersion, too, can enable the affective sensation of being in a world that is beyond the user and their subjective experience, a world programmed by alien rules that never fully concedes to the user's desires. When we find ourselves surrounded by a virtual environment, it never does exactly what we want it to. It resists us, and pulls away from us in unexpected and awkward ways. These unruly moments should be embraced, not seen as a breaking of the "true" VR experience—they offer an enormous potential for understanding, allowing users and critics to delve further into the ways in which they understand these well-worn terms, and the very material realities of VR, and of the bodies that engage with it. In order to illustrate these antagonistic affects, I will look at work across a spectrum of contemporary phenomenological thought particularly in relation to subjectivities *beyond* the human. These will include (but are not limited to): Sara Ahmed's *Queer Phenomenology* (2006), Ian Bogost's *Alien Phenomenology* (2012), and Susan Kozel's *Process Phenomenologies* (2015). Each of these texts explore the intricacies of agency and access that exceed the subject by analysing lived affective and embodied experiences of that which is necessarily outside the bounds of immediate comprehension. Each of the chapters of this thesis focus on specific forms of subjectivity that have emerged in contemporary critical theory and philosophies of being, including the *non*human, the *un*human; and the *post*human. To quickly summarise the thesis' central approaches to each of these figures, it will argue that:

- Approaches to contemporary VR devices, their use, and relation to users, need to place more emphasis on the *nonhuman* elements that form part of these relations (hardware, software, networks, tracking).
- VR enables new perceptual opportunities where human and nonhuman co-emerge and intertwine. When thinking about this emergence in the realm of

horror and unanticipated encounters, this can replicate the unique affects which I will associate with *un*humanity and phenomenologies of the *unhuman*.

- VR should be regarded as a *posthuman* technology, in the ways that it can produce experiences which challenge the agency and access of the humanist subject. In order to move VR away from its discourses of limitless experience on the behalf of its users, considerations of VR as a posthuman technology enable opportunities to instead critique absolute agency and valorised modes of perception (e.g. empathy).

More broadly, this work will speak to the ways Virtual Reality may be able to affectively create sensations of subjectivities *beyond* the human that intersect with each of the aforementioned categories. It will step away from the all-too-human questions concerning VR – and see the non-, post- and un-human as valid points of consideration for the VR space. In addition, New Materialist approaches to the realm of the posthuman, for example, are seen to be "messier and more complex, offering no promises of bliss or salvation."[67] Such an approach gives voice to materiality and embodiment away from the blissful promises of realism and seamlessness, going beyond, for example, VR evangelists' constant pulls toward "empathy" and gaining access to the embodied experience of someone else.

In its focus on areas of digital culture and VR experience that are neither transcendent or transparent, this project captures a broader phenomenological understanding of VR, analysing both its potential successes and generative failures. Whilst presence and immersion remain central to the thesis, they will be reconfigured in order to push the boundaries of their meaning in relation to novel and unruly experiences of virtual environments. New reports emerging of the details of VR experiences specifically reference intimacy and its implications for agency and access.[68] I argue that a shift of focus towards "agency" and "access," and the ways they contribute to presence and immersion, will provide more thorough insights into the spectrum of VR's experiential capacities. Both agency and access are integral to the concept of

[67] Ella Brians, 'The "Virtual" Body and the Strange Persistence of the Flesh,' *Deleuze and the Body*, ed. by Laura Guillaume and Joe Hughes (Edinburgh: Edinburgh University Press, 2011) p.130.
[68] See for example, *Business Insider* article on 'What happens to your body when you've been in virtual reality for too long' <https://www.businessinsider.com/virtual-reality-vr-side-effects-2018-3?r=U regards to the dangers of intimacy in VR spaces, see account on experience of being groped in VR: <https://medium.com/athena-talks/my-first-virtual-reality-sexual-assault-2330410b62ee>

framelessness, where the user resides in an experiential middle ground between the real world and the virtual environment; each of the chapters of this thesis consider the ways VR experiences implicate novel issues of agency and access in this regard. I argue that frameless fictions require us to look beyond simplistic, and anthropocentric notions of agency and access, rather considering them as dispersed phenomena engaged by human and nonhuman alike.[69] Agency and access play a pivotal part in understanding, and critiquing, VR's unique potentials, particularly as it engineers new proximities between human/s and nonhuman/s. One of the most notable elements of VR is its potential to look beyond frames of human realism, and engage critical questions concerning the intimacy it fosters between nonhuman infrastructures and the body. Rob Gallagher refers to such questions in his writing on the affective soundscapes of ASMR, arguing that technologies of intimacy raise concerns around

> our ever more intimate relationship with networked devices; the changing character of work; the formation of communities and collective identities online; the implications of algorithmic systems for human agency; the influence of medical breakthroughs on popular conceptions of the body and brain; the emergence of new cultural forms that prioritise feeling over meaning.[70]

Technologies which rely on physical intimacy with the human body are consequently both changing and revealing what it means to be an embodied subject. The effects of users' physical proximity to VR hardware remains relatively underexplored. What does it feel like to be-agent/agential in VR? What does it feel like to have agency pulled away? How does it feel when immersion isn't wholly possible, and spaces feel *in*accessible?

In considering the ways in which agency and access contribute to the expansion of our understandings of presence and immersion, I argue that affect is crucial to understanding how these phenomena translate into embodied feeling. Sian Ngai argues that affective experiences are initiated by suspended agency;[71] because affect refers to the body's intricate encounters with various surfaces and outsides, affective approaches

[69] Karen Barad, whose work will be explored further in Chapter 3, refers to the dispersal of agency between human and nonhuman as "intra-active agency" in *Meeting the Universe Half Way: Quantum Physics and the Entanglement of Matter and Meaning* (NC: Duke University Press, 2007).
[70] Rob Gallagher, 'ASMR autobiographies and the (life-)writing of digital subjectivity', *Convergence: The International Journal of Research into New Media Technologies* (2018).
[71] Sianne Ngai, *Ugly Feelings* (Cambridge, MS: Harvard University Press, 2004).

ultimately destabilise the notion of human agency. Ngai suggests that when agency is pulled away, we experience "affective indeterminacy," or "being lost in one's own affective map."[72] The "affective turn," which emerged in the mid-1990's as an approach which focused on bodily sensation and dynamic body-world encounters, reconfigured the human body as part of multitudinous ecologies.[73] These ecologies refer to the body's interconnectedness with objects and matter; these could include all entities, from technological hardware, to microscopic cells, to huge meteors. In order to consider the affective implications of framelessness, this thesis will use affect as a framework for considering the unfurling sensations of VR on the body when in use. The thesis refers to a range of literary and critical/theoretical texts to exemplify and visualise some of the nuanced affects that VR produces. In so doing, it forges a dialogue between phenomenology and affect studies in order to analyse VR's unique interactions with the body, and how these generally exceed VR's popular framings in its advertising and discourse. Each chapter, as I outline below, will respond to various ecological elements of VR experiences, and the ways the body comes into affective contact with hardware, software, and virtual environment/s.

Chapter 1 will focus on representations of VR in the contemporary consumer market and analyse central tropes in the advertising of various hardware releases from 2016; it will argue that the advertisements of VR function as *framings* of the technology, producing the dominant discourses around VR's capacity to immerse users. This chapter will analyse and critique these popular framings, arguing that existing representations of immersion do little, if anything, to portray the affective intricacies that VR makes possible. It will further expand on the ways agency and access are framed in popular representations, in the ways that they target specific audiences of users, and promise total access into immersive virtual environments. In order to counter the notion of VR's "limitless" potentials, this chapter will introduce some of the history of "enframing" in phenomenological thinking (Heidegger; Hansen), and consider the ways VR intersects with this area of philosophical enquiry through its focus on the individual (human) subject. Enframing isn't a wholly encompassing phenomenological framework for analysing VR's unique potentials; much of VR's potential, I argue here, comes from

[72] Ibid, p.14.
[73] For an exploration of the affective turn and its implications for 'biomedia,' bodies, and biomediated bodies, see Patricia T. Clough, 'The Affective Turn: Political Economy, Biomedia and Bodies,' *Theory, Culture & Society,* 25.1 (2008) pp.1-22.

encounters with the unexpected, where users experience strange affects when agency and access are not wholly given to them. By analysing VR's emerging "frames," in conjunction with contemporary phenomenological approaches which consider compromised agency and access, this chapter demonstrates that framelessness may enable new understandings of VR's unique potential to push beyond individualistic representations.

Chapter 2 sees the oozing of VR outside of its comfortable frames of reference. Unpicking the concept of "presence," this chapter focuses on the emergence of flesh as a unit for capturing VR's unruly potential. This chapter is all about carnal, or bodily presence, and the ways this informs users' experiences of VR during unanticipated encounters. Destabilising the notion that VR is a wholly transparent device, this chapter focuses on science fiction and body-horror narratives that depict the strange interfacing of the human body with technological systems. In so doing, it suggests that we must move beyond the individualistic representations of VR that focus on user empowerment, and shift focus towards moments of vulnerability and ontological disparity. The human subject is no longer captured by skin and bone, but is part of complex assemblages which inform new networks of affectivity. The fictional references in this chapter provide analogies for the ways fleshy presence emerges in retaliation to a corporatized push to transcendence and transparency. James Tiptree Jr (Alice Sheldon)'s *The Girl Who Was Plugged In* (1973) and the videogame *Inside* (2016) both present dystopian landscapes which ponder "what comes next?" in worlds increasingly permeated by digital technology. Both of these texts, I argue, allow their reader/player to interact with *unhuman* subjects, where technology pushes humanity beyond itself. I draw here, on Dylan Trigg's definition of the unhuman as the intercorporeity of the human and nonhuman within the same body.[74] The flesh, and unhumanity, I argue, are embodied realisations of the complex assemblages that intimate technologies like VR produce, where subjectivity is smeared somewhere between an ontological here and there.

Chapter 3 focuses in on a reframing of "immersion," and the ways one can be immersed within unruly landscapes forged by mediated error, as opposed to seamless and accessible worlds. It will consider the affective potential of VR glitches, given their proximity to the user's body and immediate perception, and argue that glitches form

[74] Paraphrased from Dylan Trigg's *The Thing: A Phenomenology of Horror* (Hants: Zero Books, 2014).

particular immersive experiences (as opposed to being detrimental to immersion). Virtual environments extend and deepen as we come into contact with them, and to look at the body and hardware as separate entities is not enough. This chapter will use insights into glitch aesthetics to look further into their radical potential in the disruption of flow, and the ways that they reveal the inner workings of black-boxed hardware devices. This chapter will consider instances of error that promote various iterations of framelessness – namely, pushing beyond the frames of knowability towards the limits of our human understandings of the world (enframing). It will turn to approaches to *the weird*, both in fiction and in theory, in order to formulate a discourse surrounding error, glitch, and unique affects which emerge during VR use. It will use both Jeff Vandermeer's novel *Annihilation* (2014), and Alex Garlands 2018 film adaptation as its central case studies, exploring their narration of perceptual error and its capacity to push understandings beyond the immediate givenness of world/s. This chapter also applies the central concepts of the weird and weirdness to VR applications, and suggests that the language of weirdness provides some of the grammars required to narrate the unique ecologies forged in the VR space.

The final chapter of this thesis functions as a "putting into practice" of the approaches established in each of the first three chapters. Chapter 4 looks closely at the popularity of horror games and experiences for VR, arguing that this popularity emerges from its implications for framelessness: a decentring of human agency; ontological porousness; evocative chasms between bodily action and its inscription within virtual environments; the incorporation of glitch; weird affects; and an embracing of the unruly. Horror, too, provides a scope through which to consider the ethical challenges of virtual reality, given its affective intensity and proximity to users' bodies; there is a certain degree of vulnerability to the image involved in the use of virtual reality, in the sense that the image perceptually surrounds the body in its embrace.

VR has an interesting relation to horror narratives, given the widespread popularity of horror content for the medium—this coupled with its association with a kind of futuristic complacency. Such complacency produces new forms of cultural horror; we only need look at the widely circulated image taken at the Mobile World Congress event in 2017 (which we'll encounter again in Chapter 1), which shows Mark Zuckerberg walking smugly through an audience (seemingly all men) wearing Google Cardboard headsets and completely oblivious to his entrance into the room. On the other hand,

horror has always held the potential to capture and critique fears concerning social and cultural deceit, where Gina Wise notes that "horror's role is ultimately to destabilise our complacency."[75] The concerns established in earlier chapters, via the phenomenology of the flesh and the weird, are grappled with in works of art-horror. I take art-horror here from Noël Carroll's work, *The Philosophy of Horror* (1990), to refer to the certain types of affects that works of horror elicit upon their audiences, and the emotional states horror produces. [76] The thesis' central conception of 'framelessness' will be illustrated through various horror narratives which focus on the ontological porousness of old and new media technologies. Fear is induced when the contents of a technology seep out of its hardware, and nonhuman entities are released into the human world. Aligning with contemporary horror texts and their embodied relations, the genre is particularly relevant for further understanding subjectivity, affective response and the engagement of cognitive schema.

Whether its cinematic frames and camera work, or frames through which to observe, frames and framing play a prevalent part in many works of horror. As Adam Daniel notes, "the composition of the frame can be seen as a delimiting device used to elicit our attention to both what is shown and what threatens to be shown."[77] When translated to the 360-degree environment of virtual reality, viewers are rather left to absorb the environment, knowing that something could emerge from outside their point of view at any given time. With the developments in head and body tracking in VR, producers now have the capacity to place things into the virtual space specifically where the user is *not* looking – meaning that whatever is placed within the environment is unknown until the user dares to turn around. Yet such capacities also give rise to certain challenges relating to the manipulation of player agency. It is through horror's affective potential, I argue, that the genre provides concrete examples of embracing VR's unruly potential – whether that be that the VR headset doesn't become transparent, but rather its bulk and weight becomes part of the horrific experience, or that the experience is not transcendent, but rather that the user feels more rooted within their own body. Both

[75] Gina Wise in Brian N Duchaney, *The Spark of Fear: Technology, Society and the Horror Film* (North Carolina: McFarland & Co, 2015).
[76] Paraphrased from Noël Carroll, *Philosophy of Horror, or Paradoxes of the Heart* (London: Routledge, 1990) p.16.
[77] Adam Daniel, 'Don't Look Behind You: The Oculus Rift and Virtual Reality Horror', *Sydney Screen Studies Blog* < https://sydneyscreenstudies.wordpress.com/dont-look-behind-you-the-oculus-rift-and-virtual-reality-horror/> [accessed Nov 2018].

horror and VR, I argue, fundamentally grapple with challenges to human agency. Horror is the realisation of framelessness, of interactions with worlds that somehow extend beyond human subjectivity.

Frameless Fictions unpicks the popular enframings of VR through considering the weird, wonderful, and more importantly embodied and affective potentials of experiencing mediated realities which are frameless, untethered, and ontologically complex. In so doing, I argue that we can better understand the 'realities' of VR use, and embrace the generative unruly encounters which break away from persisting discourses of transcendence and transparency.

Chapter 1

Framelessness: The Phenomenological Implications of Virtual Reality

This thesis' central claim is that "framelessness" is a valid mode for analysing central aspects of digital culture and its embodiment ties more broadly. Building from the introduction's setting out of the term, this chapter maintains that framelessness equates to specific kinds of ambivalence and ontological porousness. By this, I suggest that the close ties technologies like Virtual Reality foster with their users' bodies produce unique affects that implicate multiple actors and nonhuman forces. By looking at the kinds of language and images used to evoke experiences of virtual worlds in fiction and contemporary advertising, this chapter will argue that much of VR's potential does not inherently come with the innovative possibilities of forging new kinds of realism. Rather, VR's underexplored potential is revealed during real-time encounters with the unexpected, where users experience messy sensations that escape immediate cognitive capture. Such unruly moments realise the truly material ties between the technology and the body. That is to say that this chapter hopes to formulate a fleshy and affective phenomenology of immersive, technologically mediated experiences in order to open up the somewhat limiting popular discourses surrounding VR and its contemporary applications. Instead, discourses of framelessness might open up and encourage new ways of thinking about first-hand experiences of virtual environments, and acknowledging and embracing emergent and unexpected moments.

Combining iterations of frames and acts of framing, the chapter, and the thesis at large, aims to expand the permeating discourses surrounding VR that allude to these ideas: where representations and discourses mark certain limited 'framings' of VR; where 'frames' are appropriated to mean 'interface' and framelessness becomes more about technological transparency; where phenomenological thought focuses on the human will to 'enframe' the world. All of these ideological realms might be expanded if we consider a mode of 'framelessness' which captures the ways bodies respond to virtual environments in unruly and affective ways. This chapter will set up the philosophical contexts of framelessness, where it draws on, and extends, accounts of "enframing" in the history of phenomenological philosophy. Indeed, as outlined in the thesis' introduction, I do not refer to the removal of frames as being synonymous to the disintegration of the

interface and, thus, untethered access to virtual worlds. Rather, I argue that framelessness offers a critique of the predominant representations of VR by acknowledging what sits just outside of users' reach and understanding, looking more closely at the underexplored affectivities of this intimate technology (i.e. carnal and close to the body). This chapter seeks to lay out a theoretical framework for understanding VR's unique affects by initiating novel discussions around the ways VR implicates both 'access' and 'agency.' These terms readily capture the 'realities' of using VR during moments of disruption. Immersion, as a holistic goal in the industry, does not necessarily equate to absolute access in virtual environments. 'Immersivity,' or the capacity of a technology to 'immerse' its users, raises specific ethical and political issues relating to self, which can be seen in the discourses and representations of VR in contemporary advertising that I will go on to consider, which will include advertisements and accompanying discourses used by VR developers Oculus, Samsung and HTC.

In order to illustrate pre-existing ambivalences which exist in the VR space, I begin by giving a short introduction to the technology's associations with both presence and absence. Presence will be explored in greater depth in Chapter 3, but here, I look at presence and absence specifically in regard to VR's hardware manifestations and materiality, in order to establish some of the cognitive *and* material aspects of VR use. Building out of this introduction to VR's hardware, I go on to look at some of its popular images, focusing particularly on the ways they represent user agency. These 'framings' of VR allude to specific corporate goals, marketing the hardware in particular ways, and to particular imagined audiences. But one of the particular shortcomings of VR's popular representations, I argue here, is their incapacity to prepare users for the complex agential challenges that emerge during use; these images do very little to give a truthful account of VR use in real-time. Where discourses surrounding VR tend to allude to its immeasurable and unlimited possibilities for absolute agency and access, in actuality its popular images convey the opposite: ignorance and complacency.

Following this analysis, I go on to outline implications for access and accessibility in VR; the problem of accessibility in the VR market is one that persists, despite the technology's continued, and increasing, consumer interest. Whilst popular images arguably fail to capture emergent experiences and affectivities in VR spaces, there still exists a dependency on these images in order for broad audiences to gain access to this otherwise largely inaccessible technology; VR is still expensive, and its functionality in

homes is far from 'ideal.' By looking further at popular advertising, I will argue that a set of recurring tropes relating to access emerge across the spectrum of VR imagery, which require further critical attention: 'invasion,' 'evasion,' and 'departure.' These tropes enable further consideration of the particularities of user agency and autonomy, as well as evidencing the nonhuman elements of VR and their capacity to behold access. Though depictions of access in popular advertising allude to worlds wholly accessible to human users, I use these tropes as an opportunity to look beyond human-centric depictions of VR use, and instead consider forms of nonhuman access and agency.

I will then go on to set out framelessness as a means of critically assessing, and providing alternatives to, VR's popular imaginings. As I have established, framelessness maintains a focus on materiality, and is not synonymous with non-mediation and technological transparency. I introduce the act of 'breaking' frames as challenging the valorisation of user agency and access in the production and development of VR applications. Nonhuman actors and forces, including momentary errors in VR software, are often ignored or escape critical attention through the inherent framing and promotion of user empowerment. In order to premise the thesis' ideas concerning frames and enframing, I turn to insights into phenomenological "enframing" (Heidegger; Hansen) and traditions which have considered the ways humans frame and structure their worlds, objects, and things as solely being for their own use. At present, VR struggles to move away from its centralising of the human, and the valorisation of human agency. Yet, VR contains the unique potential to produce experiences that extend *beyond* the human and human vision, potentials which, given further consideration, can enable us to look beyond the technology's existing, and relatively redundant, framings.

It might seem all too obvious that, in many ways, VR is a relatively human-centric technology; when building for VR, developers primarily consider the ways human bodies 'naturally' interact with objects and break down the operations through which the human body perceives the world. However, interest in VR has expanded towards its capacities to simulate the logics and perceptions of other objects and nonhumans. For example, Helen W. Kennedy and Sarah Atkinson consider the affordances of VR to produce "nonhuman, animal, and environmental 'bodies' to facilitate a deeper engagement."[1] The operations which unfold within the headset, and their interaction with the body forges

[1] Helen W. Kennedy and Sarah Atkinson, 'Virtual Humanity: Empathy, Embodiment and Disorientation in Humanitarian VR Experience Design,' *Refractory: A Journal of Entertainment Media,* 30 (2018).

new, perhaps weird, relations which exceed perceptual realism. To this end, I refer to a range of theoretical scholarship from the fields of posthuman and affect studies, as well as New Materialism, as these fields question persistent ontological frameworks which continue to place the human at their centre. In line with these ideas, this chapter establishes an ethical approach to the concepts of agency and access, and argues that queer and posthuman theories offer rigorous interjections to VR's popular discourses and imagery; these fields centralise agency and access, but not as limitless, but precisely as being limited. Arguing for the potentials for novel critical enquiry into VR technologies, this chapter establishes framelessness as a way of acknowledging the limits of human subjectivity, whilst pressing at the realms beyond human framing.

Reconfiguring Presence/Absence

Ubiquitous technologies often come to be associated with either presence or absence, and oftentimes these phenomena are what inherently contribute to their ubiquity. For example, a slender iPhone model enables the ever-presence of a communications medium on the body of its user – it is something most of us carry with us all of the time. Yet, its size and functionality enable us to hide the phones away in our pockets so that they remain relatively absent when we don't require them for use. Meanwhile, however, location tracking can inevitably mark the presence of the phone owner's body in the world; such systems remain relatively ontologically 'absent,' yet feed through real-time data concerning bodily movement. It is in these kinds of instances that we might consider that presence and absence are always inherently materially bound with the living, moving body. These issues have embedded themselves within existing academic and theoretical discourses of technological use; Sherry Turkle perhaps most influentially captured this in her 2011 work *Alone* Together, where she stated that technology and networked life "allow us to hide from each other."[2] Turkle's work alludes specifically to ubiquitous technologies that are embedded into our everyday lives. In the case of immersive technologies, formulations of presence and absence take on particular forms of affect on behalf of their users and the ways they interact with simulated spaces. Presence is often considered in VR as relating to one's feeling of being part of the virtual

[2] Sherry Turkle, *Alone Together: Why We Expect More from Technology and Less from Each other* (New York: Basic Books, 2011).

simulation presented to them. Throughout this thesis, I contest that more considerations of VR's 'presence,' in the material, physical, and embodied sense of the word, should be acknowledged; both presence and absence could equally be applied to the materiality of hardware and the obfuscation of the technology's operating systems.

VR is yet to become ubiquitous, but draws particular attention to presence and absence simultaneously, and both phenomena feature heavily within existing VR discourses. As we will come to see, the presence of VR hardware, from an 'outside' perspective (i.e. viewing someone who is using VR) can connote embodied and critical passivity, coldness, and compromised awareness. Whilst the hardware maintains an unbreakable presence, the user is regarded as being *less-present,* or even absent. The hardware clings to the face of its user, almost like the facehugger in Ridley's Scott's 1979 *Alien*:[3] its presence looks unnatural, conveying a kind of inhumanness. But not dissimilarly to the alien clinging to the face of its human prey, the actual processes of connection and symbiosis between the body and the hardware encompass a complex ecology which brings together cognition, simulation, embodiment, and the coded world represented. The binary oppositions of presence and absence in VR discourses oftentimes draw attention away from other avenues of potential and critical enquiry: the rich affective and entangled work beneath the surface of VR's opaque hardware infrastructures is not captured through and by the unbreakable, visible frames of VR's opaque hardware. This problem has been considered in much of the scholarship around VR: in 1992, Jonathan Steuer noted that "The focus of virtual reality is […] technological, rather than experiential; the locus of virtual reality is a collection of machines."[4] The opacity of VR is difficult to break away from: access to the complexities of our connections with this immersive technology is limited because VR consistently fails to break away from its hardware framings. This lead Steuer to comment that hardware dependent definitions of VR:

> fail to provide any insight into the processes or effects of using these systems, fail to provide a conceptual framework from which to make regulatory decisions, fail to provide an aesthetic from which to create media products, and fail to provide a

[3] Alien, dir. by Ridley Scott (20th Century Fox, 1979).
[4] Steuer, p.73

> method for consumers to rely on their previous experiences with other media in understanding the nature of virtual reality.[5]

When VR is framed solely by its opaque hardware components, little attention is given to its unique relations to embodiment and the multifarious ways it is felt by users, aside from its visible physical elements. An approach to materiality and to bodily affectivity will enable an approach which combines VR's material presence with its interactions with the body during use.

As discussed in relation to its embedding within the contemporary commercial markets in the thesis' introduction, Virtual Reality has extended its reach significantly further since the time of Steuer's writing. Yet some of the problems he outlines in his analysis persist. Many of the dialogues, write-ups, and representations of contemporary VR seemingly maintain a focus on its outsides, or the ways it is visibly perceived outside of use. Dan Golding, in his recent analysis of VR imagery, notes that "the image of virtual reality is much more ubiquitous than its experience."[6] In this paper, Golding explores the popularity of images of VR during use. He explores the evidence that suggests that watching someone else in VR is statistically more popular than first-hand use of the technology itself. This is inevitably tied to a number of issues related to access: the cost of VR headsets, the homogenised 'imagined' audiences of VR, and global availability of the hardware. The popularity of viewing and watching others use VR, I argue in addition, ties to a lack of access and understanding of the processes, effects, and, I would add, affects encompassed in real-time VR experiences. At present, the medium still very much relies on other media in order to be accessed at all.

VR inherently draws on other commercial technology sectors. In more recent years, VR has become very closely associated with gaming, with a significant proportion of its applications being game-based.[7] With these developments, VR has inevitably relied on the pre-established frameworks of gaming mediums. One example of the physical compatibility of VR with games consoles is the PlaystationVR headset, released in 2015, which was developed specifically to work compatibly with existing PlayStation gaming

[5] Ibid.
[6] Dan Golding, 'Far From Paradise: The Body, the Apparatus and the Image of Contemporary Virtual Reality,' *Convergence*, 20.10 (2017) p.1.
[7] Statistics in a recent *techjury* article state that 70% of VR headset owners have bought a game application for their device <https://techjury.net/blog/virtual-reality-statistics/#gref> (2020).

consoles. VR is also embedded into the journalistic space, with a number of news outlets now producing "immersive journalism" and 360-degree content for their platforms.[8] YouTube videos also provide popular access to the medium, where audiences are able to view online influencers, mainly those who host gaming shows, watching and playing VR applications.[9] The dependence of VR on other mediums should not be ignored, or necessarily discouraged. Indeed, it is only by comparing VR to other ubiquitous technologies that we might better understand its unique experiential possibilities. Yet, in addition, a broadened phenomenological account of VR enables access to the very specific kinds of affective encounters VR technologies enable: how it functions in relation to the body, and how we might push beyond the somewhat elusive visual and linguistic framings of VR that persist in popular culture.

"Silicon Valley Success"

Here, I want to take a closer look at the predominant 'framings' of virtual reality, and the ways in which they either point to its physical presence and bulky exterior, its capacity to make its users complacent and seemingly "un-present" during use, or increasingly dystopian and corporate connotations that allude to forms of ignorance and absence on the part of VR users. One of VR's most prevalent and popular framings (perhaps to the technology's disadvantage) appeared on the front of *Time Magazine* back in 2015. The image showed young, self-made, tech tycoon Palmer Luckey floating at the forefront of a beach vista wearing the then new Oculus Rift headset.

[8] In a 2020 article, Forbes considered the potentials for the future of immersive journalism." See <https://www.forbes.com/sites/solrogers/2020/02/06/is-immersive-technology-the-future-of-journalism/#26935eaa7e30>.
[9]Some of the most popular VR YouTubers and YouTube channels are listed in a continually updated blog on *Feedspot*. See <https://blog.feedspot.com/virtual_reality_youtube_channels/> (2020).

Image 2 'The Surprising Joy of Virtual Reality,' featuring Palmer Luckey (*Time Magazine*, 2015)

Image 3 Unfortunate meme, 'The Surprising Joy of Virtual Reality,' taken from PetaPixel <https://petapixel.com/2015/08/07/everyone-is-mocking-times-latest-cover-photo/>

The image, along with its tagline, 'The Surprising Joy of Virtual Reality,' was almost certainly the most circulated image of VR – emerging around the same time that big tech

corporations like Facebook and Sony were showing interest and investing in the VR space. These tech giants were beginning to make announcements about the development of new immersive products that would be aimed at large, mainstream audiences. Luckey's cover quickly became a meme sensation, with multiple edits of the image set against film backdrops, placing the floating Luckey on horseback, or editing him over already well-known memes and music video screenshots.[10] The depiction of Luckey's floating body enabled the image's mutability into numerous viral images as it humorously came to reinstate the imaginings of VR's free floating embodiment practices. If anything, the image of Luckey on Time Magazine reinforces the desire to push away from embodied understandings of immersion, and instead regard it as total sensory overhaul, which consequentially resists critical attention; though Luckey's body is at the centre of the image, if anything, it ironically encourages viewers to discard of any critical thinking about the ways virtual reality is complexly entangled with embodiment. Instead, it visibly frames the false idea that VR 'does away' with the weight of embodiment, discarding physicality for the pleasures of an immaterial and obscured virtual world on the other side of the headset (purchase to find out more…).

The depiction of Palmer Luckey is just one example of the popular corporate messaging that surrounded VR's re-emergence, and continues to play a part in its imaginings. The image visibly captured the wider cultural perception of virtual reality as a technology of escapism—a new mode of experiencing virtual worlds much more exciting than the mundanities of the 'real world.' Try VR, it says, and leave reality behind. This blatant urge toward escapism, I argue, is one VR's central corporate selling points: large multi-billion-dollar companies leverage agency and access within the advertising of the technology they sell in very specific ways. Compromised agency is one of the conditions users of VR are asked to accept in order to reach the end result of being wholly immersed, and to behold totally unlimited access to the simulated worlds VR makes possible. Little, if any reference is made to the odd, discomforting affective implications of VR. Instead, feelings are seemingly absent in its popular framings, aside from the illusions of total absorption in virtual worlds. Representations of VR use can do very little to capture the unique affectivities of engaging with this kind of immersive technology;

[10] *Time* actually went on to publish an article following their publication of the Luckey edition, titled 'Here are 37 of our favourite TIME Virtual Reality memes' <https://time.com/3987961/virtual-reality-time-magazine-cover-memes/> (2015).

this becomes problematic when it is perhaps the most prevalent mode of accessing a medium that on many levels remains inaccessible to wider audiences. In addition, images like this also reinforce and produce imagined audiences of the technology and the oft referenced white male "nerd" stereotype.

These representational issues persist, and can be seen in a number of popular images across VR's commercial landscape. What is depicted as being particularly prevalent is the willingness of users towards compromised agency. Representations of people using VR are interpreted in various ways as depicting an *in-presentness*, and a lack of critical awareness. Some images have become synonymous with 'dystopian' corporate control seized via mass complacency: take as another example the image of Mark Zuckerberg walking through the Mobile World Congress in 2017. The image shows a conference hall full of businessmen wearing VR headsets with Zuckerberg walking through the blinded crowds, smirking. The audience members have each been provided a VR headset, and whilst they are visibly 'absorbed' in the content, Zuckerberg walks unknowingly into the hall.

Image 4 Mark Zuckerberg walks through conference hall, Mobile World Congress 2017 (The Verge, 2017)

Not dissimilarly to the well-circulated Palmer Luckey cover, this image became the source of hundreds of memes, with sources like *The Verge* claiming that the image "looks like the concept art for a dystopian sci-fi film."[11] Yet another 'popular framing,' this image detracts from the complex embodied implications of VR, despite bodies being at the centre of the image. Here, the (again homogenised) audience of business people appear as an in-present mass; the hordes of people in VR headsets were interpreted to be under the influence of a Facebook mass mind-control system, sacrificing their agency to fulfil the goals and aspirations the infamous corporation. All of the micro-contexts that surround the 'big players' in the VR space matter—they root VR in a very real socio-political arena that it cannot escape, despite the common allusions and framings of worlds and realities elsewhere. To give some context to this popular image specifically, Zuckerberg and Facebook purchased the company Oculus in 2014 for two billion dollars. Since the founding of this partnership, Oculus founder (Palmer Luckey) left the team in early 2017, amidst a number of concerns around his funding of pro-Trump groups and worries of the effects on Facebook's public image.[12] It is in these kinds of sociopolitical arenas that public perceptions of VR, particularly for lay audiences, is shaped by the stories that surround its popular imagery.

Promotion, Agency, and Access

Thus far, the analysis of two of VR's most infamous images has given some insight about the ways in which agency is represented from the hardware's 'outsides.' To the technology's detriment, user agency is shown as being seemingly dissolved and depictions of VR in use do little to account for the unique affects, processes, and entanglement between users' bodies and VR hardware. Aside from these well-known still images within VR's representational space, the video advertising of VR raises similar issues in regards to agency and access. Of course, the advertisements seek to capture the experience of VR use in a way that makes audiences want to buy the devices. One of the ways they often try to forge appeal is by representing VR's capacity to *break frames* as a

[11] Rich McCormick, 'This photo of Mark Zuckerberg says so much about our future,' *The Verge* (2016) <https://www.theverge.com/2016/2/22/11087890/mark-zuckerberg-mwc-picture-future-samsung> [accessed June 2016].
[12] Brian Heater and Lucas Matney, 'Embattled Oculus co-founder Palmer Luckey leaves Facebook,' *TechCrunch* <https://techcrunch.com/2017/03/30/palmer-luckey-facebook/> [accessed June 2018].

means of producing new forms of access. The opaque hardware depicted in still images is visibly broken down to reveal more of the experiential elements associated with user interaction and engagement: where the still images are limited by the boundedness of the concrete hardware, promotional videos devote more time to capturing the technology in action. Despite the obvious freedoms of the videos to showcase user's actually interacting with the hardware, some of the issues surrounding agency and access persist; clips move away from the complacency/control paradigms associated with images that have been previously discussed, and instead excessively valorise user agency. Not only does this do injustice to the realities of VR use, but it produces odd dynamics of power on behalf of VR users. This, I will illustrate, represents VR's central humanist problem. That is to say that the other side of the coin in VR advertising actually places too much emphasis on the agency of the individual subject, and loses sight of the assemblage of actors that VR, in actuality, entails. Agency and access become totally untethered, giving the illusion of absolute user autonomy. Nonhuman processes, elements, and material objects are readily discarded, and this similarly ignores many of the affective and ethical challenges that remain under-explored.

For the sake of directing attention to these unexplored avenues of affectivity and nonhuman agency further, the following analysis of video advertisements of VR hardware is broken up into three categories that are based around their common factors: 'invasion,' 'evasion,' and 'departure.' To briefly summarise: advertisements depicting various kinds of 'invasion' see the depiction of a rupturing of physical, particularly domestic, space where the virtual invades the physical. Representations of 'evasion' speak to certain kinds of *excessive* access in virtual spaces previously mentioned, where material and socio-political constraints are wholly evaded. And finally, 'departure' defines the representations of movement *into* virtual space as a "stepping into" a "new reality" which is truly otherworldly, marketing forms of untethered access. By outlining these central tropes, it will be possible to grant consideration of the philosophical and ethical implications of 'stepping into' a virtual environment, as well as uniting the common thematics which form the premise of visual depictions of VR in popular culture. It is necessary to reconsider these tropes, and the ways they visually represent the emergence of ethical issues concerning user data, privacy, and transparency—whilst also acknowledging the myths of total agency that form the premise of many of VR's popular

discourses, in order to more accurately assess the technology's implications for agency and access in real-time use.

Invasion:

The 'invasion' trope is seen in representations like that shown in the images below. These are still shots taken from advertisements for both the *HTC Vive* and the *Oculus Rift* VR headsets. Both of these devices utilise room-scale tracking systems which enable users to stand within and move around physical space, whilst cameras track the dimensions of physical space to render the virtual environment in accordance with the dimensions of the space in which the technology is being used. As such, these kinds of depictions play on the spatial elements of use, showing the entirety of the individual's domestic space becoming part of the experience. Primarily, there is seen to be a merging of the physical and the virtual, so as the "real space", which is most often depicted as a typically western (and particularly plush) domestic space, is invaded by the simulated environment depicted by the headset. This is not necessarily shown to be a threatening invasion, but visually represents the technology's opening onto, and thus accessing of, the intimate geographies of home and the body. *Image 5* below sees a group of viewers sitting on a sofa seemingly under the ocean, where the walls of the physical space lift away to show what is being depicted via the headset. *Images 6* and *7* taken from *Oculus Rift* advertisements also see walls opening up as the virtual environment overpowers the

scene. This marked 'invasion' is the representation of a world *breaking into* another world.

Image 5 User wearing HTC Vive headset in Steam VR (Valve, 2016) <https://www.youtube.com/watch?v=qYfNzhLXYGc&t=16s>

Image 7 'Step into Rift,' Oculus Rift advertisement (Oculus, 2016) <https://www.youtube.com/watch?v=5q6BcQq_yhw>

Image 6 Step into Rift,' Oculus Rift advertisement (Oculus, 2016) <https://www.youtube.com/watch?v=5q6BcQq_yhw>

This trope visually tells us something about the fact that agency in immersive technologies is two-fold: users are granted access to the seemingly vast geographies of virtual environments should they allow the technological systems access to their intimate, domestic spaces. At the same time, the user's body enacts the locus of access for both sites. The device, its programmed software, cameras, and algorithms all have access to intimate personal data about the user's bodies and the spaces in which they are used. Both the *HTC Vive* and the *Oculus Rift* require multiple camera tracking systems to operate; attention should be directed to the data that can be collected both in terms of mapping the physical environment, but also the affective and intimate tracking of eye and body movement in the locus of the body.

Evasion:

The 'evasion' trope, unlike 'invasion' is primarily articulated through the narratives attached to the visual advertisements, as opposed to the visuals themselves. As one example, a 2017 advertisement for the *HTC Vive* is described as an opportunity to "enter a new era of discovery" and create "a place where everyone has a chance to make their mark."[13] This narrative sees VR described as an event, rather than a technology per se. Little, if any focus is given to the hardware itself; rather, attention is paid to the potential VR users who seek to experience the supposed "new reality" this technology makes possible. Such a new reality, it is suggested, removes the individual from the constraints of any given socio-political 'reality' so that anyone is able to "make their mark."[14] Evasion also marks the attempt to remove the material barriers of VR hardware from the depictions of the technology in use. This is particularly prevalent in the earlier advertising of the *PlayStation VR* (PSVR) headset. These adverts promote excessive forms of access for users, as the material hardware is shown to become transparent during use; this is to visually represent the system disappearing from the user's consciousness as they become sole actor in a virtual world devoid of material tethering.

[13] HTC Vive Advertisement 2015 <https://www.youtube.com/watch?v=C84TXtEQaeo> [accessed October 2016]
[14] Ibid.

Image 8 Headset becomes transparent, PlayStation VR advertisement (PlayStation, 2016)

In these particular advertisements, the user's bodily and visible responses to the environments become the key selling point to the technology. Where attention to the technology itself is minimal, the user's overt emotional reactions to the experiences are emphasised. Evasion, then, marks the purposeful masking of VR's inherently material infrastructures in order to promote total user agency and access to the worlds presented on the other side of the screen.

Departure:

The representations above show various depictions of kinds of "blended" environments where the divisions between the physical space and virtual environment are seemingly broken down to reveal a space where both co-emerge. In the case of the 'departure' trope, however, a wholly new world is inferred where physical space gets totally left behind.

Image 9 HTC Vive Advertisement (HTC, 2016)

Users are asked to "step into" a new reality. Oculus' tagline for the Rift, for example, is "Step into the Oculus Rift," implying a certain *givenness* of the world. By givenness, I suggest that the world is represented as totally accessible for the user, with every element available for them to engage with without barriers or interruptions. As opposed to inviting users to purchase a headset, spend time setting up the headset and loading an environment to explore, users are told to simply 'step into' the experience that is waiting for them. In representations of departure, VR technologies are seen primarily to provide spaces built solely for the individual that invests. This is evidently appealing, as it implies that the virtual worlds can be wholly shaped and acted upon by individual users, and does little to speak to the inherent constraints of the technology which limit action, and ultimately user access and agency.

These representational framings of Virtual Reality do much to influence public perceptions around the tools. This is significant, because the majority of people still rely on these kinds of images to access VR at all. Though headsets have entered consumer markets and have become moderately more affordable, access to the technology still remains relatively limited. A study conducted by YouGov in 2017, for example, stated that only 6% of the British population owned a VR headset.[15] There is very limited preparation, or prior embedded knowledge when it comes to using VR, and for its capacity to influence how we conceive of bodies and selves, including our own. The white male corporate success story remains a central selling point. As a consequence, usership is representationally homogenised. We have also seen that user experience is representationally homogenised, too: popular tropes in advertising sell the story of total agency and access which centralises the individual user. As I will continue to attest throughout this work, more attention must be payed to VR's inherent nuances, the potentials for unruly interaction, and experiences which evade capture and remain frameless.

Agency and access are core facets of VR use. Where access to the technology has faltered because of wider sociocultural and economic factors, its capacity to produce new forms of agency is only perceived via VR's outsides. Delving further into how VR *feels* to use, how it implicates embodied relations, and its persevering resistance to seamless

[15] Russell Feldman, 'VR headsets more popular than tablets and wearables were at same stage,' *YouGov* (2017) <https://yougov.co.uk/topics/consumer/articles-reports/2017/05/19/vr-headsets-more-popular-tablets-and-wearables-wer> [accessed February 2019].

performance, might enable a broader understanding of agency, and the agencies which form part of its underlying processes. The bodies and selves of users are part of an entangled system of nonhuman actors which work to mould how we interact with VR, but also produce the potentials to push the technology beyond the bounds of expectation.

The humanist problem of VR continues on. Each of the representations of VR discussed above either fetishize an abundance of user agency, or experiences of virtual environments which leave agency completely compromised. Across the scope of VR advertising is a neoliberal urge towards seeing the individual as the primary unit of value. Whether it is the self-made Silicon Valley success story, or the domestic user, VR promises growth of the individual through access to untethered experience. This ultimately leads to the complete obfuscation in understanding concerning how VR systems work: the ways they record data, the ways they track bodies, and the instances in which things might go wrong – or veer off the path of perfect immersivity, something which will be explored in more depth in the chapters that follow.

Humanist VR: A Parody?

One of the more light-hearted advertisements for the *Samsung Gear VR* headset evades any mention to humanity, or reference to the emotional and affective responses of human users. It actually appears to parody some of the dominant discourses of VR in its depiction of an ostrich wearing the headset attempting to fly.

Image 10 #Dowhatyoucant Gear VR advertisement (Samsung, 2017).

It begins with an ostrich moving with its flock, stumbling across a *Gear VR* headset lying on the table of a front porch. The ostrich eats food from the plates that have been left

outside, only to peck his way into the VR headset which conveniently attaches to its face. Fittingly, Elton John's 'Rocket Man' plays in the background. This example can be read as a parodic hint at the anthropomorphisation of the animal when it interacts with the hardware. A flight simulation plays through the headset, with the ostrich attempting to fly, much to the bewilderment of its flock. Eventually, with the aid of the simulation, the ostrich takes off and soars across the landscape. The advertisement ends with the message: "We make what can't be made […] so you can do what can't be done […] #dowhatyoucant."[16]

The *Samsung Gear VR* advert is one of the few that evades reference to the human subject, though it subtly mimics the representations of VR's affective potentials of awe and shock with the extension of cognitive capacities into virtual realms. The 'cute' depictions of the ostrich's eyes widening as it interacts with the simulation, and its stumbling clumsily through the herd attempts to capture the humorous bodily movements perceived from VR's 'outsides;' this marks another push to represent VR as inviting and accessible, despite the reality of an ostrich and VR being a moderately disturbing combination. It depicts VR as both otherworldly, but also rooting the body in clunky and chaotic ways: though the ostrich perceives itself to be flying through the clouds, free from physical constraints in its physical environment, the 'outside' shows it chaotically navigating the space untethered from wires or physical blockades. This somewhat dirties VR's clean and seamless representations previously discussed; one web search for 'VR fails' can return numerous images of users stumbling over wires and falling over. And in this sense, by depicting an animal using VR, not predisposed to technology, it resolves to illustrate a kind of neutrality and naturalness of perception via VR. It informs users that they don't have to be expert users to try it, and encourages experimentation. Yet the advertisement still appeals to the will toward individuated agency by marking the ostrich's cognitive acceleration beyond the rest of its flock. If an ostrich can have unlimited access to a virtual environment, then surely human users can too… The extensions of cognition and possibility through VR use depict an abundance of agency in its simulated worlds.

The representations of VR analysed thus far in this chapter collectively illustrate virtual reality's current and well-known representational framings and the invisibility of

[16] Samsung, <https://www.youtube.com/watch?v=L3N1jeBp7H8> [accessed August 2017].

processes during use. Unlike early writings of VR that came to grips, to some degree, with the process of accessing immersive simulations, the emergence of new hardware from 2016 onwards completely detracts from the object-processes enabled when the human body and VR hardware produce a relatively novel assemblage. Works such as William Gibson's *Neuromancer*,[17] though seen as the narrative creation of modern virtual reality, at least captured some of the processes and becomings involved in the subject's comingling with a wraparound mediated environment. In the case of Gibson's 'cyberspace,' a topological landscape of the computer interface is narrated as it enables the extension of human consciousness and phenomenal being into cybernetic space. As opposed to the smooth illustrative representations of contemporary devices, the process of 'jacking in' is depicted by Gibson as a messy and material encounter: the body becomes 'meat' – loaded with fleshly corporeity which comingles with simulation via hallucinogenic affects. Not dissimilarly, Neal Stephenson's 1992 *Snow Crash*[18] depicts a computer virus-inspired substance which can be passed from one user-body to another within the 'Metaverse,' an early vision of a networked virtual reality technology which is accessed via goggles. Though as Lisa Swanstrom notes, the narrative of *Snow Crash* "perpetuates a logic of encapsulation,"[19] the ontological realms between reality and virtual reality are never wholly contained, but, rather, produce an affective middle-ground of ecological processes: the body is affecting and affected, as is the technological substructure. These fictions spend time exploring the materiality of the hardware in order to narrate their complex infrastructures to the reader.

Frame Breaking

With all of this in mind, the bounded frames of VR, namely its hardware and representations, need to be broken—or at least 'made messy.' They need to be analysed in order to further understand the technology's unique potentials— both how it builds out of existing media, and extends beyond them. The conceptual idea of "breaking the frame" emerged during the Luddite movement of the 19th century, where workers destroyed the technologies that were pushing their work towards machinic industry

[17] William Gibson, *Neuromancer*, new ed. (London: Harper Voyager, 2015)
[18] Neal Stephenson, *Snow Crash* (London: Penguin, 1992).
[19] Lisa Swanstrom, 'Capsules and Nodes and Ruptures and Flows: Circulating Subjectivity in Neal Stephenson's Snow Crash', Science Fiction Studies, 37.1 (2010) p.65.

practices. Frames became the conceptual model for referring to the opaque, nonhuman machines that threated human work through urges toward machine autonomy and efficiency. Opposing the commonplace understanding of a "luddite" as referring to someone who opposes new technologies, the Luddite movement of the 19th century marked a rebellion against the deceitful use of technology that was embedded into the workplace as a means of vacating standard labour practices.[20] The movement, and the "breaking the frame" trope that emerged from it, sought to break down the borders which might distance people from understanding the technology and what its potentials were, both good and bad; they challenged the integration of new tools by drawing attention to the social, ethical, and political challenges they posed. For the Luddites, the integration of new technology fundamentally changed the ways humans might operate as beings-in-the-world. In part, as Riley McDonald notes, the act of breaking the frame marked "the subject[s] transcend[ence of] the mechanisms of control."[21] Although these breakages were physical acts of resistance, this same resistance can be enacted conceptually by theoretically breaking through the black-boxed manifestations of technology to reveal some of their obfuscated processes. The same is required in order to truly understand VR. As has been set up thus far in this chapter, VR is limited by the constraints of:

- Its opaque physical presence.
- The homogony of its audiences.
- The illusions of absolute agency and endless possibility.
- The urge towards immersion in any world or place one might be able to imagine.

VR produces new and novel tensions in the realm of digital culture relating to privacy, embodiment, and agency. To challenge VR's persistent framings, it is important to consider such tensions and the ways they manifest as particular bodily encounters. The experience of immersive virtual environments is produced through assemblage systems that comingle embodiment and technology in novel and intimate ways.

In contrast to the rebellion and resistance of the Luddites, the 'breaking of frames' analogy has been appropriated within emerging VR discourses to implicate untethered

[20] Peter Hitchcock, 'Resistance is Futile: The cultural politics of transformation in the digital age,' *The Comparatist*, 42 (2018) p.304.
[21] Riley McDonald, 'The Frame Breakers: Thomas Pynchon's Posthuman Luddites', Canadian Review of American Studies, 44.1 (2014) p.106.

access and agency for individual users. Rather than an act of protest against the integration of tools, this mode of frame breaking instead marks the willing integration of technology into lived experience through its becoming transparent. Discourses of technological transparency and transcendence, I argue, divert away from the potential experiencing of affective displacement in the ontological mashup of the real and virtual. The frame now stands in for the modern conception of the interface. This is the primary focus of a TED presentation given by Chris Milk in 2015. Milk, the CEO of VR company *Within,* remarked:

> I started thinking about frames, and what do they represent? And a frame is just a window. I mean, all media that we watch—television, cinema—they're these windows into these other worlds. And I thought, well, great. I got you in a frame. But I don't want you in the frame, I don't want you in the window, I want you through the window, I want you on the other side, in the world, inhabiting the world.[22]

The continued discussion of the move through and beyond frames and framing is implicated here as the removal of ontological interface between the user and digital information. But where does this leave the body? This aspiration dates far back towards VR's conception in popular consciousness in the 90s. In their *Remediation: Understanding New Media* (1999), Jay David Bolter and Richard Grusin noted that

> [v]irtual reality operates most often under the logic of transparency. For enthusiasts, the perfect interface is one in which the user, wearing a head-mounted display, feels as if she has fallen through Alberti's window and into a world of computer graphics. For them the immediacy of virtual reality comes from the illusion of three-dimensional immersion and from the capacity for interaction. In the case of a traditional painting, photograph, or film, the viewer is located beyond the frame, looking in.[23]

Through their evaluation of VR's immersive capabilities, Bolter and Grusin introduce what they call the "logic of transparency," whereby the hardware becomes transparent

[22] Milk, Chris, 'How Virtual Reality can create the Ultimate Empathy Machine', *TED Talks* <https://www.ted.com/talks/chris_milk_how_virtual_reality_can_create_the_ultimate_empathy_machine?language=en> [accessed 16 November 2015].
[23] Jay David Bolter and Richard Grusin, *Remediation: Understanding New Media* (Cambridge, MA: MIT Press, 1999) p.162

during use because of the involvement of users in the worlds presented to them. These persistent illusions to transparency have meant that framelessness oftentimes becomes interpreted as being synonymous with technological transparency. When Bolter and Grusin discuss the emergence of transparency through other mediums (photography and film), they suggest that viewer is located beyond the frame; with VR, on the other hand, it is inferred that users are wholly embedded within the frame. In his 2012 work *The Interface Effect,* Alexander Galloway states:

> Frames, windows, doors, and other thresholds are those transparent devices that achieve more the less they do: for every moment of virtuosic immersion and connectivity, for every moment of volumetric delivery, of inopacity, the threshold becomes one notch more invisible […] As technology, the more dioptric device erases the trace of its own functioning (in actually delivering the thing presented beyond), the more it succeeds in its functional mandate […] the more intuitive a device becomes, the more it risks falling out of media altogether, becoming as naturalised as air or as common as dirt.[24]

The ubiquity of the media interface, as Galloway notes, sees its impact on our lives, our work, our relationships, as ever more 'natural.' Galloway's work challenges the notion that interfaces are transparent and explores some of the ways they are unable to forge seamless connection. The urge to framelessness-as-transparency ultimately leads to a lack of ethical and critical understanding about the hardware in relation to body tracking, and compromised access and agency. It is worth opening up what frames and framing mean beyond the imagining of an interface; we might begin to forge such a language in relation to VR if we look back at the philosophical groundings of the frame.

The Humanist Legacy of the Frame: 'Enframing'

Beyond the material frame, frames and enframing find an extensive legacy within philosophical accounts of human experience. In philosophical contexts, the frame marks the mode of human seeing and being in the world; humans frame the world in order to use it, mould it to our needs, and order it into a logical system to live through. This conceptual idea of framing has much to offer existing discourses concerned with frames

[24] Alexander R. Galloway, *The Interface Effect* (Malden, MA: Polity Press, 2012) p.25

in digital culture in that embodiment and real-time experience become the central mode of enquiry. At the same time, this legacy reveals some of the humanist tendencies of framing; enframing, in both philosophical discourse and media encounters, is the act of understanding, experiencing, and seeing the world from a specifically human (and inherently reductive) perspective. In the same way that, as humans, we reduce things to a specific ordering for use,[25] media also constitute a framing of the world as representation. In order to truly think about the unique affective potentials of virtual reality, and to open up discourses which oftentimes misrepresent agency and access, I argue that this phenomenological approach to framing will enable an encompassing understanding of why we might begin to think beyond frames, but also how we might consider unruly interactions with our technological tools.

Phenomenological accounts of enframing, arguably beginning with Heidegger's conception of the phenomenon in his influential essay 'The Question Concerning Technology,'[26] illustrate an evolution from an anthropocentric understanding of Being towards a being-in-the-world, a more complex examination of the ways in which human embodiment and perception continue to extend through our ever-complex interactions with technological tools. Philosophical accounts of human/technology interaction discuss the ways that technology enables us to understand further the ways humans enframe the world by analysing immediate experiences of it. Heidegger's essay explores the use of technology as a means of interacting with the world as it exists as "standing reserve," or waiting to be accessed through and by human use of tools. Heidegger's conceptualisation of enframing sees human dependence on tools as bringing nature to a state where it can be accessed, so that both humans and the world of appearances are enframed to be configured into an ordering for use. This relationship to technology, Heidegger asserts, gives way to the essence of technology itself as "Gestell", or "enframing". Technology, then, is both a material entity and an instrumental one; the essence of technology (enframing) foregrounds the idea that technology is "a means to an end" and "a human activity."[27] This foregrounding highlights the use of technology as being framed for and by its human use. The action of enframing never captures things as they truly are outside human understanding. Though Heidegger hints that human use of

[25] Martin Heidegger, *The Question Concerning Technology and Other Essays*, trans by W. Lovitt (New York: Harper & Row, 1997).
[26] Ibid.
[27] Ibid, p.18.

technology conceals the things themselves, he also suggests that such enframing reveals a truth. He continues:

> Modern technology as an ordering revealing is, then, no merely human doing. Therefore we must take that challenging that sets upon man to order the real as standing-reserve in accordance with the way in which it shows itself. That challenging gathers man into ordering. This gathering concentrates man upon ordering the real as standing reserve.[28]

Here, Heidegger proposes that seemingly both humans and technology are recruited into the enframing event in order to reveal an ultimate truth that cannot expose itself purely through human action. Humans rely on technology, but there are always elements which escape our (human) comprehension. The act of enframing is not perceivable to the physical eye, and is articulated by Heidegger via its strangeness and ambiguity as humans and their being-in-the-world are revealed to one another. In this way, human embodiment – and its technological extensions– sees human Being (our always being in and of the world) come into realisation. Heidegger's essay emphasises the role of enframing to reveal the real, and the real as always seemingly outside of humans and technology, an ontological event which escapes the ordering that it necessitates. Through enframing, then, Heidegger asserts that humans and Being, as the "Being of whatever Is" (p.xv), come into estrangement and realisation of one another.[29]

Much of the language used to describe transparency and use of technology dates back to these long-withstanding phenomenological traditions. It is in this regard that Heidegger's works continue to inform a trajectory of re-readings; the 'enframing' concept is of particular interest to new media theorist Mark B. N. Hansen, who aligns Heideggerian phenomenology with experiences of new media and VR most explicitly. Where Heidegger's approach towards technology more broadly considers objects of use that are "by no means anything technological," (p.4) Hansen rewrites bodily enframing into the cultural and technological milieu of immersive digital events and objects. Heidegger's emphasis on enframing is primarily concerned with the realisation of Being and its relationship to the world; Hansen, rather, sees enframing as a performative role undertaken by the experiencing body. Though Hansen's approach aligns Heidegger's

[28] Ibid p.19.

[29] Please note that throughout the thesis, where works are quoted extensively for close reading and analysis, I include references as parenthesis within the text.

philosophy with a more contemporary discussion of digital media, it would seem that much of Heidegger's discussion of enframing as both revealing *and* concealing is mitigated so that the body is put in the "empowered" position of giving form to digital data. Such an analysis only accounts for the ways the body might enable a seamless conversion of formless information into fully realised feeling, and not those elements which remain concealed, arduous or beyond immediate cognitive comprehension. An account which might see the body as *disempowered*, as responding to the affective potential of immersive digital innovations in weird and unexpected ways, enables a critical understanding of VR which goes beyond familiar encounters, and legitimises the consideration of instances where technological use might affectively deviate, as we will see play out in the following chapters.

Rearticulating the enframing concept in his work, *New Philosophy for New Media*, Mark B. N. Hansen correlates an approach to the use of technology with the "advent of digitisation."[30] This movement sees enframing take on new technicalities, where the focus shifts towards the process in which information is converted into concrete bodily affect. As Hansen puts it:

> Correlated with the advent of digitisation, then, the body undergoes a certain empowerment, since it deploys its own constitutive singularity (affection and memory) not to filter a universe of preconstituted images, but actually to *enframe* something (digital information) that is originally formless. This originary act of enframing information must be seen as the source of all technical frames (even if these appear to be primary), to the extent that these are designed to make information perceivable by the body, that is, to transform it into the form of the image[31].

Hansen's approach differs to Heidegger's in the way it marks digital information's seeming dependence on the body in order to be fully realised through its conversion into affective bodily response. For Hansen, the frame and framing are necessary to "institute a difference between the actual and the virtual and thus to catalyse the actualisation of the virtual."[32] He states that framing "always originates in the transpatial meaning-

[30] Mark B. N. Hansen, *New Philosophy for New Media* (Cambridge, MA: MIT Press, 2006) p.10.
[31] Ibid.
[32] Ibid, p.74.

constituting and actualizing capacity of (human) embodiment. The technical frame, or interface of digital media is constituted as its 'objective support,"[33] an ontological separator – keeping data permanent instead of the impermanent "mental or instrumental" form of visual memory. By framing virtual space and/or digital data, Hansen argues that the body converts data into a "contingent actualised image"— the body becomes the "source of all technical frames" (p.120). However, Hansen's approach to enframing does not account for instances where the body may be unable to interpret given information in a recognisable way. When media does something unexpected, such as temporaneous glitching, the body does not become a framing source—rather, the realm of subjectivity is confronted by the digital as it exists beyond the embodied interaction with it. In immersive VR experiences in particular, the body does not necessarily convert data into an actualised image, but is rather confronted by strange affective sensations as the "actual" and "virtual" collide.

From a typically anthropocentric philosophical perspective, the frame has become the mode of seeing and being in the world; humans frame the world in order to use it, mould it to our needs and order it into a logical system to live through. Framing implicates a certain sense of ordering. Heidegger's analysis of enframing focuses specifically on an event where human usage of technology frames the world of appearances; Hansen places enframing closer to the experiencing human body, where it comes to be an affective interpretation of virtual information. In a similar technical vein, the permeating discourses of technological transparency focus on the frame-as-interface and ultimately seek to do away with the frame as its presence sees it become a perceptual obstruction. However, framelessness-as-transparency purely reflects the invisibility of enframing in all human perception: everything is always enframed, but we never encounter it as such. Enframing can only be recognised when being-in-the-world is disrupted by that which cannot be framed.

Framelessness

The iteration of framelessness that I propose encourages considerations of the weird and wonderful affectivities tied to VR that emerge via the oscillations between the virtual

[33] Ibid, p.102.

environment and physical space. This mode of thinking about the frameless challenges the embeddedness of agency and access in VR, and instead focuses on the ways that these elements break away from the human user. Whether it is walking past a VR arcade or watching an advertisement, we are drawn towards this 'exciting' new technology through the lure of entering worlds where anything is possible. VR promises that scenarios of limitless potential can be truly realised in this brand-new era of cyberspace. A new ideology of framelessness would seek to break down these enticing, yet lucrative, discourses; there is pleasure to be found in the more banal and strange encounters we have with our technological tools. Rather than entering these promised 'new realities,' VR's potential is more productively encountered when mediated worlds don't always let us in; whether through glitches, strange movements or physical discomfort, virtual worlds expose us to the weird and wonderful of our everyday embodied experiences. Framelessness is a way of articulating not a fully accessible and immersive landscape, but slippages between reality and virtuality, everydayness and unexpectedness.

Contemporary turns towards affectivity and new thinking around the beyond-humanness of the world, or the move away from anthropocentrism, reveal new ways of analysing and interpreting lived experience that can be applied equally to digital realms. Emerging philosophical arenas no longer refer to perfectly shaped worldviews with solid borders and hard corners to capture them; phenomenology, in particular, has turned towards various modes of *becoming* – mutating views of the world where the human once stood centre stage. In the early stages of his *Alien Phenomenology*, Ian Bogost declares that

> We've (humans) have been living in a tiny prison of our own devising, one in which all that concerns us are the fleshy beings that our kindred and the stuffs with which we stuff ourselves. Culture, cuisine, experience, expression, politics, polemic: all existence is drawn through the sieve of humanity, the rich world of things discarded like chaff so thoroughly, so immediately, so efficiently that we don't even notice. How did it come to this, an era in which "things" means ideas so often, and stuff so seldom?[34]

[34] Ian Bogost, *Alien Phenomenology or What It's Like to Be a Thing* (Minneapolis: University of Minnesota Press, 2012) p.3.

Bogost's approach, inspired by Object-Oriented Ontology,[35] notes that the human has taken centre stage in phenomenological enquiry, formulating a tiny microcosm of what it means to experience the world the only way 'we' will understand it – as being for us (Heidegger). However, to align 'fleshy being' with the human specifically will come to be challenged; in the second chapter, 'Flesh' will be referred to as a specific materialised unit of experience which is shared by human and nonhuman alike, embracing the "multifarious complexity of being among all things."[36] Unlike the perhaps more 'human' understanding of the 'skin' as the primary interface of human experience,[37] the flesh beholds the affective capacity to move between various ontological realms. It not only informs human affectivity, but unsettles human being-in-the-world as a unit removed, displaced, or ripped away from the unified body which so typically informs phenomenology. The well-sculpted bust of the (white, male) human on the worldly mantelpiece has been discovered dashed on the floor and has been replaced with a lump of unhuman flesh. Though the particularities of the 'unhuman' and 'flesh' will be explored thoroughly in the next chapter, here I draw on phenomenological accounts which premise this initial move away from human agency and access. Though they maintain that our (human) tactility is central to our experiencing of the world, we are always shaped by the weird and wonderful affective forces that emerge both inside and outside of our skin, that which muddies the boundaries between human Being and being-in, and of, the-world.

A reliance in traditional thinking around the unity of experience has meant that the world is brought forth from a first-person perspective. Shaun Gallagher states that phenomenology, broadly speaking, is about interpreting how we are "immersed in our everyday situations and projects."[38] This mode of interpreting the everyday requires that we don't simply take the world as it is given, how we are immersed in it, but challenge and interpret what 'immersion' means and experientially entails. An enframed world has typically enabled us to perceive the world as always for us. However, if we look beyond the immediate givenness of the world through the underexplored and untethered nature

[35] See e.g. Graham Harman, *Object-Oriented Ontology: A New Theory of Everything* (London: Penguin, 2018) and Timothy Morton, *Hyperobjects: Philosophy and Ecology after the End of the World* (Minneapolis, University of Minnesota Press, 2013).
[36] Bogost, p.5.
[37] Mark BN Hansen.
[38] Shaun Gallagher, *The Phenomenological Mind: an Introduction to Philosophy of Mind and Cognitive Science* (London: Routledge, 2008) p.26.

of the term 'immersion,' we can instead consider the ways the world is constantly tearing away from us—how we might affectively interpret the world as never being "for us."[39] The comingling of thought around the human and nonhuman have led scholars to state that "beyond the human, another phenomenology persists."[40] For Dylan Trigg in particular, this phenomenology is unhuman: a new body is revealed that sees the affective intercorporeity of the human and nonhuman. Brian Massumi's work brings together the affective and the virtual via the claim of their being "an incorporeal dimension of the body."[41] For Massumi, movement, sensation, and affect are virtual processes that are inherently part of the corporeal's process of becoming. His approach to the virtual sees the creation of multiple ontologies via corporeal movement through the world – not just by the human subject, but through 'the becoming' of culture of nature. Massumi uses the term 'ontogenesis' – a process which captures every move or change in the world, as they necessarily create something new, "an added reality."[42] The multiply-tiered ontologies integral to experiences of virtual reality coincide with the notion of becoming. I want to argue that an understanding of 'flesh' can be developed which is non-anthropocentric, detailing its ontogenesis through the collision of new media technologies, their capacities to interact with, but also destabilise the human (specifically, human*ist*) subject.

Rather than regarding the materiality of the virtual reality experience as wholly articulated by its hardware and bodily frames, it seems necessary to consider the materiality and affective potentials of the processes which enable such encounters. The human body can be regarded as a central framing device when it comes to the ways in which humans perceive the world, but ultimately how this leads to forms of reduction when thinking of the world outside the human. In bridging together posthuman and affect studies, in line with a specific technological medium, a mode of seeing and feeling through apparatus beyond the body can be mobilised. The able-bodied, white male imaginary prevails in the VR space; in many ways, the technology enables access to 'new' phenomenological worlds for those who have this privilege. The next part of this chapter will focus on issues of access in phenomenological enquiry. In thinking through some of virtual reality's weird affects, or to try and attempt to capture an essence of the frameless, I turn to contemporary phenomenological perspectives which switch focus toward the

[39] Eugine Thacker, *In the Dust of This Planet: Horror of Philosophy Vol.1* (Hants: Zero Books, 2011).
[40] Dylan Trigg, p.4.
[41] Brian Massumi, *Parables of the Virtual* (Durham: Duke University Press, 2002).
[42] Ibid, p.12.

world as not-quite-given. That is to say, approaches which see worlds as always partially not-made-for-us (human perspective is never enough) and that see the world recede from us in different ways.

Sara Ahmed's work on Queer Phenomenology provides an approach to access and the givenness of the world which aligns phenomenology with queer studies. For Ahmed, orientation forms her central analysis, and creates a perceptive understanding of the "straightness" or "wonkiness" of perception, as it exists within specific spaces and socio-political contexts. Orientations are devices which affect what bodies can do, mapping out phenomenal space in order that bodies gain access or are barred from certain phenomenological experiences or interactions. Ahmed captures 'orientations' through the ways that they function as affective devices; she maintains that phenomenal orientation is very much felt on the surface of the body. Ahmed provides reinterpretations of the works of Husserl, Heidegger, and Merleau-Ponty in order to expand on the queer phenomenological moments that have existed and are discussed by all three philosophers. Ahmed states that:

> Phenomenology […] is full of queer moments, moments of disorientation, which involve not only the intellectual experience of disorder, but the vital experience of giddiness and nausea, which is the awareness of our own contingency and the horror with which fills us.[43]

By aligning phenomenology with considerations of queer studies' orientations specifically, Ahmed's work considers the ways in which objects are both reachable, or recede from certain bodies. In line with the aforementioned philosophers, queer moments are articulated as instances in which the subject is disorientated and as a consequence, becomes exposed to strange affective responses which emerge at embodied, psychological, and physiological levels. In thinking through the scope of orientation, Ahmed sees the heteronormative orientation as a straight way of seeing, literally forming an in-line mode of perception and being-in-the-world which enables most access to world/s and their object/s. Spaces thus enact certain privilege, in that should orientation differ to the sketched line of heteronormativity, then bodily action is

[43] Sara Ahmed, 'Orientations: Towards a Queer Phenomenology,' *A Journal of Lesbian and Gay Studies,* 12.4 (2006) p.544.

blocked; "they [queer moments] inhibit the body, such that it ceases to extend into phenomenal space."[44] Referring to the bodily horizon as that which "gives objects their contours and […] allows […] objects to be reached,"[45] the queer moment intervenes in the "reaching forward" toward an object – an alternative line or bodily horizon is drawn within the social space depending on orientations. Ahmed continues:

> The bodily horizon shows the "line" that bodies can reach toward, what is reachable, by also marking what they cannot reach. The horizon marks the edge of what can be reached by the body. The body becomes present as a body, with surfaces and boundaries, in the showing of the limits of what it can do (p.552).

Queer moments provide disruptive instances which, in essence, highlight such invisible lines that manifest through lived phenomenological experiences. In such a moment, the limits of the phenomenal body and movement through space are highlighted: not only does the bodily apparatus become apparent, but the contours of its experience and the inscription of the socio-political onto phenomenal space and the body itself are revealed.

Ahmed suggests that a queer moment provides a temporal engagement with a world that does not seem the right way up (p.561) where access and agency are challenged by forces that have immediate impact on the bodily horizon of the subject. Not dissimilarly, Ahmed contests that objects can, too, be queer: the queer object manifests as "one out of line, on a slant, the odd and strange one" which is "encountered as slipping away, as threatening to become out of reach" (p.566). Thus, queerness for Ahmed manifests as both a temporaneous instance of object slippage, or movement away from the individual, whilst also existing as a kind of disorientation away from the heteronormative orientation. Queer phenomenology "overcome[s] the disalignment of the horizontal and vertical axes; allowing the oblique to open another angle on the world" (p.566).

Ahmed's conception of a queer phenomenology as a kind of disorientation highlights the kinds of affective repercussions of a 'programmed' straight orientation in the world, which has very real worldly effects for on the subject and their access to the world; it also provides a framework for thinking through the potentials of a 'slantwise'

[44] Ibid, p.561.
[45] Ibid.

phenomenology which strays from the vertical and horizontal lines of perception: to consider the bodily horizon as very much embedded into social, cultural, and political forces is crucial for any phenomenological enquiry, particularly in terms of access, agency, and comfort from a point-of-view, rooted in experience of the world. An embrace of 'disorientation' as a mode of viewing the world allows critical interpretations of the lines already drawn in the sand: in what ways do such lines limit access? What happens should such lines be crossed, and how might worlds that are the wrong way up, strange worlds, open up new possibilities for inter-action?

Recent work by Alison Bennett and Megan Beckwith specifically aligns some of the philosophical intertwinings of queerness and virtual reality, with a particular focus on representing drag realness in virtual environments.[46] Their development project is centred around a simulation entitled 'Virtual Drag,' a VR experience created using photogrammetry techniques and 3D projections. The simulation invites users to traverse a number of elaborate and emphatic environments which are centred around six different drag personas. The drag queens and kings' 3D images were produced using photogrammetry, and maintain an unruly aesthetic where disparate images do not quite match up, thus producing unique digitally rendered images. Bennett and Beckwith argue that the project enables access into an environment which raises multiple questions which remain central to both virtual reality and queer culture: the construction of the 'real', the "constructed and contingent frameworks of culture and identity,"[47] and power structures of normalcy.

[46] Alison Bennett and Megan Beckwith, 'Queering virtual reality with drag realness: a case study of a creative investigation,' *Refractory Journal of Entertainment Media*, 30 (2018).
[47] Ibid.

Image 11 Virtual Drag, by Alison Bennett and Megan Beckwith (2015)
<https://alisonbennett.net/2015/09/16/virtual-drag/>

The figures depicted in the simulations are overtly digitised, showing part of the processes of their reproduction within the virtual space. This overtly non-seamless depiction of digitally rendered bodies and objects reveals the ways the images are produced and their underlying structures – with access to the gridlines hidden beneath the garments, with different images having certain levels of colour and opacity which, in turn, reveals different aspects of the images. The bodies also move with a strange, glitching momentum which seemingly unsettles but invites attention to the processes embedded within the artistic creation. For Bennet and Beckwith, the glitches in the piece "crack the hyperreal veneer of digital media to reveal its underlying construction."[48] By drawing attention to its digitised contours, the artwork rallies against the push for seamless experiences in the virtual reality space. Bennett and Beckwith argue that "virtual reality troubles the experience of reality;"[49] by alluding to its own fabrication, 'Virtual Drag' pushes the expectation of what virtual reality should be—not as a replication of 'reality' but as an imperfect simulation. As such, the artists come to conclude that virtual reality experiences should be seen as a "form of becoming in mediation, of performing emergent potential."[50] Aligning virtual reality with the thematics of queer theory sees the affective becoming within virtual reality experiences

[48] Ibid.
[49] Ibid.
[50] Ibid.

as processes, as opposed to immediate destinations. That is to say, virtual reality constitutes a kind of performance of a fabricated reality which has the power to critique habitual experience and seamless embodied access and interaction with worlds.

Virtual reality hardware and simulations are built around the body. As such, as a technology, it is inherently an orientation device because it simulates an environment which shapes how the [virtual] "world coheres around me [the user]."[51] The parameters of bodily interactivity are afforded by the developer, dictating how each user can come into contact with the world depicted, how objects can be interacted with, and where the boundaries of movement are placed. In the case of VR, orientation is encoded as a central facet of the medium itself. This not only means that bodily interaction can be extended, it can also be limited. Similarly, what can come into contact with the body in virtual space has already been planned ahead by the developer and as such forges new kinds of agencies. The work of Bennett and Beckwith plays with the notion that gender might be readily codified in virtual spaces. As an artwork, 'Virtual Drag' initiates an affective experience in which one is able to feel the presence of the construction of gender itself. Returning to Ahmed's work, we might consider the ways virtual reality instantiates various pre-existing forms of gendered occupation.

Ahmed rewrites the frequently narrated orientation of the philosopher writing at the table to exemplify the affordances and access of the writing space. Ahmed places queer phenomenology at the sight of the philosopher's back, a looking behind at phenomenology; queer phenomenology narrates what Ahmed refers to as the "background affects," for example, domestic action which might keep the philosopher's table clear and clean, the unnarrated political economy of attention which is unevenly distributed to writers sat at the table. What, Ahmed asks, for the mother who is drawn away from the table by her children? What about the kitchen table, a table where perhaps the writing of philosophy may be impossible, for it is unable to enact the "horizontal surface"? Such orientations and occupations of the philosopher's table, Ahmed argues, are gendered. She continues:

> In other words, what we do with the table, or what the table allows us to do, is essential to the table. So we do things "on the table", which is what makes the table

[51] Ahmed, p.235.

> what it is and take shape in the way that it does. The *table is assembled around the support it gives.* […] The "in order to" structure of the table, in other words, means that the people who are at the table are also part of what makes the table itself. Doing things at the table is what makes the table itself and not some other thing. We might note that what bodies do at the table involves gendered forms of occupation.[52]

For some, the orientation towards the writing table is inaccessible, or is pulled away. As such, orientations are social, they are affective—the object recedes. Access denied.

I argue here that Ahmed's work on orientation to world/s is a crucial theoretical model that is beneficial to phenomenological interpretations of immersive environments, where its relationship to the body reveals modes of concealing, revealing, and worlds receding. Ahmed's work is premised on the importance and validity of queer moments, in their allowing for a coming to terms with the privileges of access. I want to maintain, here, that the concept of 'immersion' requires certain kinds of privileges of access: social, cultural, and political factors play into one's capacity to be immersed. Virtual reality is rooted within the spaces it is practiced, and horizons and orientations, as invisibly present conditions of experience, allow for the consideration of boundaries and access within immersive environments. The depictions and discourses surrounding VR's most prevalent applications all seem to rely on the promotion of total access. Immersion has become synonymous with this sense of total access – both of which have become the common expectation of virtual reality devices. Yet, the more we consider immersion as a means of technology becoming transparent, the more we fail to acknowledge its ethical and political implications. By resisting the discourses of immediate 'presence,' 'immersion,' and absolute access, we are able to consider the systems associated with the technologies we use, their underlying systems, and the ways they mediate complex affective relations. Assumptions about immersion, as a form of mediated givenness, as being an inherent part of the experience, means that little time is given to the ethical underpinnings of various experiences.

[52] Ahmed, p.551.

Challenging *Givenness*

In 2016, Robert Yang wrote a blogpost in response to Chris Milk's claim that VR should be considered as the "ultimate empathy machine" in his previously discussed TED talk. Yang drew attention to the ways certain rhetorics limit critical thinking about the production of technology, and who it is produced by and for. He stated that "the rhetoric of the empathy machine asks us to endorse technology without questioning the politics of its construction or who profits from it."[53] VR's is entangled within the spheres of technocapitalism: the big companies who are buying into the VR space specifically market their tools in a way that depicts uninterrupted access to promote their experiential possibilities. In 2016, Mark Zuckerberg delivered a live broadcast to Facebook users worldwide promoting the new 'VR Spaces' application. The broadcast saw avatar Zuckerberg and 'VR Spaces' chief Rachel Franklin teleporting across space, standing in Zuckerberg's living room, taking virtual selfies and fussing a giant live rendition of his pet dog. The broadcast aimed to capture what it was like to be in VR to a broad audience – to physically feel like, quote: "you're really in a place."[54] Though Zuckerberg and Franklin were connecting from different sides of America in the "real world," the two emphasised the sensation that they were "in the same place and can make eye contact."[55] This broadcast caused a huge amass of discontent amongst Facebook users, as Zuckerberg and Franklin decided to "take a trip" to flood stricken Puerto Rico. Only three weeks after the arrival of Hurricane Maria and the subsequently devastating effects on the island, Zuckerberg told viewers that it was "magical to feel like you're actually in the place."[56] This broadcast was testament to the lack of ethical awareness when it comes to access in virtual environments. To appropriate real-world spaces in this way and testify to the amazing sensation of feeling like they were actually there, Zuckerberg and Franklin assumed that the hardware's immersive potential would trump any consideration of ethical problematics.

With this instance, the concept of 'presence,' or the feeling of being somewhere else, is not only problematic, but actively political. Presuming access to any given location,

[53] Robert Yang, '"If you walk in someone else's shoes, then you've taken their shoes": empathy machines as appropriation machines," *Radiator* <https://www.blog.radiator.debacle.us/2017/04/if-you-walk-in-someone-elses-shoes-then.html> [accessed July 2017].
[54] Facebook broadcast <https://www.youtube.com/watch?v=N-MkduVh0wM>
[55] Ibid.
[56] Ibid.

the idea of 'being in a place' sees an erasure of boundaries for the presumed 'virtual tourist:' there is a conscious effort to market an ease of movement across geographical space, in a particular time where controlled mobility across borders has caused significant socio-political hardships. Here again, there is little reference to the technology itself, simply an enactment of movement. It is in the interest of the capitalist market to obfuscate the workings of the technology and simply show what it can make possible, whilst also flattening "real world" experience. This is one instance within a wide continuum of VR production which aims to promote empathy as the ultimate goal of point-of-view VR experiences. The depiction of Mark Zuckerberg walking through the ignorant masses, or his attempt to advertise the Oculus headset by visiting the then-recently devastated Puerto Rico, sees immersion and presence forming part of a wider ethical problem – the problem of assuming total access. Ahmed's queer phenomenology, or slantwise perception, offers an alternative approach which validates instances of barred access. The constraints of the real world are still present and perpetrating in virtual spaces.

I argue, therefore, for the establishment of new posthuman ethical frameworks to be applied to VR development and production. Such ethics would maintain some focus on the human user, but would push further to consider the complex, embodied assemblage incurred within VR experiences that also includes nonhuman actors. Despite the seeming unrootedness from an ethics of being in the day-to-day, VR is absolutely formed from a material and cultural reality which uses discourses of 'otherworldliness' to disguise power structures and the prejudices built into its applications. This is where I want to argue for a theoretical push beyond the human and humanism when exploring issues around technologies like VR which affectively and intimately tie human users together with nonhuman technologies; though the experiential and ontological lines between perception and mediated environments become porous, the hardware maintains a nonhuman essence in the way it links to the body and processes information.

In traditional ethical enquiry, the 'face' enacts the central signifier of the exteriority of 'the other.' Emmanuel Levinas' definitional ethical writings, in particular, *Totality and Infinity*,[57] approach ethics as being wholly intersubjective. In Levinisian

[57] Emmanuel Levinas, *Totality and Infinity: An Essay on Exteriority*, trans. Alphonso Lingis (Dordrecht: Kluwer Academic Publishers, 1991).

ethics, focus lies on the ways humans come into contact with 'other' humans; humanity becomes ethically bound to itself through the 'face,' the distinct marker of humanity through which "the other—the absolutely other—presents himself."[58] Novel ethical issues emerge when the face is mediated, and when faces are perceived via mediated worlds. In VR in particular, as the Zuckerberg in Puerto Rico incident makes evident, the face of the other is trumped by the promoted experiential novelty for the individual user.

The use of 'face' within virtual simulations has become widespread, creating experiences for the neoliberal user of VR to access the lives of perceived others in order to promote "empathy." These kinds of experiences, including examples such as 'Clouds Over Sidra,'[59] are positioned solely as perceptual experiences for users; the 'face' gets mediated particular ways in order to evoke a predesignated emotional response. Such artworks form what Vivian Sobchack refers to as the "cultural organisations of perception:"[60] through the illusion of encountering 'the other' and being proximal to the spaces presented, the user is given untethered access to the worlds of imagined others. These particular experiences are heavily framed around the individual subject. Indeed, as Rosi Braidotti notes, oftentimes these kinds of applications form part of a dense network of otherness which frame negative difference; sexualised, racialised, and naturalised others act as the specular counterpart of the Subject.[61] This approach maximises on the urge to access promoted in VR discourse; it does not question the right to access – or the political and ethical implications of where access is barred. I argue that an ethics of VR can be established if we push *beyond* subjective experience, push *beyond* a human ethics, and turn towards a posthuman ethical framework. A posthuman positioning sees a move away from the unified at-oneness of subjectivity, and instead focuses on ethical encounters through the non-unitary subject. This non-unitary approach to subjectivity recognises an individual whose affective, embodied, and distributed experience is part of a process of multiple-belongings and becomings; that is to say that the humanist 'subject' does not capture the constant process of which embodiment is part – never shaped fully and consistently changing. As Rosi Braidotti

[58] Levinas, p.203.
[59] *Clouds Over Sidra* is an on-location 360 film of the Za'atri Refugee Camp in Jordan which follows a 13 year old girl through her day-to-day life, dir. by Gabo Arora and Barry Pousman (2015) <http://unvr.sdgactioncampaign.org/cloudsoversidra/#.XmAUVi10dQI>
[60] Vivian Sobchack, *Carnal Thoughts: Embodiment and Moving Image Culture* (Berkley: University of California Press, 2004) p.153.
[61] Rosi Braidotti, *The Posthuman* (Cambridge, MA: Polity Press, 2013).

articulates, we (humans) are "the effect of irrepressible flows of encounters, interactions, affectivity and desire, which one is not in charge of."[62] Such an approach necessarily shifts agency away from the individual, and sees them as part of a web of actors. As we will see, the formulation of a posthuman ethics in the VR space enables considerations of that which escapes the immediate perceptual experience of the user.

Moving Beyond the Human

The representational framings of VR that have been analysed thus far evidence the ways the human subject remains at the forefront of its popular conceptions. It is necessary, then, to consider the ways that depictions and discourses of VR might extend beyond the humanist 'you,' or unified human subject, in order to adapt a language which pays attention to the flows, encounters, interactions, and affectivity of VR experiences. Despite the fact that phenomenological enquiry somewhat depends on the subject as the point of experiencing the world, it should not necessarily depend wholly on interior self-reflexivity: VR should encourage an outward facing reflection not on what has to be gained by the individual, but how it might open experience beyond unified subjectivity. Jaron Lanier's recent work *Dawn of the New Everything: A Journey Through Virtual Reality* narrates the evolution of VR from its early trials in Silicon Valley, to modern day consumer devices. Lanier has been dubbed the "founding father of virtual reality."[63] Despite his scepticism towards social media as platforms for performing self,[64] he maintains his advocacy for VR's humanist potential. The *Dawn of the New Everything* defines VR as a "technology of noticing experience itself."[65] He continues:

> As technology changes everything, we here have a chance to discover that by pushing tech as far as possible we can rediscover something in ourselves that transcends technology. VR is the most humanistic approach to information. It

[62] Ibid, p.269.
[63] E.g. Ryan Levi, 'Virtual Reality's Founding Father on the Beauty of VR and Music,' *KQED* (2018) <https://www.kqed.org/news/11640619/virtual-realitys-founding-father-on-the-beauty-of-vr-and-music> [accessed January 2019].
[64] Lanier's most recent book is entitled *Ten Arguments for Deleting your Social Media Accounts Right Now* (London: Bodley Head, 2018).
[65] Jaron Lanier, *Dawn of the New Everything: A Journey Through Virtual Reality* (London: Bodley Head, 2017) p.55.

> suggests an inner-centred conception of life, and of computing, that is almost the opposite of what has become familiar to most people, and that inversion has vast implications. VR researchers have to acknowledge the reality of inner life, for without it virtual reality would be an absurd idea […] VR lets you feel your consciousness in its pure form. There you are, the fixed point in a system where everything else can change.[66]

Lanier's account here advocates the potential for humans to transcend the bounds of technology, and suggests that VR enables an understanding of consciousness "in its pure form."[67] He suggests that the user is the point of stability during use of VR – going on to state: who is the VR experience for, if it's not for you?"[68]

Recent scholarship in both the posthumanities and affect studies have moved towards articulations of nonhuman actors, or the un-humaning of embodiment, allowing for a greater understanding of technology away from human framing, and instead exploring how the body becomes part of nonhuman processes. Katherine Hayles argues for the human body to be regarded as a prosthesis – that life does not depend on being embodied in a biological substrate. Hayles' genealogy writes the technological actor into a natural evolutionary process of becoming-being. Such a move towards 'becoming' has been forwarded by philosophical thinkers Giles Deleuze and Félix Guattari as a more accurate description of our current ontological situation, which reflects "the endless process of differentiation."[69] Being, for posthuman and affect scholars, does not depend solely on the human subject. In this regard, New Materialist theory also inspires modes of repositioning human subjectivity as enmeshed within a nonhuman world; as opposed to focusing solely on the subjective experience of human beings, and the ways certain bodies access and form the world, New Materialism sees human bodies as part of the material ecology of the world which is constantly coming into being. Karen Barad's outlining of 'intra-action' entails "the complex co-productions of human and nonhuman matter, time, spaces, and their signification […] the human does not act on matter, but rather humans and nonhumans are agential actors in the world as it continuously comes

[66] Ibid, pp.55-56.
[67] Ibid.
[68] Ibid, p.56.
[69] Ella Brians, 'The "Virtual" Body and the Strange Persistence of the Flesh: Deleuze, Cyberspace and the Posthuman', in *Deleuze and the Body*, ed. by Laura Guillaume (Edinburgh: Edinburgh University Press, 2006) p.132.

into being."[70] Some of the more nuanced approaches encompassed within New Materialist theory will be explored in Chapter 3, in order to articulate the ways virtual identity and embodiment are constructed in narratives via complex interactions between "matters inside and outside of bodies, and between the social and environmental conditions in which bodies exist."[71] For now, what these fields offer is a questioning of a persistent ontological framework which continues to place the human at its centre.

Rosi Braidotti's work on posthuman ethics and articulations of difference is centred upon what she refers to as the non-unitary subject. Braidotti's non-unitary subject is inherently posthuman, in that it opens up the categories of same and other beyond the human subject. As opposed to structural otherness, posthumanism accounts for affective and experiential encounters with multitudinous 'others.' Braidotti states:

> A sustainable ethics for a non-unitary subject proposes an enlarged sense of interconnection between self and others, including the non-human or "earth" others, by removing the obstacle of self-centred individualism […] it is a nomadic eco-philosophy of multiple belongings.[72]

In this sense, a mode of posthuman ethics accounts for contact beyond the face-to-face encounter, and instead reconfigures this traditional framing of 'self' and 'other' to account for a "technologically and globally mediated" world.[73] Braidotti's ethics of nomadism is an approach to the life-world which is shaped by its continuous state of becoming. Braidotti refers to this as "bios-zoe:" "the endless vitality of life as continuous becoming."[74] "Zoe" prefaces an understanding of the world which always exists beyond subjectivity; it is through Zoe that we can conceptualise the multitudinous forces and encounters from 'others' as they exist as human, non-human, and earth others. 'Bios' denotes the "specific social nexus of humans."[75] Bios and Zoe, Braidotti states, are "the two competing notions of life coincide on the human body turn[ing] the issue of

[70] Karen Barad in Kameron Sanzo, 'New Materialism(s)', *Critical Posthumanism* <http://criticalposthumanism.net/new-materialisms/> [accessed 25 February 2019]
[71] Ibid.
[72] Rosi Braidotti, *Transpositions: On Nomadic Ethics* (Cambridge, MA: Polity Press, 2006) p.265.
[73] Ibid, p.15.
[74] Ibid, p.41.
[75] Ibid.

embodiment into a contested space and a political arena."[76] This approach to ethical understanding is not specifically located, but implicates embodiment and bodies as they mark multiple belongings.

The posthuman ethical stance of Braidotti is not based on structural otherness, rather, 'Being' is embraced through its interconnections between 'selves' and 'others,' including nonhuman and earth others; self-centred individualism is regarded as an obstacle. This reconfiguration of ethics accounts for technologically mediated worlds. Body-tech assemblages like VR benefit from this reconfiguration, given that they bring the 'humanness' of subjectivity into question because that same subjectivity becomes ontologically dispersed. VR is not necessarily 'otherworldly,' but a material and cultural reality which, if not ethically grounded, risks disguising power structures and prejudices built into the ways virtual encounters are built into its worlds.

This thesis will continue to focus on the affective interconnections of subjectivity with multiple forces in virtual encounters, not what is shown to the subject, but what is felt. Affective interpretation enacts a mode of resistance to technological transparency by acknowledging the ways systems and structures are built into technology, and acknowledging the smearing of subjectivity across material and virtual spaces. Affect tests the boundaries of 'self' and 'other.' A push towards an affective understanding of interactions with virtual environments provides an alternative approach to absolute access, immersion, and infinite possibility that is most prevalent in VR's representational framings and discourses. In an approach which decentres the individual subject and focus rather on processual understandings of posthuman others, it is worth considering applications which explore biological processes at a microscopic level, and the ways VR marks new intersections between human and nonhuman entities. Popular applications, including *The Body VR: Journey Inside a Cell*, *In Cell VR* and *VR Plant Cell 3D Tour* put users inside simulations where they encounter the movement of cells through human and nonhuman beings.[77] These kinds of applications do not valorise human agency in the sense that they extend beyond the humanist frameworks of total agency. Rather, they encourage insight into other ways of seeing the world not through human eyes. However, in most cases, the human user is still distanced or valorised in the process. As opposed to

[76] Ibid, p.37.
[77] *The Body VR: Journey Inside a Cell* (New York, The Body VR LLC, 2016), *InCell VR* (Moscow: Luden.io, 2015), *VR Plant Cell 3D Tour – Biology with NAMOO* (2016) <https://www.youtube.com/watch?v=_Ga3wYIraYg> [accessed April 2017].

being portrayed or embodied within a cell themselves, the user is often placed behind some kind of screen or glass-fronted vehicle which travels through the body—the user being ushered in "come, human" (*In Cell VR*).

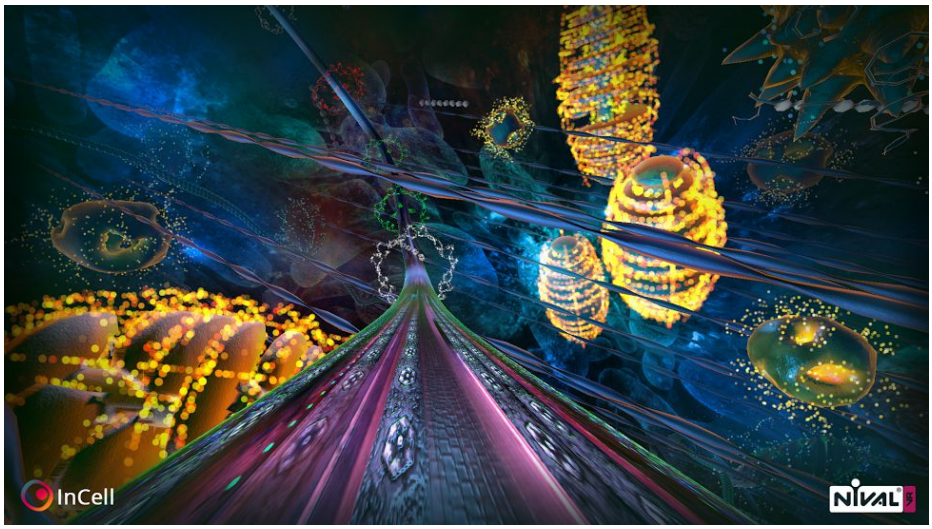

Image 12 *InCell VR*, (Luden.io, 2015) <https://store.steampowered.com/app/396030/InCell_VR/>

VR can most definitely be a useful educational tool in this regard, enabling perceptual access to the underlying processes of human/plant bodies. However, there still remains an underexplored consideration of the ways VR itself influences perceptual and affective bodily processes at a phenomenological level: rather than being implicated as a human in this kind of simulation, what if the user was positioned themselves as a cell? What would this collision with the nonhuman feel like to be present within? Though much of VR's focus is inherently on improving human experience, or understanding further how human cognition and perception works at a kind of primal level, I want to consider the collisions with the nonhuman VR enables, and how VR might be a useful tool for mobilising a posthuman ecological mode of encountering virtual environments.

In the Eyes of the Animal,[78] by Marshmallow Laser Feast (2016), explores the subjective experiences of a number of different organisms, offering users the opportunity to experience a point-of-view experience inspired by the perceptual capacities of various animals. Frederik Molgaard argues that this kind of application explores how virtual reality enables and mobilises a posthuman mode of seeing the world; virtual reality "can potentially alter the point of view of the experiential subject, which points to questions

[78] *In the Eyes of the Animal*, dir. by Robin McNicholas and Barnaby Steal (Marshmallow Laser Feast, 2016).

regarding the potential altering or enhancing effects technology can have on our experiences in- and of the world."[79] The application is available for a wide range of devices. It begins by inviting its users on a "sensory journey, an artistic exploration into the science of seeing."[80]

Image 13 Seeing through the Eyes of the Animal, *In the Eyes of the Animal*, Marshmallow Laser Feast <http://intheeyesoftheanimal.com>

Image 14 Custom Headsets, *In the Eyes of the Animal*, Marshmallow Laser Feast (2016) <http://intheeyesoftheanimal.com>

[79] Frederik Thielke Mølgaard, 'Virtual Phenomenology: In the Eyes of the Animal', *Posthuman Aesthetics: Ethics and Aesthetics of the Posthuman Condition*, < https://open-tdm.au.dk/ph/2016/11/virtual-phenomenology-in-the-eyes-of-the-animal/> [accessed February 2019].
[80] As described on the film website <http://intheeyesoftheanimal.com> [accessed February 2019]

Users are then given four choices of woodland species to view a forest through the eyes of, including a mosquito, a dragonfly, a frog, or an owl. For each option, a small biography, written in the first-person, is given which gives some background details about the ways the vision is put together and how the chosen species experiences the world through its unique sensory apparatus. In the case of the dragonfly, for example, the bio reads "my world extends in all directions, on the wing at any angle, I move through ultraviolet light. I drink images, six frames to every human one."[81] The environment then allows the user to look around the forest, showing it through the lens of the animal they have chosen. In each example, binaural sounds reveal information about the body the user is inhabiting and the ways the sounds of the forest are conveyed to each animal. This in turn, enables the user to sense things around them by hearing multidirectional movements.

The scenes contained in the application are set within select UK forests, where the team collected drone footage and 360 videos in real environments, using scanners to embed the footage into software in order to edit the images and add textures and sounds to the pieces to align with different kinds of animals. LiDAR scanners send out laser beams to capture 3D volumetric data to show where exactly things are in three-dimensional space. Since its release, Marshmallow Laser Feast have done tours around the UK to promote the application, with a number of set ups actually happening within wooded environments, adding to the haptic sensation of engaging with the forest outside of the headset to add complement the simulation shown. The headsets used in the forest hung from trees and were embedded within large black helmets that were coated in grass and bark. All kinds of "unnatural" looking elements of the technology are masked behind a natural facade to encourage audience participation.

These applications give some insight into the ways in which VR is beginning to urge us beyond its humanistic tendencies. In a way, these kinds of application push past what Braidotti refers to as "self-centred individualism," i.e. focusing on the agency of the individual subject/user, and instead illustrates the ways VR can be used in a communal setting to promote points of view that are not human, and do not encourage or valorise user empowerment. In this regard, VR isn't about being human-centric, but opening up points of view that challenge framing, or seeing the world for and by the human subject.

[81] Ibid.

This chapter has given insights into VR's current framings and critiqued the persistence of absolute agency and access as the technology's central goal. It has introduced some of the ways we might unthink these prevalent ideas: how agency is compromised, how transparency exceeds the interface and bleeds into domestic spaces, how nonhuman agents are implicated, and how applications oftentimes evade ethical critique. Framelessness, I want to suggest, equates to an ontological porousness that is more complicated than 'absolute access;' it might raise questions that go beyond immersion as a holistic goal, but challenge its resistance to ethical realities. By introducing the phenomenological understanding of 'enframing,' the chapter has explored how we might extend understandings of frames within the VR space. Sara Ahmed's queer phenomenological approach provides a valid approach to access as never wholly given – and the ways worlds pull away from subjects. In so doing, we might be able to establish a (dis)orientation of VR – one that considers actors beyond the human agent. In capturing VR as it has evolved into a consumer market, it will be possible to delve further into its particular embodiment ties in the following chapter. Depictions of simultaneous presence and absence do little to attend to VR's affective potential: despite the fact both the technology and the body are central in its representations, depictions of VR during use disguise the processes that emerge between the two sites of embodiment and hardware.

Chapter 2

Presence and the Phenomenology of the Flesh

Sections of this chapter feature in the soon-to-be-published 'Unhuman Agency: Reading Subjectivities in Playdead's *Inside*,' *Game: The Italian Journal of Game Studies*, 8 (pending publication, 2020).

Skin: organicity; heimlich; identity; humanity; ethical face-to-face; specificity; being-in-the-world; containment; embodied at-oneness.

Flesh: always becoming; unheimlich; non-identity; nonhumanity; faceless; elemental; non-specificity; being-with-the-world; fluidity; disembodied multiplicity.

The first chapter contextualised framelessness in relation to VR as a phenomenon that does not produce or adhere to transparency and/or clarity, but instead to *unruliness*. Individualism, effortlessness, and the pristine all prevail in VR's popular discourses, and yet they are wholly insufficient conceptualisations of what VR is, does, and can be. The turn towards collective and experiential phenomenology in the second half of Chapter 1 introduced some theoretical groundings that consider the ways access, blockages, and compromised agency inevitably form the boundaries of experience; the chapter made the case that these boundaries are important units for the analysis of VR specifically. In this next chapter, the boundaries of agency and access remain central. The chapter will look to narratives which truly realise and emphasise these boundaries in relation to embodiment and the body's interaction with imagined novel technologies. This chapter begins the thesis' turn towards a set of frameless fictions which put the thesis' central aspects into action, including: the complex interrelations of embodiment and immersive technologies; the emergence of strange affects; and the consideration of the role of nonhuman actors in the production of virtual environments. By frameless fictions, I refer to a set of fictional texts that illustrate the ways framelessness plays out in various experiences of mediated environments, where human agency and access are challenged, and technologies break away from their intended functionality. Such texts reveal the material realities of presence and immersion in virtual environments, and give credence to the embodied and affective realities of being *with* technology.

Aside from the narratives of exponential growth in the selling of digital technology (financial; experiential; hedonistic), we might consider blockages, ruptures, and hurdles

as inevitable and rich elements of our relationship to new media technologies. This chapter's approach to growth will instead focus on materiality and slow and unfurling mutation. This chapter will argue that mutation best captures the unique capacity for VR to rupture humanist ideals of subjectivity, rather than enhance them (as seen in chapter 1). Mutation is unruly. It does not adhere to patterns, nor to expectation, but rather emerges under surfaces and causes an ontological shift as one being *becomes* another. N Katherine Hayles stated in her writing on 'The Condition of Virtuality' that mutation marks "the decisive event precipitating a changed subjectivity in a virtual age."[1] For Hayles, mutation is inherent to the changing dialectics of embodiment and technological interaction; her theorisation of 'virtuality' marked a shift in understanding embodiment not as a given pattern or encoding of the human, but as a complex experiential mode of being that is always-becoming with the tools it interacts with. Mutation, Hayles argued, is realised when

> randomness interpenetrates and precedes pattern. Mutation occurs when pattern can no longer be counted on to replicate itself, when pattern's disruption by randomness becomes visibly evident in the body.[2]

The emergence of randomness within new media discourse marks a shift away from containment, individualism, and expectation, precipitating a move towards the unruly and emergent. In fact, Hayles argues that randomness and mutation are a result of a move away from presence and absence, towards pattern and randomness.[3] This chapter turns to flesh as it stands in for the mutation of subjectivity within the evolution of virtual environments. Flesh, I argue, is the realisation of framelessness as it exists at the limits of fixed ontological matter.

As we saw in Chapter 1, presence and absence comprise the predominant framings of VR in the consumer market, namely that users are depicted as being either side of the presence/absence coin, but never in-between. Flesh enables a new formulation of presence in the VR space, not as the sensation of feeling part of a virtual environment, but instead of being made more aware of the presence of the materiality of

[1] N Katherine Hayles, 'The Condition of Virtuality' in *The Digital Dialectic* p.80.
[2] Ibid, p.79.
[3] Paraphrased from Ibid.

the body as it affectively responds to the environments produced by the hardware. Such sensations of material presence allude to the thematics of mutation, because the body is strewn between both physical and virtual spaces in such a way that the neat ontological framings of VR are broken down. The messy materiality of VR, and the body, persist. Rather than valorising the floaty immateriality and limitlessness shown in VR's popular framings, this chapter pays attention to the ambivalent slippages that emerge in virtual environments; it begins in the in-between, where the emergence of affective and embodied encounters with virtual worlds reveal that the smooth discourses and representations of VR are reductive to the niche and unruly interactions this technology actually makes possible. In order to achieve this, this chapter will focus on science-fiction and body-horror narratives, whose eerie depictions of *mutation bodies* provoke very material imaginings of 'presence.'

Chapter 1 indicated that presence emerges in representations of VR not as a feeling of *being there*, but of an absolute being *here*, where the depictions of bodies in stasis that seem *more* material because they are rooted by hardware. This chapter continues to explore presence-as-materiality beyond the representational, and instead considers its affective and embodied implications. All of the collective moments where VR users have tripped over wires, trodden on an onlookers' feet, struggled to make the hardware fit comfortably over their heads, experienced motion sickness— these are unruly moments that mark what can be referred to as a 'breakdown,' a concept inspired by Martin Heidegger's *Being and Time* (1953). The 'breakdown' refers to the instances whereby tools break away from their intended uses, or what Heidegger calls the "in order to."[4] Heidegger considers the ways that tools and equipment "withdraw" themselves from being "ready-to-hand," by which he means that objects do not achieve their intended functionality;[5] a moment of breakdown does not mean that there is a literal breakage, but a break away from intended use to achieve a certain end. In their work *Understanding Computers and Cognition* (1986), Fernando Flores and Terry Winograd define the 'breakdown' as:

[4] Martin Heidegger, *Being and Time,* translated by John Macquarrie and Edward Robinson (Oxford: Blackwell, 1962) p.98.
[5] Ibid, p.101 Heidegger himself defines "readiness to hand" as "the way in which entities as they are 'in themselves' are defined ontologico-categorially" (p.101). In this sense, Heidegger alludes to the use of tools as a kind of framing – a way through which to prescribe objects with a specific (human) use, and, in so doing, ignoring the essence of the objects "in themselves."

> the interrupted moment of our habitual, standard, comfortable being-in-the-world. Breakdowns serve an extremely important cognitive function, revealing to us the nature of our practices and equipment, making them 'present to hand' to us, perhaps for the first time.[6]

It is in this regard that the *presence* associated with VR might be reconfigured to account for its presentness-to-hand, its vivid materiality, and the ways our comprehension of materiality is heightened during VR use. In the moment that a VR headset does not initiate unlimited access to otherworldly environments, the body and the technology become more present – they become affectively heavy because we notice they are there. By paying attention to the instances where VR breaks away from its central mandate to immerse the user in a wholly accessible world, we are able to better understand the nature of VR and its affective implications for the body.

With these ideas in mind, this chapter focuses on the blurring ontologies implicated within virtual environments, and how the popular understanding of presence as the *feeling of being somewhere else* (as explored in the introduction and first chapter) might better be configured if we acknowledge the sensation of the *being there, but not quite*. The materiality of VR hardware and the body root us to the here and now; when we experience strange sensations in VR, we are reminded of the roles our bodies play in the production of virtual environments, and in making them affectively present. This chapter acts as a kind of intervention to the popular imaginings of VR that we have seen in the previous chapter. Turning to texts outside the VR space, this chapter looks closely at fictions which capture the emergence of carnal, bodily presence during unruly encounters with, or within, virtual environments. Looking at some examples of science fiction and body-horror narratives, including Alice Sheldon's (James Tiptree Jnr) *The Girl Who Was Plugged In* (1973) and the 2016 videogame *Inside* (Playdead), this chapter argues that more can be revealed about the true capacities of VR when the body does not interface successfully with proximal technologies. As we will see within these narratives, the flesh emerges when bodies and technologies interact in unruly ways. It is the flesh, I argue, that the realisation of framelessness, and how we might consider framelessness in

[6] Fernando Flores and Terry Winograd, *Understanding Computers and Cognition: A New Foundation for Design* (Wokingham: Addison-Wesley, 1987) pp.77-8.

relation to VR, emerges: flesh marks the strange sensations of being in the *in-between*—between the here and there, the human and nonhuman, the body and the machine.

In recognition of a mode of phenomenological enquiry rooted in the materiality of the body, this chapter goes on to attest to what the 'phenomenology of the flesh' can offer to our understandings of presence and VR. The phenomenology of the flesh was configured by Maurice Merleau-Ponty (1964) and continues to influence contemporary writings on the philosophy of the body and embodiment. The flesh marks a decisive move away from the imagined concept of unified subjectivity, and instead marks an immersion in matter. The flesh enables us to push beyond the seductive individualism sold in VR's popular discourses. In order to attest to the ruptured (human) subjectivity illustrated by flesh, this chapter looks closely at the figure of the 'unhuman.' As previously introduced, Dylan Trigg defines the unhuman through the "human and nonhuman [being] within the same body."[7] The unhuman enacts a subjectivity where multiple agents co-emerge, and provides an opportunity to make present the complex entanglements between embodiment and technological actors. It is in taking time to establish these central ideas of presence, the flesh, and the unhuman, that this chapter necessarily moves away from VR technologies: narratives created for other mediums have something to offer VR in the current stages of its re-emergence in the consumer market. By stepping away from VR, we can become better able to configure a set of frameless fictions which share and illustrate some elements of its potential affects.

Combining the phenomenology of the flesh with a number of narratives which see the flesh emerge through unruly interactions with technology, this chapter explores frameless fictions which push beyond transcendence, seamlessness, and disembodiment. Instead, the chosen texts emphasise, and even exacerbate, their potentials to produce affect through unsettling interactions with the flesh. Before going into the specificities of this chapter's approach to flesh, I want to turn to a frameless fiction which clearly depicts unruly and unsettling iterations of presence, and reveals evocative mutations of its neat etymologies. I want to explore Alice Tiptree's narrative as a starting point, an introduction to this chapter's central themes in action. *The Girl Who Was Plugged In*[8] provides a rich narrative which captures the material entanglements of the characters and the technological interfaces they are plugged in to. This text, I argue, is a frameless

[7] Trigg,
[8] James Tiptree Jr, *The Girl Who Was Plugged In* (New York: Doubleday, 1973).

fiction precisely because it alludes to the strange oscillations the protagonist experiences when attempting to interface with technology—her embodiment is smeared between a here and there. The text eradicates the notion of a seamless interface; there is a move away from an inherent association of technology with productivity, efficiency and smoothness. Rather, focus is placed on the strange sensations and experiential collisions between a physical here and a simulated there; there is no total access, but rather a *smearing in between.* As Chapter 1 has explored, we are constantly sold the illusion of total access in new, unbounded worlds. We are told to 'leave the world behind,' to "enter a whole new world."[9] But what if we can't enter? What if our access is pulled away? What if our orientation towards the world is not based on access, but a lack of it? Tiptree's novella, I argue, uses the physicality of the human body to reveal its brute rootedness to a here, and lack of access the façade of an idyllic there. Tiptree uses the human body as a site through which to consider how corporeality manifests in an *in between* phenomenological space. It also necessarily illustrates how this space constantly pulls away from the technocapitalist power structures that created it.

The Girl Who Was Plugged In (1973)

The Girl Who Was Plugged In is a novella written by the author Alice Sheldon, under the pseudonym James Tiptree Jnr, in 1973. For all of its accolades as a work of science fiction, most notably its being awarded the Nebula Prize, this novella has remained relatively underexplored. It has been analysed in relation to its exploration of gendered labour and its early imaginings of cybernetics,[10] but little has been written about the complex articulations of embodiment, mutation, and unruly affect that are realised throughout the narrative. It is with Tiptree's narration of bodily presence and unruly affect that I use the novella to begin this work. The analysis that follows will look at the unique grammars that she deploys in her narration of the body's resistance to technology. Following this interim analysis, and with the ideas realised through Tiptree's

[9] HTC Vive.

[10] See Heather Hicks, '"Whatever It Is That She's Since Become": Writing Bodies of Text and Bodies of Women in James Tiptree Jr.'s "The Girl Who Was Plugged in" and William Gibson's "The Winter Market"', *Contemporary Literature*, 37.1 (1996) and Melissa Stevenson, 'Trying to Plug In: Posthuman Cyborgs and the Search for Connection,' *Fiction Studies,* 34.1 (2007) – both of which will be returned to in the analysis of Tiptree's novella.

text, the chapter goes on to consider the phenomenology of the flesh and its relevance for thinking through the affectivity implicit in our use of immersive technology.

Tiptree's novella is centred around the character of P Burke, the "groggy girl brute"[11] who, after attempting suicide, is taken in by a corporate entity called GTX. GTX offer P Burke the opportunity to become a cyborg controller, where she is given the opportunity to operate the perfect "girl body" of Delphi, a beautiful humanoid cyborg created to function as an embodied advertising mechanism. The embodiment ties between P Burke and Delphi become messier as the novella progresses, as ruptures between P Burke's here and there emerge. But what Tiptree's prose emphasises is the affective and emotional ties of the two characters as P Burke's subjectivity is smeared between her body *here* and Delphi's perfect body *there*. Where P Burke and Delphi maintain very specific presence throughout the narrative in the ways that they exist as bodies within the world, the GTX corporation remains seemingly absent—or eerily present—at the side-lines of the narrative; this is despite the fact that it is arguably the central agent within the text. Presence emerges in a variety of different ways, all of which rely on inherent failures, and the disturbingly evocative rupturings of technology and its interfacing with the human body.

P Burke is a subject who is also constantly monitored by a range of nonhuman entities; such monitoring is embedded within the mandates of modern technocapitalism, and virtual reality is no exception. The descriptions of P Burke's monitored control over the perfect girl-body of Delphi shares some of the desires that virtual reality has become associated with: that one might be able to seamlessly control the body of another through mapping body movement into a simulated there-space. Yet Tiptree's work challenges the *givenness* of this other body and raises important ethical questions about bodily access, whether this is concerned with eradicating bodily difference, or becoming an object of corporate gain. These ethical notions are ever more important when VR is sold to us as providing unlimited access to experiences (and this will be explored more thoroughly in Chapters 3 & 4).

In the context of *The Girl Who Was Plugged In,* Heather Hicks likens the theme of entering the embodied subjectivity of another in the novel to Sheldon's embodying "the

[11] James Tiptree Jr, p.1.

sham body of Tiptree."[12] Hicks considers the implications of the publication of Sheldon's work within a market that historically subjugated female authors; she argues that by embodying James Tiptree, Sheldon allowed herself more agency over her own work and its success in the publishing market. Melissa Stevenson also notes that *The Girl Who Was Plugged In* "is a tale written by an author who was not exactly who 'he' seemed to be."[13] Indeed, these issues of agency and embodiment are crucial facets of the novella, and reveal the deeply personal elements of the narrative relating to gender, normativity, and privileged embodiment. But the true innovative powers of Tiptree's fiction are realised in her narration of the complexities of presence as it is ontologically rooted—that is to say that Tiptree's vivid evocations of embodiment and its interfacing with technology realise the liveliness of carnal presence. Presence is not shown through its interpretation as a sensation of 'feeling-there' when experiencing the world through the eyes of another. Rather, presence becomes the act of rupture in the 'being-here:' when one's is asked that their own subjectivity be compromised for that of another, unusual, and messy interfaces between the here and there emerge. I use Tiptree's novella here as an interim analysis of the ways 'presence,' a term which has become so associated with seamlessness and functionality, is an inherently messy, ontologically rooted, and affective phenomenon.

The contrasting articulations of mundanity and lifelessness vs novelty and liveliness constantly shape the ontological presence of each character present within the *The Girl Who Was Plugged In*. In each case, there is an infusion of human and nonhuman forces which shape the lived reality of Tiptree's world, all of which produce their distinctive chasms between one another. Indeed, the reader is pulled into the thematics of re-embodiment from the beginning of the text; the novella begins through an extradiegetic dialogue between the narrator-author and the reader, where they are referred to as a "zombie." The figure of the zombie functions as a signifier of complacency, human agents compromised by a higher power. The author speaks to the reader:

> Look, dead daddy, I'd say. See for instance that rotten girl?

[12] Heather Hicks, '"Whatever It Is That She's Since Become": Writing Bodies of Text and Bodies of Women in James Tiptree Jr.'s "The Girl Who Was Plugged in" and William Gibson's "The Winter Market"', *Contemporary Literature*, 37.1 (1996) p.75.
[13] Melissa Stevenson, 'Trying to Plug In: Posthuman Cyborgs and the Search for Connection,' *Fiction Studies,* 34.1 (2007) p.95.

> In the crowd over there, that one gaping at her gods. One rotten girl in the city of the future. (That's what I said.) Watch.[14]

From here, Tiptree's narrative toys with the reader's role in the story – i.e. whether they are passive or active in the unfurling plot: the reader is described as holding onto a growth-stocks portfolio with "hands leaking sweat,"[15] a hint toward the mundanities of the corporate world in which they find themselves. The reader, as well as those others moving through the world in the background, are complacent actors. Direct references to the reader as things like "zombie," "doubleknit dummy," and "dead daddy" are dispersed throughout the novella, for example:

> Believe it, zombie. When I say growth I mean growth. Capital appreciation. You can stop sweating. There's a great future there.[16]

The reader somewhat embodies the role of the lifeless observer, experiencing the strange mundanities of the world, though it is clear that there is more than meets the eye. Their carnal presence is infused throughout Tiptree's intricate prose; all allusions towards the reader implicate them as unconscious units of flesh scattered across a lifeless landscape.

The central localé of the text is the "city of the future", the "boiling megacity," an overcrowded yet dismal landscape where the "crowd moans. Love" (p.1). The people of the city worship custom-made gods, humanoid creatures of corporate celebrity. The humanoids represent the more-than-human counterparts of the lifeless human "dummies" whose bodies populate the streets. Contrastingly, the character of P Burke is immediately introduced as standing out from the crowd residing in the city of the future, where she is "jammed among bodies, craning and peering with her soul yearning out of her eyeballs" (p.1). The narration spatially depicts the cityscape as if the narrator and reader are moving through it: "that's right. NO ADS. An eyeballer for you. Look around Not a billboard, sign, slogan, jungle, skywrite, blurb, sublimflash, in this whole fun world" (p.2).

[14] Tiptree Jnr, p.1.
[15] Ibid, p.2.
[16] Ibid, p.31.

Tiptree's narration of the environments of her story evokes a certain kind of physical presence, that is affectively experienced by the reader as they move through it. Despite its seaming mundanity, the technology that resides in the space is placed perceptually to the side; focus instead is placed on the affective depictions of people, their movement, and in particular, the carnal presence of P Burke. From the outset, and as we will come to see, she is defined solely through her vivid, bodily presence. It is the narration of P Burke's rupturing bodily presence that I explore in the first instance as a way of representing the carnal presence of flesh which is central to this chapter. With the imagery of Tiptree's narrative in mind, we might better conceive of the affective relations that intimate technologies like VR are able to forge. *The Girl Who Was Plugged In* is a narrative which recognises the persisting presence of the body, particularly when the desire sold to its users is bodily transcendence.

Tiptree satirises the seamlessness of her cityscape; human beings and the technologies and infrastructures that permeate the city seamlessly integrate. Tiptree's representation of the city provides an alternative to the kinds of cybernetic cities engrained into a public imagination under the influence of earlier cyberpunk writers like William Gibson, Pat Cadigan and Neal Stephenson—where dazzling architecture and bright lights are the central features of futuristic worlds. Unlike these imaginings, Tiptree's world isn't fantastical, overwhelmed by fluorescence, stark images and architectural innovation. The city that Tiptree depicts is, instead, premised on visual neutrality and a 'blending in' motif: nothing stands out; rather, everyone and everything is encouraged to aspire to banality. P Burke, Tiptree makes very clear, does not fit into the established frameworks of the city that surrounds her. By making the world relatively calm and simplistic, P Burke's bodily presence later becomes more emphatic as it resists the seamless frameworks set up earlier in the narrative. Rather than the presence of the environment, embodiment becomes the locus of presence in the novella – something, we will come to see, may reconfigure popular notions of embodiment and presence in VR practice and discourse.

The underground corporate control system of GTX is alluded to when the movements of "the gods" are continually exported and surveilled by GTX. The gods referred to in the narrative are the cyborg people that P Burke comes to become as Delphi, "custom made" humanoids who move through the world perfectly. Subtle references are made to "her gods" (p.1), those who she aspires to be, but will come to control her under

the guise of the beautiful Delphi. These figures are shown to be those "dressed like simple street-people but…smashing" (p.1). Their seamless integration within the environment, "just like people" (p.2), enables them to function unseen: though their hands are described as "lifting shyly", they are contrastingly "smashing" – beholding the agential forces of the obfuscated technological network that controls them. Tiptree's use of parentheses provides short snippets which provide access to the control system hiding behind the disillusioned cityscape: "(in a room far from—but not connected to—the GTX tower a molecular flipflop closes too, and three account tapes spin)" (p.2). This allusion to the technological workings occurring in the background reveal the materiality of the infrastructure which records and stores the data collected from the humanoid Gods as they move through the world. The embedded narration of the obfuscated network typologically represents their obscurity in the world painted by Tiptree's narrator: the written prose continues to seamlessly walk the reader through the world without disruption from the black boxed system it walks across. The corporation, GTX, remains invisible to the eye; its presence is not felt in the city, it is rather overpowered by the façade of the city "garble." The narrator, looking at the GTX tower says: "what they do like up there is to have things orderly, especially their communications. You could say they've dedicated their lives to that, to freeing the world from garble" (p.3). Seamless network operation remains the premise, a consistent desire for the system to eliminate messiness and the garble of unruly affect.

The overt perfection and beauty of the humanoids becomes the embodiment of GTX's desire for order and complacency. Their shells perform as living advertisements, moving through the world in order to recommend brands to their human counterparts. They are described as possessing "divine flesh" (p.20), and their ethereal descriptions give them a weightlessness; in a sense, Tiptree's prose makes the presence of the humanoids light and cold, they lack an affective weight in Tiptree's otherwise affective prose. Yet, unruly affects seemingly prevail in the novella. Ruptures between body/world/technology begin to subtly unfurl. Indeed, when describing the aforementioned garble of the cityscape, the narrator uses terms related to embodiment and flesh, referring to the desire to prevent the "haemorrhages of information" (p.3). This image gives a liveness and growth to information, bringing together the messy entanglement that P Burke will eventually embody as she interfaces with Delphi. The haemorrhages mark a certain kind of carnal presence emerging when the flow of the

system is disrupted. It is this kind of language of technology and organicity that we might take from Tiptree's work in order to articulate the vivid materiality of both the body and technology in the otherwise transcendent narratives of VR, something that the rest of this chapter, and the thesis at large, will consider, in the unruly interactions forged between VR and the body.

The intertwining of flesh and technology become the defining facets of P Burke's presence, who maintains vividness in the text as "the ugly of the world" (p.2). Though the cityscape remains subtle, P Burke enacts the imagined bulking architecture cyberpunk would be expected to implant into its own worlds, being described as "a tall monument to pituitary dystrophy" (p.2). P Burke's embodied presence is portrayed as a "moment." Unlike the abstract environment around her, it is P Burke's body which is seen as a hardened mass of bodily flesh, her jaw "almost bites her left eye out." (p.2) Tiptree's descriptions of P Burke's body are far from sympathetic, reaching towards the grotesque, her limbs presented as "jumbled" and "mismatched." Her movement through the world is similarly chaotic, and she is captured "stumbling into people." (p.2) Her movements are anything but seamless; she struggles through a world that doesn't work for her, "cross[ing] trip[ping] and collid[ing] with the casualty rail" (p.2) across a moving walkway which marks the mapping of seamlessness into the city's architecture. Not dissimilar to the reference to information haemorrhages, descriptions of P Burke's carnal presence fluctuate between human and nonhuman references. Her eyes are described as "bug[ging] out grotesquely," and her embodiment becomes aligned with technological error or glitch. Where the world around her is premised on seamlessness, P Burke enacts a rupturing of the flow, a fleshy haemorrhage, within the depicted landscape. Yet this allusion to "bugging out" is a nod toward her future as she will become a melding "of flesh and metal" (p.4). GTX recruit P Burke as a "human" remote which will be used to control the "perfect girl body" of the live avatar, Delphi. She is submitted to rigorous training practice in order to pass off as a "real" human when embodying the avatar:

> The training takes place in her suite, and is exactly what you'd call a charm course. How to walk, sit, eat, speak, blow her nose, how to stumble, to urinate, to hiccup—DELICIOUSLY. How to make each nose-blow or shrug delightfully, subtly different from any ever spooled before. As the man said, its hard work. (p.5)

P Burke is trained how to function and move through the world "deliciously" – not in her once regarded as messy and monstrous manner, but to carry herself through the world in a normalised, able bodied, and seductive way. Her movements become units which are monitored by the corporation, who have promised her salvation by allowing her to 'fit in' to a world she has always struggled to feel part of. This opportunity suggests that the imagined technology can actually eradicate bodily difference: real-world embodiment becomes a sequence of glitches, and GTX offer the opportunity for technology to offer something more 'perfect' than the real world. The call to transcendence, as we saw in Chapter 1, offers to go beyond the limitations of lived experience. In so doing, embodiment and affectivity is completely erased.

Lindsey Felt pays particular attention to Tiptree's narration of embodiment and issues of access in her article 'Cyberpunk's Other Hackers: The Girls Who Were Plugged In' (2019).[17] Paying attention to the ways Tiptree narrates P Burke's disability, Felt attests to the ways such portrayals are "tied to a cybernetic conception of noise and error as valuable byproducts of a body's encounter with communication devices."[18] Not dissimilarly to the concerns of this chapter at large, Felt's analysis of *The Girl Who Was Plugged In* emphasises the "frictions between users and their machine interfaces" and "materialises unexamined performances of critical labour."[19] As noted in the thesis' introduction, users and their bodies contribute to the creation and disruption of the experiential goals of immersion and presence. As opposed to marking a form of bodily transcendence, Tiptree's work disrupts notions of the technologically enhanced body, through "the impetus of supplementation [and] technological prostheses [to] transience one's given abilities, or render the unenhanced body disabled."[20] Rather, the disruptions realised in the novella offers alternatives to the cyberpunk imaginings of "loathsome flesh" which "rely on a flawed logic that stigmatises disability and parses non-normative female bodies as disabled."[21] These kinds of discourses and presumed ableism continue to permeate the immersive space. I argue that Tiptree's work, and the frameless fictions explored in this chapter, realise the flesh as enacting a resistance to technological and bodily seamlessness, instead favouring ambivalence and slippage.

[17] Lindsey Dolich Felt, 'Cyberpunk's Other Hackers: The Girls Who Were Plugged In,' *CATALYST: Feminism, Theory, Technoscience*, 5.1 (2019).
[18] Ibid.
[19] Ibid.
[20] Ibid.
[21] Ibid.

In many ways, Tiptree's text functions as an ecological narration of P Burke's interactions with the environment around her. Indeed, the narrative allows the reader to access the ways in which her interfacing as a remote controller of Delphi's body is very specifically and affectively charged. Her body is depicted as less-than-human, using the language of circuit transmission to describe her relationship to Delphi's perfect body. This cybernetic discourse complicates bodily agency, relying on affective descriptors in order to capture the unsettling coming-together of P Burke and Delphi:

> When you wash your hands, do you feel the water running in your brain? Of course not. You feel the water on your hand, although the "feeling" is actually a potential-pattern flickering over the electrochemical jelly between your ears. And it's delivered there via the long circuits from your hands. Just so, P. Burke's brain in the cabinet feels the water on her hands in the bathroom. The fact that the signals have jumped across space on the way in makes no difference at all. (p.6)

Bodily sensation is likened to the functionalities of signals and circuits, where flesh enacts the space through which signals travel to the brain. When P Burke gains curiosity about the technology enabling her to behold power over Delphi's body, she is informed by the self-righteous GTX scientist Joe that the android bodies are grown in a "flesh department" (p.6). The humanoids are likened to "vegetables" which are left to flourish before being paired to a Remote Operator. Little care is given to P Burke; the scientists find beauty in her ability to seamlessly integrate with a system they have put together. She isn't regarded as a body, a human: she is simply part of an unfeeling wider technological assemblage.

There is a perceptual contrast depicted in Tiptree's writing between the embodiment of both Delphi and P Burke: where P Burke is treated inhumanely, her humanness seeps out through her organicity, her fluid movement, her flesh. Delphi, on the other hand, is precisely not human because of the way she functions perfectly in the world. She lacks messiness, and this marks her inhumanness. Delphi is the embodied framing of an idealised feminine beauty, described in the novella as a "porno for angels" (p.5); P Burke's sensation of being part of Delphi sees her "sit there hugging her perfect girl body, looking at you out of delighted eyes" (p.5). Yet simultaneously, P Burke is smeared across two different plains, being pulled between the here and there: she is

"smothered in two bodies, electrodes jerking in her flesh." (p.5) The operation, seen from the reality inside, is anything but beautiful. The descriptions of P Burke being "smothered" in two bodies enables the reader's affective access to the entanglings of flesh and technology that congeal the characters and prose together. Delphi is built to perform the perfect interface, disguising the complex system that enables her to function in the world.

At this point, we have seen P Burke be sold the illusion of being able to uproot herself from her own bodily materiality, instead moving through the world "deliciously" as humanoid Delphi. In any case, although P Burke is seduced by the idea of being able to embody idealised feminine beauty, Tiptree's narrative locates the reader at the cusp of the experiences of both Delphi and P Burke; Tiptree narrates the affective and material assemblage which makes this operation possible. Though Delphi's movement through the world is depicted as wholly weightless and immaterial, P Burke's body and its entanglement of wires and flesh becomes part of a grim assemblage that still feels and touches despite its projection into the control of Delphi. What Tiptree's work does so uniquely is to exaggerate, but make wholly visible, the materiality of interacting with world and self-building technological infrastructures. Though *The Girl That Was Plugged In* is not representative of VR specifically, the narrative calls attention to that which exists beyond the façade of disembodiment and transcendence. It is from this same perspective that this thesis is positioned, in its central argument that the body and embodied affectivity are central to the production of, and experiencing of, virtual environments. The power of Tiptree's horrific prose is that it fully realises the corporeal presence of the body in a way that questions the ethics of trying to forget its existence, something that Chapters 3 & 4 will come to consider in more detail.

P Burke is given unlimited access to a world which she was never able to, with "parties—clothes—suncars" (p.9). As a consequence, "in P Burke's starved seventeen-year-old head the ethics of the product sponsorship float far away" (p.9). Here, her immersion in the body and life of Delphi, where she is given access to all of the most elaborate material goods, sees P Burke leave behind any notion of the problematic systems that are at play. Being able to fit in and receive instruction to operate the body of the glamorous Delphi becomes more about the access she now has, as opposed to her compromised agency as P Burke, the "grim carcass" (p.11). She has to adapt to an unfeeling body which is far less affective than her own:

> She's always known Delphi has almost no sense of taste or smell […] And that slight overall dimness of Delphi's sense of touch—she's familiar with that, too. Fabrics that would prickle P. Burke's own hide feel like a cool plastic film to Delphi. (p.11)

In terms of bodily feeling, operating Delphi massively reduces P Burke's lived experience. Yet in other ways, Delphi expands her horizons because of her pleasing appearance. Delphi gives P Burke access to a more fulfilling, warm experiences such as falling in love with Paul. Though she is given access to the experience of love, she is unable to physically feel the sensations and is under the strict protocols prescribed to her by GTX. P Burke's bodily autonomy is compromised for the freedom to be loved and desired by others, and as a consequence, "she's slow about discovering there's certain definite places where her beastly P Burke body feels things that Delphi's dainty flesh does not" (p.11). P Burke is unable to truly be in and part of Delphi's constructed, only half feeling corporeality. Yet to others, her control of the shell of Delphi is totally convincing—she is able to adapt to her new corporeality with "no disorientations, no rejections" (p.13). She is a skilful operator, "going into Delphi like a salmon to the sea." (p.13) So whilst the experience of controlling Delphi is easy on the part of P Burke, it remains disorientating as she comes into contact with the ethical reality of her situation. Should she question the "gods" who saved her life and have given her an opportunity to live again in a 'new and improved' body?

P Burke's success is ultimately measured by her seamless adaptation to the technology with which she is connected, and imparting control over Delphi which is error-free. Yet, in so doing, her sense of feeling and affectivity is wholly compromised. The messy materiality 'outside' the shell of Delphi continues to exist, and P Burke's own bodily autonomy is completely compromised. The persistence of the flesh comes to represent the far-reaching issues of agency and access where one assumes the position 'stepping into' the body of another, something VR prizes itself upon. The emphatic errors representing in the novella enable this 'stepping in' to be disrupted, and instead mark the smearing of an ontological here and there into an unruly and affective in-between space.

Despite the seamless interactions that P Burke maintains with Delphi, reminders of the unruly flesh powering the system persist. The narrator pulls the reader away from

the misleading perfection, to describe "P Burke the monster, down in the dungeon, smelling of electrode-paste. A caricature of a woman burning, melting, obsessed with true love" (p.20). As she falls in love with Paul through Delphi's "girl-flesh", she comes to hate her own body and the "beast she is chained to" (p.20). Her physical sensations are limited, and she is unable to fulfil her desires of intimacy with Paul. She is reminded that "remotes don't love. They don't have real sex, the circuits designed that out from the start." (p.23) Though the remotes are built to be adored, they cannot experience the physical and affective sensations of contact. When Paul realises that Delphi is being controlled by GTX, Delphi is for the first time seen as the not-human figure of the story. When asking for Delphi's reassurance, "he [Paul] doesn't know it but he's seeing a weirdie. Remotes aren't hooked up to flow tears" (p.21). For the first time, Delphi is uncategorizable. She is no longer simply a beautiful girl, but is "a weirdie:" she becomes the not-quite, between human and machine, on the verge of a functional rupture under the intense pressures of P Burke's trauma. Even when P Burke is given such autonomy and freedom in the body of Delphi, Paul grapples with his power over her, asking her to break out of GTX: "you're mine. They can't have you." (p.22)

As Paul gets closer to understanding the reality of Delphi's existence, the apparent lines between the feeling P Burke and the "cold" Delphi seem to meld into one another. Delphi goes from "a nervous little statue" (p.24) to sobbing uncontrollably when Paul discovers that she is really an avatar under the control of GTX. P Burke's emotional and physical responses leak through into the unfeeling system—a leaking of flesh and cybernetic wiring where affective responses pool through multiple bodies. At this point of rupture in the story, we see P Burke/Delphi maintaining the most agency: the system has, to a degree, been broken. Delphi breaks out of the coded system of which she is part through the sheer power of P Burke's emotional outburst. P Burke achieves something that was never anticipated by the system, and thus breaks into new terrains of possibility untethered from GTX and Pauls' power over her/them. Yet, as Paul reaches P Burke at the GTX tower, she calls out to him, "croaking." The novella's ending turns to the grotesque most overtly, providing a gruesome image of P Burke reaching out for Paul from her wires and tethers, flesh oozing. Paul responds to the "monster rising up" (p.29) shouting at P Burke to "get away;" the narrator turns to the reader, asking: "wouldn't you, if a gaunt she-golem-flab-naked and spouting wires and blood came at you clawing with metal studded paws?" (p.29). The reader is placed in close proximity to P Burke's fleshy

presence—they experience the shock with Paul as he discovers Delphi's life source. Flesh and wires are amalgamated into a grotesque spectacle. This rupturing marks the emergence of a presence beyond the human.

What appears in the ruptures of the here and there is a discombobulated mass of flesh. P Burke's body becomes an immanent mass, fighting towards an illusory transcendence. Aside from placing emphasis on the sensation of presence in the world of P Burke, the reader is more overtly exposed to the carnal presence of flesh, as her body loudly melds with wires and metal. In Tiptree's obfuscation of typical cyberpunk thematics, her quiet cityscape emphasises the loudness of bodies. It is only through the absolute presence and grotesque spectacle of P Burke's melding flesh at the end of the novella that we come into contact with the very real, very material consequences of the cruel systems at play. Though it is suggested that the violent workings of GTX continue beyond the novel, there remains a certain stasis after P Burke's death. Her brute presence marks a liveliness, an unorthodoxy, an unruly existence that presents a stark contrast to the lifeless, quotidian cityscape. The complex relationships between agency, access, body, and technology are articulated by the carnal presence of flesh.

This chapter marks another point of bodily rupture in its approach to – the move away from – transcendent individualism that is so enmeshed in VR discourses. The bodily rupturing heralded in *The Girl Who Was Plugged In* signals the messy and unsettling sensation of being stuck within the frame. If framing marks a mode of attempting to organise the world for use, here the focus lies on the smearing of the other-than-human body across and through the borders of the frame. The human can no longer be captured at its centre; the lump of unhuman flesh oozes in front of us, mutating and unfurling out of the once perfectly sculpted human bust. It is in this regard, with the vividness of Tiptree's narrative in mind, that I go on to argue that Merleau-Ponty's *The Phenomenology of the Flesh* (1968) can enable an understanding of embodied relations with virtual environments and VR specifically that prefaces the affectivity of flesh. In so doing, the flesh marks the rupturing of the persistent imagined VR agent, and instead looks at the body as moulding into and within complex technological infrastructures.

Why Flesh?

What is flesh? What does it signify? Is it human?

The unit of 'flesh' is not uncommon in science fiction and cyberpunk fiction. One need only look at the entirety of David Cronenberg's oeuvre of "body horror" films, where abject flesh manifests in a particularly unsettling and *weird* manner; the particularities of weirdness and 'weird affect' form the premise of the following chapter. However, in this instance, it is when Cronenberg's protagonists interact with immersive technologies that these lumps of flesh appear. Take, for example, the *Videodrome* (1983),[22] an alluring TV show which causes its users' cells to mutate, leading to an outbreak of brain tumours. The Videodrome not only causes mutations within its viewers, but itself emerges in hallucinations as fleshly hardware manifestations with Nicki Brand (Debbie Harry) inviting the protagonist Max Renn to "become the new flesh".

Image 15 Fleshy Headset, *Videodrome*, dir. by David Cronenberg (1983).

[22] *Videodrome,* dir. by David Cronenberg (Universal: 1983).

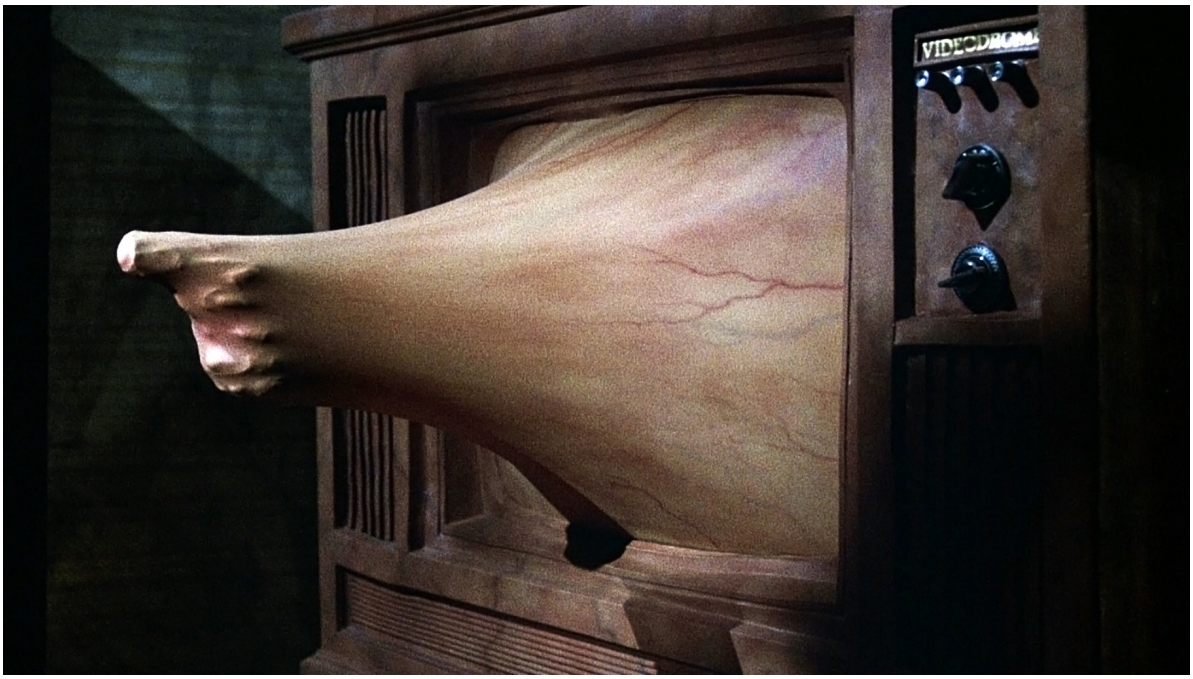

Image 16 Flesh breaks the frame, *Videodrome*, dir. by David Cronenberg (1983).

We can also turn to Cronenberg's *ExistenZ* (1999)[23] where virtual reality headsets consist of fleshly UmbyCords which physically meld with their users' bodies in order to immerse their entire sensory apparatus in its images.

Image 17 VR-as-flesh, *Existenz*, dir. by David Cronenberg (1999).

[23] *Existenz*, dir. by David Cronenberg (Miramax: 1999).

Steven Shaviro argues that flesh enacts the "structural principle of all of Cronenberg's films" in the ways that it "breaks down traditional binary oppositions between mind and matter, image and object, self and other, inside and outside, male and female, nature and culture, human and inhuman, organic and mechanical."[24] The entanglements of virtual reality and the flesh are not new. But hidden beyond the flurry of discourses focused on hedonistic growth and technological transparency is an inherent unruliness. Alice Tiptree's narration of the flesh is noisy – it speaks loudly, more so than the novella's protagonists. The realisation of the flesh enacts mutation, the unruly and random encounters which manifest in the body when the user attempts to interact with immersive mediated worlds. I want to further explore VR's weird entanglements with flesh by turning towards phenomenological discourses which focus on this strange unit of being. By considering a *phenomenology of the flesh*, we might better understand how it comes to represent unruliness, a push towards a lack of *human agency* and *unlimited access* towards something that encourages us to enter worlds *beyond*, but that these worlds might not feel familiar or indeed comfortable.

Philosophical approaches to flesh date back to the beginnings of the phenomenological tradition in the early 20th century. For the purposes of this thesis, I begin my analysis with Edmund Husserl's successor Maurice Merleau-Ponty, as flesh is perhaps most notably realised in his works. Merleau-Ponty's exploration of what he terms the "phenomenology of the flesh" was first posited in the unfinished work published after his death, *The Visible and the Invisible* (1964).[25] Merleau-Ponty used the unit of flesh to capture intercorporeity and shared human experience. Pushing beyond the somewhat individualist narratives of perception forwarded by his predecessors, Merleau-Ponty saw perception as both interchangeable and multidirectional; though perception inherently requires a subject-perceiver, the subject themselves are always already perceived. The seer and the seen are reversible. Alphonso Lingis (translator of *Visible and Invisible*) discusses the extent to which the body is only ever seen as 'dimensional of itself'[26] in earlier phenomenological discourse. Reflections on the body tend to lead to imparting the body's judgement onto that in which it encounters. The flesh

[24] Steven Shaviro, *The Cinematic Body* (Minneapolis: University of Minnesota Press, 2006) p.143.
[25] Maurice Merleau-Ponty, *The Visible and the Invisible*, ed. by Claude Lefort and trans. By Alphonso Lingis (Illnois: Northwestern University Press, 1968) third ed
[26] Ibid, p.260.

provides an alternative model as it "captures the lines of force of the world."[27] Lingis continues:

> The things can solicit the flesh without leaving their places because they are transcendencies, rays of the world, each promoting a singular style of being across time and space; and the flesh can capture in itself the allusive, schematic presence of the things because it is itself elemental being, self-positing posture, self-moving motion adjusting itself to the routes and levels and axes of the visible. This intertwining, this chiasm effected across the substance of the flesh is the inaugural event of visibility.[28]

This narration of the flesh sees it affectively coming into contact with things (the visible) which is communicated by elemental being. In the act of coming into contact, things not only become visible, but they become present. Merleau-Ponty uses the well-known analogy of touching one's hand with the other to exemplify this: a hand can both touch and be touched, "tak[ing] its place among the thing it touches, in a sense one of them, opens finally upon a tangible being of which it is also part."[29] For Merleau-Ponty, the flesh is that through which the seer and the thing communicate. It is the "depth" of corporeity which the seer sees upon herself:

> The thickness of the body, far from rivalling that of the world, is on the contrary the sole means I have to go unto the heart of the things, by making myself a world and by making them flesh. (p.135)

The body enacts a world where things become flesh. Flesh marks the form of becoming, where we encounter and feel things outside the body, and in that moment converting them into substance.

I approach the flesh here as not necessarily a subject shift, but an *abjection of the subject*. The phenomenology of the flesh shatters the enframing paradigm: where enframing connotes the attempt of human beings to frame things for individual use, to

[27] Ibid, p.lv.
[28] Ibid, pp.lv-lvi.
[29] Ibid, p.133.

capture them reductively, the flesh captures the moment of interaction not as one of reduction but of a kind of unknowing. The flesh is not human flesh, but carnal substance – it touches and is touched, but does not make sense of the things it interacts with. Rather, it *becomes with it*. As an ontological unit, the flesh marks the movement away from a unified and coherent approach to subjective experience, and a move toward communality and immersion in matter. It is in the emphasis of materiality and affect that the popular framings of presence and immersion in VR should be reconsidered. Immersion forms the focus of the following chapter; here, I suggest that presence should be reconfigured as the corporeal aspect of our interactions with immersive environments – something central to the phenomenology of the flesh. Merleau-Ponty articulates this in *The Visible and the Invisible*, where he focuses in on the capacity of flesh to push beyond the individual subject:

> When we speak of the flesh of the visible, we do not mean to do anthropology, to describe a world covered over with all our own projections, leaving aside what it can be under the human mask. Rather, we mean that carnal being, as a being of depths, of several leaves or several faces, a being in latency, and a presentation of a certain absence, is a prototype of being, of which our body, the sensible sentient, is a very remarkable variant, but whose constitutive paradox already lies in every visible […]
>
> What we call a visible is, we said, a quality pregnant with texture, the surface of a depth, a cross section upon a massive being, a grain or corpuscle borne by a wave of Being […] It is thus, and not as the bearer of a knowing subject, that our body commands the visible for us, but it does not explain it, it does not clarify it, it only concentrates the mystery of its scattered visibility; and it is indeed a paradox of Being, not a paradox of man, that we are dealing with here (p.136).

Merleau-Ponty notes that the flesh does not translate to the human interpretation of the world; it resists anthropological readings. Rather, the flesh creates a layering through which the visible is made "pregnant with texture" (p.136). Merleau-Ponty's articulation of the flesh, the visible and the invisible, are noted as his last contributions to his phenomenological apex, *The Visible and the Invisible* remaining incomplete before his death in 1961. What he establishes here is a movement toward a mode of

phenomenological thinking which pushes beyond the human – and it is the flesh that enables this extension (or contraction). The world is not framed for or by (hu)man, but is itself a massive being, a surface of "scattered visibility."[30] Flesh is the ever-present carnal being hidden behind the mask of humanity. Flesh is dissolved of the attachments to humanist subjectivity and all-encompassing experiences. To go even further, flesh is the physical breaking down of the humanist subject, instead providing the substance through which we can understand affectivity as messy, unruly, and frameless.

Flesh maintains its influence on new media theory and broader contemporary philosophical enquiry. Steven Shaviro uses flesh as the substance of what he calls the "cinematic body," arguing that flesh is "intrinsic to the cinematic apparatus, at once its subject, its substance, its limit."[31] Shaviro's "cinematic body" returns focus to the viewer's embodiment, acknowledging how bodies feel cinematic representation, and also the ways in which the representational captures bodies as fundamental matter; there is, in cinematic experience, an anxiety implicit in the state of *being a body*. Films which focus on flesh, he argues, confront this anxiety head on, reminding their viewers of their state of being-body. There exists an ontological chasm where real and representational bodies co-emerge to produce unsettling and abject affects. Thus, flesh is not devolved from enquiries into the affective potentials of other media. Yet, at this stage in VR development as we have previously seen, the flesh is wholly ignored in order to account for the unified and seamlessly immersive experiences which are emphasised in the technology's popular advertising. In taking the time within this chapter to explore narratives and theoretical approaches related to the flesh, I hope to illustrate the ways we may reconfigure some of VR's central aspects in line with its affective and unruly potentials.

The unruliness of flesh, in this regard, has also been adopted by philosopher and feminist theorist Elizabeth Grosz, as the ontological grounding of a feminine subjectivity. Grosz returns to the work of Merleau-Ponty, arguing that as being's most elementary level, flesh enables a "reconce[ption of] materiality so that it includes rather than opposes the psychic and the sexual.[32]" Grosz's work outlines the intersections of Merleau-Ponty's phenomenology with feminist theory, and the ways in which the "radical and

[30] Ibid.
[31] Shaviro, *The Cinematic Body*, pp.269-70.
[32] Elizabeth Grosz, 'Merleau Ponty, Iragaray in the Flesh', *Thesis Eleven*, 36.1 (1993).

transgressive notion of the flesh" might be aligned with feminine experience. In particular, she argues for the importance of lived experience within feminism:

> [Merleau Ponty's] emphasis on the notion of *lived experience*, on the question of what is phenomenologically given, of what the body-subject experiences, has resonances with probably the most crucial and unique contribution of feminist theory—its capacity to use lived experience and experiential acquaintance (connaissance) as a touchstone or criterion in the evaluation, not only of theoretical paradigms and propositions, but also of day-by-day and mass politics.[33]

Merleau-Ponty's emphasis on lived experience, in his earlier writings, is here used as another way of framing an important facet of feminist theory, as a way of emphasising lived experience. The flesh, for Grosz, is integral to feminism because of its "active and passive functioning, its role in both the inscription and subversion of socio-political values.[34]" Flesh is re-interpreted in Grosz's work as a "non-binarized ontology" (p.43) which stands in simultaneously for the subject and object folding into one another. The flesh is not a privileged category of being as unitary and definable, rather it is an open, reflexive approach to being's most elementary level. Merleau-Ponty's view is that in seeing and being seen, the subject and object are always intertwined. For the painter to draw a tree, he must simultaneously see the tree and be seen by the tree: the painter and the tree must be present to one another. The painting thus manifests out of both the tree and the painter being one in the same flesh. The flesh, as Grosz summarises, "is the chiasm linking and separating the one from the other" as subject/object; mind/body; visible/invisible (p.46).

Grosz further expands on Merleau-Ponty's descriptors of the flesh by drawing on feminist philosopher Luce Irigaray's conception of the flesh enacting a metaphor of maternity and female experience. Grosz forwards the notion that "the feminine may be said to be the unspoken, disembodied underside of the flesh."[35] As opposed to Merleau-Ponty's focus on the binary of *visible* and *invisible*, Grosz instead explores Irigaray's focus

[33] Ibid, p.39-40.
[34] Ibid, p.40.
[35] Ibid, p.47.

on the entangled binary of the *visible* and the *tangible* (touching). Grosz states that the tangible is

> the unacknowledged base or foundation, the source of the visible that renders any comparison, any congruity between them, false: they are not comparable for they occupy different logical positions—the one is the foundation and origin of the other. The tangible is the invisible, unseeable milieu of the visible, the source of visibility; it precedes the distinction between active and passive, subject and object. (p.50)

Grosz traces the tangible's carnal roots as being a kind of *mucousy materiality,* the passage from inside to outside which allows the "mutual touching of the body's parts and regions" (p.51) – the marker of sexualised feminine corporeality. The flesh is viewed as the placentary nourishment which marks the interdependency of being/s. Here, the flesh is sexualised subjectivity: in the obfuscation of binary opposition, Grosz argues "rather than add to the form of the body-subject, the sex of the subject provides an entire orientation, a framework from which the body-subject lives and acts in the world" (p.53). With Grosz's articulations of the flesh in mind, the analysis above has established some of the ways the flesh realises hidden potentials and critical spaces. As we have seen, the flesh dissolves ontological binaries which seek to disguise the entanglements of flesh, affectivity, and bodily practice. With this theoretical underpinning, we can see how bodily unity is challenged when the body's tactile experience is smeared between two planes of experience, across both real and virtual environments.

Not dissimilarly to the work of Sara Ahmed explored in the first chapter, Grosz's feminist philosophy enables new and important orientations towards carnal experiences intwined with the flesh as a unit of experience. In all of its conceptualisations across critical theory and philosophy, flesh marks a certain unruliness that illustrates approaches to being-in-the-world as messy, as affective, as mutative. Much of this sticky ontology is captured in Tiptree's narration of the melding of flesh and metal outlined above; what emerges is a feminine experience of an unsettled ontology – it marks a the vulnerable power of a smeared subjectivity. It is in this way that the flesh, I argue, can provide a rigorous, theoretical model for thinking about immersion and its affective ties.

In addition, presence, when seen through the amalgamation of Grosz and Merleau-Ponty's flesh, becomes carnal, and immersion becomes weird. These weird evocations will be explored further in Chapter 3, building on this lineage of a fleshy phenomenology which already offers some of its weirdness to us, and, as we've seen, the ways it might be applicable to VR. The interconnectedness implicated in the narration of flesh enables new considerations of VR and immersive technologies which extend beyond the individual subject. It provides a language for describing unruly connection, error, and affectivity. The phenomenology of the flesh is not a phenomenology of humanity, but more one that considers a phenomenology beyond the human. Flesh is the realisation of framelessness as it exists precisely at the limits of fixed ontological matter; it falls away from the bodily frame (skin to flesh), it is not ethically framed (it is faceless), and it resists subjective framing. The flesh is brute carnality, and the unsettling depictions of flesh entangled with virtual environments offer new discourses for understanding VR away from the persistent framings of neat ontologies of the here and there. The phenomenology of the flesh, then, encompasses the unsettling affects of being in the in-between.

Producing New Subjectivities

In order to further capture the mutual compatibility of flesh and framelessness, I want to turn to digital artworks that visually depict the ontological strangeness of flesh. The chapter begun with the dense narration of fleshy interactions in the prose of the *Girl Who Was Plugged In*. The second half of this chapter, now, instead turns to the manifestations of mutation and flesh in contemporary new media. In this section, I explore examples of computer generated imagery (CGI) and video games which represent their mediums' capacity to represent bodies as abject forms; rather than moving away from noise, I look at digital images that disregard fixed ontologies and embrace noise, providing a push against the prevalent rhetorics of speed, efficiency, and seamlessness in contemporary technoculture. These examples visualise some of the complexities of the flesh and its entanglement in virtual spaces, opening up the possibilities for embracing framelessness and the unruly. In so doing, it enables us to see how philosophies of flesh have become incorporated into the understanding and analysis of technologies and their embodied relations. We might learn more about the application of the flesh in VR if we consider its role and representation in other mediums and virtual environments, as well as the ways they draw on some of the concerns that have been established in the chapter's first half.

Lev Manovich narrates some of the essential differences he witnesses between film-based photography and digital photography in his essay *The Paradoxes of Digital Photography* (1995). Some of the essential changes he discusses include the mutability of digital imagery and the changes that can be made by the computer. He argues that digital images do not achieve realism, but rather photorealism – "the ability to fake not our perceptual and bodily experience of reality but only its photographic image."[36] In this regard, Manovich continues, "the synthetic image is free of the limitations of both human and camera vision;"[37] he argues that computer imagery marks the vision of a "cyborg body yet to come,"[38] a point to the future. The limitations explored by Manovich in the late 20th century include the material discrepancies of the photograph, the "noise created by stock [i.e. camera film, or its digital equivalent in sensors and storage] and by human perception" (p.201). What is most important for the discussion here, however, is that in these ideas we can see that there remains a conflict between the capacity to perfect reality, to extend it, or to dirty it, and make it noisy. Virtual reality opens more possibilities for this conflict, for noisy stock and noisy humans to combine in a photorealistic effect that doesn't feel real, given its extension of the photograph into an encapsulating world.

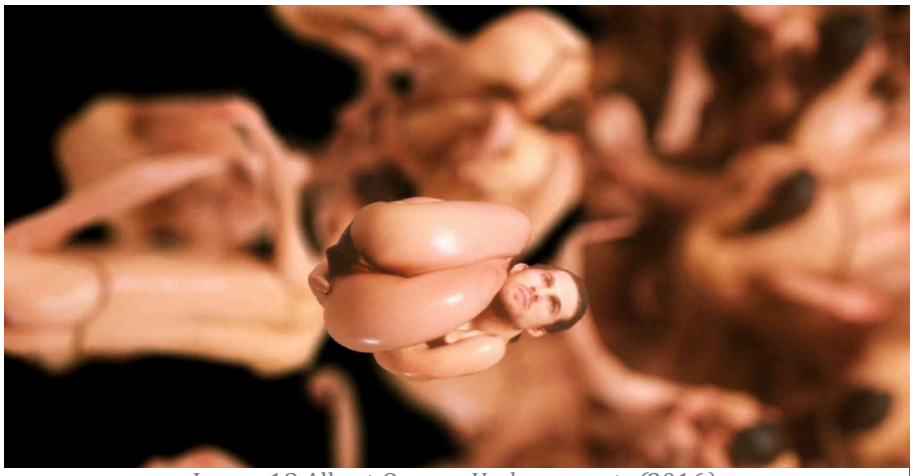

Image 18 Albert Omoss, *Undercurrents (*2016*)*

[36] Lev Manovich, 'The Paradoxes of Digital Photography,' *Photography After Photography* (1995) p.200-1
[37] Ibid, p.202.
[38] Ibid.

Image 19 Albert Omoss, *form n-11 objectification* (2016)

Image 20 Erik Ferguson, *Wake* (2017)

The images above are stills taken from the video portfolios of two CGI artists, Albert Omoss and Erik Ferguson. Each of the videos involve a number of CGI rendered bodies that move beyond the logic of the real world: they float, collide, and morph with one another. Though they look to be human, the bodies function rather as units of flesh that move to the jurisdiction of the mechanics of the computer. Expression is not created via the humans faces, but rather the weird bodily movements depicted. The carnal aesthetics exist outside of a concrete ontology and instead move through alternative models of time and space. These videos realise the strange potentials of frameless flesh. Outside of the human, and outside the logics of a necessarily human phenomenology, these bodies mark a specific form of presence that is both carnal and eerie.

In the development of CGI and its role in producing new forms of cinematic vision, Stephen Shaviro contests that a new form of filmmaking has come into play, what he calls

"post-continuity filmmaking."[39] This form of film production, which sees the logical continuity of time and space as being "less important"[40] than classical cinematic sequences, sees the combination of techniques and the blending of social, psychological, and technological forces.[41] Through this combination, Shaviro argues, post-continuity filmmaking

> abandons the ontology of time and space, and the articulation of bodies in relation to this, in order to instead set up rhythms of immediate simulation and manipulation.[42]

Shaviro argues that mainstream cinematography and filmmaking have moved away from narrative and individual characterisation in order to "exploit the realm of affect" which has now become our "biopolitical mode of interface."[43] Shaviro's analysis of the affective potentials of cinema shows that there is less of a drive for, or want of, films to focus on the characterisation simply through narrative, but that audiences viscerally engage with experiences that combine the imagery of classical cinema with new forms of technological imagery. Though the stills above are not taken from 'cinematographic films,' they mark a depiction of bodies not as characterised individuals, but characterised via the narration of *form*. Omoss speaks of his artistic practice and the articulation of bodies, stating that the theme of his work is

> the exploration of form, in the geometric and structural sense of the word, and using film as the medium to express those forms. So often film is used to explore narrative and characters, and in this series I […] explore the narrative and character of the forms themselves… I direct the structures to a degree, like a director would with an actor, but at some point I give control over to the machine, in one way or another. My directorial choices made in filming these structures

[39] Steven Shaviro, *Post-Cinematic Affect*, p.187.
[40] Steven Shaviro, 'Post-Continuity: An Introduction,' in *Post-Cinema: Theorizing 21st-Century Film* <https://reframe.sussex.ac.uk/post-cinema/1-2-shaviro/> [accessed June 2018].
[41] Ibid.
[42] *Post-Cinematic Affect*, p.187.
[43] Ibid.

> comes only after observing their nature and behaviour. The forms express themselves and I try to capture it for the viewer to see. (Vice interview, 2014). [44]

Omoss combines the affective rendering of bodies enmeshed within their corporeality with the randomly generated machinic powers of the computer in order to create uncanny effects which destabilise the body as a concrete frame, a secure ontological object for being-in-the-world. The artwork, and its rendering, illustrate the artistic potentials of combining the agency of human and nonhuman in order to allow audiences to see from a perspective that is beyond human vision. The entanglement within the logic of the computer produces an alternative and playful physical model which, by extending beyond the logic of the human world, marks the emergence of a body both carnal and computerised. The artworks shown above arguably represent the breaking down of the image of man, the (white, male) humanist subject, swapping itself for a mutable block of flesh dislodged from a comfortable ontological grounding. The pressures and forces instilled within the computer animation extend beyond the limits of a purely human phenomenology, and instead mark the mutation of the imagined subject of western philosophy through digital manipulation. The affordances of the digital, as Manovich's early claims realised, do not seek to replicate the capacity of a 'human' reality. Instead, these depictions enable the exceeding of both human and camera vision through noisy photorealistic effect.

Ferguson's work also formed the music video for ZHU and Nero's electronic dance track 'Dreams' (2017).[45] The video drew particular attention given its unsettling depictions of CGI bodies, and it went on to win the Berlin Music Video Award for best VFX. A billboard article written in response to the music video states:

> The dark, gritty tune is even creepy-crawlier set to unsettling images of naked men and women dancing in ways that shouldn't be humanly possible. Are they

[44] Albert Omoss in Beckett Mufson, 'Human Anatomy Gets a Twist in CGI Film Experiments,' *Vice* (2014) <https://www.vice.com/en_us/article/gvwqwx/human-anatomy-gets-a-digital-twist-in-cgi-film-experiments> [accessed December 2017].
[45] *Dreams,* dir by Elliott Sellers and Erik Ferguson (2017) <https://www.youtube.com/watch?v=QUKCGkPoH_E> [accessed September 2017].

> mannequins come to life? […] Are they discarded clay figures God forgot to love? Whatever they are, they're gonna freak you out.[46]

Adding a visual narrative to the booming track, the video marks the horrors of the human as material abjection, the body existing beyond the limits of human phenomenology. The video raises questions about intersubjectivity, carnal presence, abjection, excess, and control. When animated to the beat of the music, the bodily movement is eerily random yet dictated: the computer is given instruction to create and impart logic into the virtual environment, but such a logic enables randomly emerging forces which see them merging together in multiple ways. The bodies are thrown around by the blasts of the music, breaking apart and contorting.

Image 21 Body clash, ZHU and Nero, *Dreams*, dir. by Elliot Sellers. CGI by Erik Fergison (2017) <https://www.youtube.com/watch?v=QUKCGkPoH_E>

The music video is unsettling because it marks the body's becoming as a carnal presence that isn't quite human. It also acknowledges the capacity of CGI to produce a form of flesh that is extremely affective and intimate to the viewer.

Such representations, I argue, mark a new formulation of the body via CGI, not as productive, self-fulfilling entities with specific qualities and traits, but bodies thrown together as what Michel Foucault might term "transient pluralities"[47] of abject flesh – they challenge the idea of individual autonomy, and see the body as a wholly carnal and other-

[46] Bein, Kat, 'Zhu Shares Nightmarish NSFW 'Dream' Video for Nero Collab, Annoices Blacklizt NYE in San Francisco: Watch,' *Billboard* (2017) <https://www.billboard.com/articles/news/dance/7973569/zhu-nsfw-dream-video-nero-nye-san-francisco-blacklizt>

[47] Michel Foucault, *Discipline and Punish: the Birth of the Prison*, trans. Alan Sheridan (London: Penguin, 1991) p.143.

than-human presence. Indeed, Foucault's work historicises institutional movements where the masses are divided into individual units, in order to avoid messy, swarming collectives. The result of these enforced institutional power structures is the "transformation of confused, useless or dangerous multitudes into ordered multiplicities."[48] Foucault's analysis of the oppressive enforcement of power marks a significant shift from the immanent masses toward transcendent individualism. The individual as a member of the state, an employee of the state, a subject whose beliefs are dictated by the state is able to achieve success and be rewarded if their bodies become useful, efficient, and a "political technology."[49] The "political economy of the body"[50] creates a directionality towards a "bodiless reality" (p.17) produced by absolute productivity and seamless momentum with state enforcements. In my contextualising of Foucault's work here, I emphasise the ways flesh, and the phenomenology of the flesh, resist the division of the 'multitude.' If flesh is to be a unit through which we better understand VR's affective and corporeal dimensions, then its capacity to break away from singular subjectivity must be emphasised. That is that the experience of VR should not be perpetually focused on an individual having unlimited access to experiences that are unified and coherent. Rather, that we might pay critical attention to, and embrace, the moments of experiential collision between human and nonhuman, here and there, and residing in the in-between.

The significance of the ideas discussed above are brought into relief as we realise that the interrelations of the human and perceptual capacities of new media technologies are a critical contemporary concern; human beings around the world are increasingly read as data by machinic systems—the ontological grounding of the body is continually being discarded by machinic vision. The human is constantly interpreted and characterised around the choices of the clothes they order, the crimes they commit, the images they post online, and all of this contributes to a particular perception of the human by the computer. Boluk and LeMieux argue that

> in an era of social media, cloud computing, algorithmic trading, network surveillance, and drone warfare, the events determining the experience of

[48] Ibid, p.148.
[49] Ibid, p.24.
[50] Ibid, p.25.

> quotidian life are increasingly automated and operate at speeds and scales beyond the domain of human phenomenology.[51]

The phenomenology of the flesh offers us a means for accessing the affectivity of such interactions with new media technologies. And, as has previously been discussed, VR's proximity to the body means that if it falls into the same intensities of digital management and observation: in VR experiences, more data can be stored *about* the body, including its movement and its responses.

The artworks depicted above represent the messy encounters between human and nonhuman actors entangled within one carnal manifestation, and this ontological fluidity of the flesh offers a rigorous framework for thinking through some of the affective intricacies of virtual reality, centrally, the strange sensations of the in-between. All of the artworks discussed thus far reveal the emergence of flesh when bodies interact with novel technologies: Tiptree/Alice Sheldon's novella illustrated the ways the fleshy body resists the neatness of technological simulations, and saw some of the unsettling and uncomfortable affects of a body required to translate neatly into another, less complex, body. Cronenberg's imaginings of VR technologies enabled brief insight into the existing entanglements between VR and the flesh, illustrating the potential for this relationship to be explored more thoroughly. Cronenberg's body horror narratives show technologies taking on a fleshy substrate, and simultaneously evoking their affective potentials and proximity to the body via the abject flesh. The artworks of Omoss and Ferguson above provide examples of the ways flesh and body horror are produced through CGI, and the ways they visually produce new subjectivities where human and nonhuman reside within the same body. All of the artworks, if we apply them to our thinking and conceptualisations of VR, illustrate the undeniable carnality of the body in its relationship to immersive, digital technologies. If we remember the weightlessness of Palmer Luckey's body, and the representations of user's in contemporary VR advertising that featured in the first chapter, we can see where current framings of VR fall short. They eradicate the messiness and materiality of VR during use. We might learn more from the flesh, as it

[51] Stephanie Boluk and Patrick LeMieux, *Metagaming: Playing, Competing, Spectating, Cheating, Trading, Making, and Breaking Videogames* (Minneapolis: University of Minnesota Press, 2017) p.4.

necessarily represents the strange and unruly entanglements produced between the human body and the nonhuman apparatus.

In order to take these unsettling images of the in-between further, I want to suggest that we might learn more about VR if we look even further away from human subjectivity, and towards a subjectivity where, like the artworks above, the human and nonhuman coalesce into the same flesh. Between the narration and visual representations of fleshy beings interacting with technological systems, we can come to understand that the flesh neither resides in the realms of the human or nonhuman. Rather, the flesh resides in the realms of *un*humanity. The unhuman, I argue, captures the essence of a frameless subjectivity which resides in the in-between of human and nonhuman. And the unhuman might also encourage the movement away from a valorised human subjectivity in VR spaces, a turn, as we'll see below, to instead embracing the unruly moments when the body and technological hardware collide in a weird, affective middle ground.

Presencing the (un)Human

The unhuman is an unruly being which marks a brute, embodied materiality. It is a mutation of the human subject, provoking an alienation of humanity away from itself. The kinds of mutations captured through the figure of the unhuman mark a temporality *after* the human, where traces of the human subject are eerily present (like in the flesh), but mutate into new and unsettling subjectivities. Dylan Trigg's work on the unhuman places the figure specifically at the core of horror and emerging phenomenologies "in which the gaze of human subjectivity loses its privileged place."[52] Trigg locates the unhuman at the cusp of traditional phenomenology, where new subjectivities emerge which challenge traditional notions of what it means to be human and an embodied emergence of human and nonhuman agents entangled within one another. Trigg states that the unhuman enacts:

> A collision of the human and nonhumanity inhabiting the same body, with each aspect folding over into the other…The subject…is depersonalised through an

[52] Dylan Trigg, p.3.

> exposure to the alienness of matter. What remains is materialised abjection (pp.8-9).

Marking a new form of subjectivity, the unhuman sees multiple agents *folding* into one another, an embodied being that marks the enmeshings of human and nonhuman actors. Trigg gives the example of insomnia as producing unhuman subjectivity, where "the sleeper is not entirely present as subject, but nor is she entirely beyond subjectivity."[53] We have seen this partly-presentness of the subject in iterations of the flesh: flesh is the realisation of frameless subjectivity, of skin removed from the body so as to take on its own affective corporeality, existing beyond human subjectivity. As has been previously emphasised, we might also see the emergence of such subjectivities in VR, as the subject is not entirely present, nor entirely beyond one's subjectivity, where one is simultaneously present as a body within and outside of the virtual environment. This subjectivity of intertwined humanity and nonhumanity is best captured, I argue, through the figure of the unhuman.

Trigg also unites the tropes of the horror genre with the weird affect of the unhuman. There are clear intersections with VR subjectivities and the horror genre, which will be explored in the final chapter of this thesis, but here, I want to consider Trigg's exploration of the "unhuman body" as a site for experiencing abjectivity, and the ways we might better respond to instances where VR simulations and avatar bodies might resist us and make the sensations of interacting with VR disorientating. Drawing on the work of Julia Kristeva (1982), Trigg repurposes the sense of unknowability, "something that escapes understanding,"[54] as an unhuman phenomenon. Trigg voices "an existence that both enables and exceeds all subjectivity."[55] His analysis of horrific representations of beings which exceed the bindings of fixed ontologies asserts that the human body itself becomes a "body horror" (p.8). In its smearing of ontologies, the materiality of the unhuman exceeds subjective experience.

Within theoretical approaches to the unhuman lies a focus on the weird contours of human embodiment and its limitations. As argued in chapter 1, understandings of VR and its unique affects might be more rigorously captured if it paid more attention to its

[53] Ibid, p.52.
[54] Kristeva, Julia, *Powers of Horror: An Essay on Abjection*, trans. L. S. Roudiez (New York: Columbia University Press, 1982) p.2
[55] Trigg, p.11.

own limitations, and to the limitations of the human body (as an alternative to limitlessness and transcendence). Trigg's particular emphasis on horror and the uncanny sees the "alienness of matter" (p.55) as a central facet of coming-into-contact with the unhuman, where suddenly the body does something unanticipated that makes us acknowledge its messy materiality. This kind of sensation can emerge when an object we interact with does something its user does not anticipate, where there is an incapacity to maintain complete agency. The example of the horror glitch at the beginning of this thesis would be one example – where my body made the virtual environment, and subsequently the avatar body, react in a way that was wholly beyond normative subjectivity. The unhuman emerges when there is an unsettling and unanticipated interaction between human and nonhuman, and such unruly interactions form the premise of the next chapter. Trigg's discussion of 'alien materiality' marks the realisation of that which exists beyond the limits of a purely human subjectivity. Trigg notes:

> On the one hand, in the flesh of our bodies, we find a materiality that leads us toward an alien existence. At the same time, this other world remains accessible in that it is given to us precisely as human subjects (p.26).

It is through this alienness of matter that we might unite VR, flesh, and the unhuman. Flesh exists at the limits of fixed ontologies, away from the bodily frame. In the same way, the unhuman marks an account of a subjectivity beyond the human, but relies on human affectivity to be realised. VR essentially produces the sensations of unhumanity by enacting weird and alien affects onto the body of its users. It does so through unruly encounters where virtual environments do not cooperate with the desires of the human user, and the body resists the neat programming of the virtual environment.

Beyond Trigg's conceptualisations, contemporary scholarship on the figure of the unhuman focuses centrally on the implications and articulations of agency, considering the challenges the unhuman poses to the more widely explored subjectivities of humanism, and posthumanism. Daniel Cottom's *Unhuman Culture* (2006) argues that the unhuman is that which is "foreign to the definition of humanity," marking the "alienation of humanity from itself in the very act of positing itself."[56] For Cottom, the unhuman poses

[56] Daniel Cottom, *Unhuman Culture* (Philadelphia: University of Pennsylvania Press, 2006) p.xi.

a definitional dilemma, uprooting the meanings of "human" and "human subjectivity" and alienating them from themselves. In *Human No More: Digital Subjectivities, Unhuman Subjects, and the End of Anthropology*, Neil Whitehead and Michael Wesch link unhuman subjectivity directly to digital technologies and the ethical dilemmas attached to the ways that they reconfigure what is human.[57] Whitehead and Wesch look at the new forms of marginalisation and oppression created by technological monopolies, where digital connections produce new forms of sociality beyond traditional social formations. Such definitions of the unhuman again draw attention to the limits of humanity, and the need to explore new subjectivities that emerge in unique encounters between human and nonhuman agents.

The unruly is a key element of the theorisation of the unhuman, and this is, in part, what makes the unhuman significant to this chapter and to the thesis at large. To assimilate the unhuman and the flesh, I end here by turning to a videogame narrative which marks the rupturing of flesh into a new unhuman subjectivity. As a form of virtual environment, though not specifically VR, it sees the putting-into-action of a new form of presence which extends its popular meaning as that of feeling part of a place. Instead, presence is produced through the production of an unhuman subjectivity and specifically unhuman affects: the fleshy subjectivity depicted in this interactive narrative marks the unhuman as *absolute, carnal presence*. The game distils the affect of the fleshy rooting of the here to its player through the eerie unsettling sensations of controlling an unhuman figure via gameplay. In particular, the unhuman subjectivity presented somewhat resists control by the player. This videogame, I argue, provides an interactive grammar of unhumanity and the phenomenology of the flesh that we can begin to apply to virtual reality experiences, and overtly acknowledges the entanglements of player, gaming system, and the game environment as they fold into one another and erupt into the unhuman presence which emerges at the end of the game.

The Unhuman *Inside* (Playdead, 2016).

[57] Neil L. Whitehead and Michael Wesch, *Human No More: Digital Subjectivities, Unhuman Subjects & the End of Anthropology: Digital Subjectivities, Unhuman Subjects, and the end of Anthropology* (Boulder: University Press of Colorado, 2012) p.11.

Before turning to the game *Inside* (Playdead, 2016), it is worth noting how videogames as a medium behold the affective capacities to produce the unhuman. In particular, videogames act as unique mediums for eliciting specific forms of affect, and the capacity for players to be touched by videogames has been explored by a range of scholars[58] who consider the contact produced between the body, representation on screen, gaming narratives, software, and hardware. James Ash argues that affect can be aligned with the ways players become somatically attuned to the medium, incorporating gaming hardware as part of their apparatus in order to achieve desired actions within the gameworld, and notes that specific design elements negotiate the "affective and emotional engagement" players have with games.[59] Eugénie Shinkle pushes beyond the capacity for game design to mediate affect, arguing that players "possess *subrational* agency"[60] which enables lateral and unpredictable responses to perceived environments. Shinkle argues that "games actualise affect in ways that designers (whatever their motives) do not always anticipate."[61] Aubrey Anable notes that affect can be read as a specific orientation towards representations, and demonstrates how game studies has seen a shift away from emergent gameplay, towards emergent feelings. Anable reads videogames as mediums which enact "specific affective dimensions, legible in their images, algorithms, temporalities, and narratives.[62] Across the spectrum of approaches aligning videogames with affect theory is a questioning of the ontological boundaries between players, programming, representation and material hardware. Whether intentional (attunement; incorporation) or unintentional (subrational response), our affective responses to videogames necessarily implicate various human and nonhuman agents.

I want to turn to a videogame here in order to consider the ways they can already complicate these ideas of attunement and incorporation by producing sensations for the player of not quite being in control. That is to say that, like the artworks that have already been discussed, videogames see the incorporation of human and nonhuman actors, and

[58] See, for example James Ash, 'Technologies of Captivation: Videogames and the Attunement of Affect' (2013), Eugénie Shinkle, 'Videogames and the Technological Sublime' (2012) and Audrey Anable *Playing with Feelings* (2018).
[59] James Ash, 'Technologies of Captivation: Videogames and the Attunement of Affect,' *Body and Society*, 19.1 (2013) p.28.
[60] Eugénie Shinkle, 'Videogames and the Technological Sublime', *Tate Papers*, 14 (2012)
[61] Ibid, p.6.
[62] Audrey Anable, *Playing with Feelings: Video games and Affect* (Minneapolis: University of Minnesota Press, 2018) p.8.

human subjectivity is necessarily decentred. Some games produce unique affects when agency is, or feels like it has been, stripped away from the player; this can be embedded into their programming, or occur through emergent play. The strange, embodied affects produced by compromised agency in videogames, however, remains underexplored, aside from games which fall within the horror genre (which form the basis of Chapter 4). This challenging of (human) agency is something worth considering, and is particularly relevant given videogames incorporation into the sphere of VR, as game narratives reach closer towards the body: when games pull between an ontological here and there, they can leave their players feeling uneasy; they can evoke strange satisfaction and unanticipated thrills. Strange affects seep out of the programmable corners of videogames and they are not always predictable. Take, for example, when a videogame glitches, momentarily resisting both the control of the player, and also its embedded programming and control systems. At these moments, games become unruly sites where they do something that neither the player nor programmer could predict. They can also make their players feel strange through their unique aesthetic and representational capacities. Videogames have always allowed for the depiction of unsettling and inarticulable subjectivities that operate via logics beyond the quotidian lifeworld—namely, alternative worlds which give rise to new beings and leave the human subject behind. In the case of the game *Inside*, I argue, unruly affect emerges through the game's depiction of unhuman subjectivities which are inherently strange and unsettling.

Inside is an eerie puzzle platformer, released by the production company Playdead in 2016.[63] The narrative centres around a young boy who moves through a dark, unforgiving world of complex mind control systems, coming into contact with a number of unsettling, deadly creatures. Within the gameworld, everything living is subject to the monitoring of nonhuman entities: cameras, computer networks, and the game system itself. Not dissimilarly to the obfuscated networks prosaically placed throughout *The Girl Who Was Plugged In*, the complex mind control systems scattered throughout *Inside* are hidden and revealed over time; elements of the system are revealed to the player should they participate in an optional mini-game, for instance, which sees players follow yellow wires into hidden parts of the gameworld where they are able to locate, and unplug,

[63] *Inside* (Denmark: Playdead. 2016).

multiple generator systems. This is ultimately revealed to be the system which produces, and partakes in, the unhuman elements of the game.

Image 22 Hiding from the system's gaze, *Inside* (2016)

The visual design and aesthetics of the environments hint at the dark and eerie world the game represents: not only does the player get given very little information about the storyline the game follows, but they are also given little sense of the amount of agency they behold, or who or what are the central agents controlling the world depicted. As a puzzle platformer, the game infrastructure is predicated on the user making mistakes in order to solve the puzzles in the environments through trial and error. Death is recurrent; in moments where the boy is killed, his body becomes lifeless meat (we will come to see specific examples of how the boy's body resonates with Dylan Trigg's unhuman phenomenology).

Over the course of the game, the narrative seems to move through a linear system, introducing buildings and landscapes which implicate various human labour practices: the scenes evolve from rural fields and abandoned farm buildings towards desolate, Fordist industrial spaces; these include large factory buildings which house conveyor belts, levers, and creaking pipelines.

Image 24 Outdoor landscape, *Inside* (2016)

Image 23 Running across rooftops, *Inside* (2016)

Aside from the visual landscapes, it is also clear that *Inside* draws attention to those systems at play beyond the player's immediate perceptual experience. Within its

temporal framework, the game captures the various mutations of the human subject over time: the societies of which they are part, and the technologies they interact with and become part of, marking the revelation of the unhuman through the interactions between the supposed human boy and the nonhuman objects and systems he interacts with, interactions which are enacted by the player.

Elements of unhumanity reveal the affective relationship the game initiates beyond the bounds of absolute player autonomy; a sense of control is given to the player, yet simultaneously this control is pulled away as other actors emerge throughout the gameworld. The multisensory nature of *Inside* has been explored in much of the writing and reviews of the game, particularly in relation to the ways the game's audio track reveals narrative elements.[64] Yet little attention has been paid to the affective intricacies of the game's textures, the contours of its design and the ways subjectivities beyond the human are depicted. Alternative logics and models of physics are revealed through strange experiments contained within the gameworld. There are human corpses tied to chords that float upwards under water, and other gravitational forces which push rather than pull; such forces are replicated through subtle triggers omitted via the hand controller.

Image 25 The physics of Inside (2016). *Image source:* <https://www.pinterest.co.uk/Goddess1112/play-deads-inside/>

In one section, the player must shelter the young boy they control from the deathly, rupturing force of a sonic boom experiment; should the boy come into contact with the

[64] See, for example, Mathew Arnold, 'Inside the Loop: The Audio Functionality of *Inside*', *The Computer Games Journal*, 7.4 (2018).

vibrational force which is omitted from the mechanism, his body explodes and flies towards the screen in shards of flesh. This moment is affectively transient, mimicked by vibrational feedback in the controller, and unsettling sounds of rupturing flesh as the corpse gets flung towards the player. The game, in many different ways, attempts to mimic the affective coming-into-contact with the unhuman through a layered narrative which bleeds between representation and the player's material interaction with its world. The game's material infrastructures, and its ties to embodiment, are embraced and incorporated into the narrative experience; presence, in the context of this world, is again concerned with the absolute presence of embodiment.

Inside resists the use of representations of emotion to convey information to its players, instead programming affective queues to prompt player action. The game's aesthetic design depicts all of its human characters as abstract and faceless. There is no capacity for human emotion to be rendered visible; instead, the game places focus on sound and movement to relay emotional cues to the player, and influence them to action. The game requires that the player has an embodied relationship with the gamespace: as Aubrey Anable notes, the feel of a game "is directly linked to the affective circuits that touching opens up between representation, screens, code, and bodies."[65] The game's affective dimensions enable the player to gain some insights into the idea that the young boy is being hunted down by some kind of anonymous institution. Given the lack of intradiegetic information relayed at the beginning, there is no emotional attachment, but certainly an affective one.

The avatar that the player controls from the start of the game is perceivably human: a young boy wearing a red jumper who begins by tumbling from out of shot into a rain sodden field. Though the boy is faceless, his bodily rhetorics – i.e. the ways in which he moves – relay useful information to the player. For example, when the boy is in danger, he will begin to sprint hectically and his breathing becomes heavy and panicked. Such actions are motivated by signifiers in the gamespace, including other people, animals, and objects which pursue him. This is initially learnt by the player in its opening scene as he is approached by other 'human' actors. Within the eerie, dark landscape of a wet field, a set of car headlights emerge out of the foggy backdrop and two men exit the vehicle. Without any action on the part of the player, the boy looks towards the car and begins to

[65] Aubrey Anable, p.37.

breathe heavily: when the player urges the young boy forward, his movement has transitioned from measured jogging towards a panicked sprint. The men then begin to run towards the young boy, and the player must tackle a number of obstacles to avoid being captured by the men; if he is captured, the boy is killed. This is something the player only learns if they do not manage to escape the first-time round. All of the boy's movements relay subtle feedback through the hand controller, and this alters according to the kinds of environment he moves through. The camera's pans, framing and angles are predominantly predetermined, i.e. the distance from and perspective on how we see the boy, save for some parallax elements, yet at key points the vista shots zoom in and out in order to reveal visual cues that aid the player; these cues, along with other audio-information, reveal subtle hints of how the player should respond in certain situations.

The player, throughout most of the game, is also forced to imagine its plot, as no direct information is given to them about the wider narrative premise. The player comes to feel, typically after the first sad death following an early mistake, a sense of responsibility toward the boy, but has little control over the wider structures – why he must survive, where he is going, and for what purpose. There is a sense of evolution within the objects the boy can interact with as you progress throughout the game, all of which hint at various bodily rhetorics associated with traditional working models.[66] There is a sense that *Inside* draws attention towards the bodily attunement of the young boy in various institutional environments, which constantly and consistently shifts as the game progresses. Where the beginning of the game is primarily located outside in rural, farming landscapes, the end of the game marks an absolute rupturing of bodily subjectivity into the unknown and eerie rhetorics of the Unhuman "huddle."

As we have seen, the setting up and incorporation of affect in videogames and videogame studies is already solidly rooted in the medium's grammars. Should we look to incorporate these modes of thinking and building into the VR space, new narratives and grammars of describing our bodily experiencing of it might be produced, replacing the somewhat redundant narratives of transcendence and immateriality it is so enmeshed within in the contemporary moment. *Inside* puts the phenomenology of the flesh into action, as that which shatters unified subjectivity and looks towards communal, material, and corporeal dimensions of action in virtual environments. The game

[66] Inspired by Foucault (1975)

incorporates the body of the young boy only as a recognisable and familiarly human point through which the rest of the world is made accessible to the player. Aside from that, the world alienates humanity, using unhuman subjects as a means of alienating humanity away from itself.[67] If we looked to VR to acknowledge the limits of specifically human action, agency, and access, then we might more truthfully understand what the medium can make possible, and how it can toy with the notions of transcendence and the obfuscation of materiality.

The unhuman serves a particular purpose within the game, in that it provides a framework of compromised agency which is central to the game's narrative. The unhuman subjectivities found within *Inside* are specifically fleshy and affectively disturbing, crossing into unknown alien territories; the subjectivities cannot instantly be categorised as part of the (human) world, apart from mounds of flesh beholding some kind of other-than-human agency. This becomes central to the game's finale, where the sporadic allusions to unhumanity throughout the game congeal themselves into what Playdead label as "the huddle." The huddle is an entity discovered by the avatar-protagonist, where he comes into contact with (what the game designers refer to as) "a compound humanoid blob of muscle, fat, skin and bones."[68]

Image 26 The unhuman 'Huddle,' *Inside* (2016). Image source: <https://www.reddit.com/r/Games/comments/4sctkj/the_meaning_of_playdeads_inside/>

[67] Trigg.
[68] GDC, 'Huddle up! Making the [SPOILER] of INSIDE <https://www.youtube.com/watch?v=gFkYjAKuUCE> [accessed November 2019]

Visually, the huddle looks like a huge compound of flesh comprising of human body parts that have been mingled together. Playdead note that they took inspiration from various phenomena in the designing of the huddle, including crowdsurfing, using this as an example in which a cluster of individuals share a common goal. The huddle, I argue, is unhuman precisely because it represents an alienation of humanity away from itself into materialised abjection: it is horrific, elicits strange affect, and resists agency on the part of the player. The huddle illustrates the ways videogame mechanics have been produced to devise limits on the part of the player: though they are able to choose which direction the huddle moves in, its movement is largely dictated by the nonhuman mechanics embedded within the medium itself. This production of unhuman subjectivity realises some of the interactional grammars which VR could look toward in order to embed and acknowledge the distributed agency throughout its worlds; rather than producing experiences which seek to valorise the agency of their users, subjectivities like the huddle realise forms of unruliness which unsettle human agency, and reveal the limits bestowed on the player.

The huddle is initially encountered by the player upon locating a vat within a building comprising of computer networking rooms and laboratories. Human figures in lab coats and business wear surround the vat, gazing in at the huddle which remains hidden until the young boy gets sucked into the vat and swims towards it.

Image 27 Gazing into the vat, Inside (2016). Image source

<https://www.gameinformer.com/b/features/archive/2017/12/18/how-is-the-iphone-version-of-playdead-s-inside.aspx>

This is the suggested *Inside* of the game's title: the centre of a vast corporate entity whose networks remain obfuscated throughout the game's narrative. The huddle is attached to a pumping mechanism within its enclosure, as if it being used as some kind of energy source; in this way, the huddle is the functioning source of the unhuman network at the heart of the game, and it is implied that the huddle has been created by an underground entity in order to power the strange, experimental puzzles the player participates in throughout the rest of the story. The experiments are predominantly focused on mind control, where the player encounters a number of animals, zombie-esque figures and technological entities which appear to be under the control of a powerful and dystopic agency. The game operates in such a way as to map out revelations during its course, as opposed to giving any directive diegetic information to the player through cut scenes or dialogue.

The huddle is the heart of a vast control network which dictates the behaviour of everything the player has previously witnessed within the gameworld. Such a network, according to Alexander Galloway and Eugene Thacker's theorisation in *The Exploit: A Theory of Networks* (2007) can be read as an emergence of the unhuman via network control. The huddle represents an aggregate life form which sees agency extending beyond the human subject, and into a strange, visceral network of fleshy matter. Galloway and Thacker note that:

> Network control ceaselessly teases out elements of the unhuman within human-oriented networks. This is most easily discovered in the phenomenology of aggregations in everyday life: crowds on city streets or at concerts, distributed forms of protest, and more esoteric instances of flashmobs, smartmobs, critical massing, or even swarms of UAVs. All are different kinds of aggregations, but they are united in their ability to underscore the unhuman aspects of human action. It is the unhuman swarm that emerges from the genetic unit.[69]

[69] Alexander Galloway and Eugine Thacker, *The Exploit: A Theory of Networks* (Minneapolis: University of Minnesota Press, 2007) p.41.

Through their approach to the network, the unhuman is revealed to be always-present and always potential, emerging at the point of new synergies that are impersonal and intersubjective. The swarm, as one unhuman unit, marks the dissolution of human subjectivity towards an aggregate phenomenology. The huddle is the realisation of the unhuman swarm in *Inside*, in the way that it maintains an elemental human feel (flesh), but produces an entirely new aggregate entity. Galloway and Thacker argue that unhuman figurations capture the "tension between unitary aggregation and anonymous distribution, between the intentionality of the network as an 'abstract whole.'"[70] *The Exploit* sees the unhuman as a marker of the underlying agency of networks that monitor and control human subjects. This analysis of networks reveals the nonhuman elements that come to inform our understandings of human subjectivity as it is (re)produced through digital technologies in the form of bits and atoms. The unhuman reveals and breaks down the valorisation of the human subject as absolute agent, and allows access to the otherwise hidden agencies which emerge alongside human action on both individual and collective levels. Where Galloway and Thacker maintain focus on human-oriented networks, the network present within *Inside* circulates dystopic mind control functions that produce its specific form of unhuman agency. Aggregate phenomenologies of unhumanity within the videogame space illustrate the ways that games are seeking to break away from singular subjectivity. As we will come to see, the huddle enacts an entity that resides in-between the human and nonhuman, and the player is only seen to be one part of a larger assemblage which encompasses the environment depicted, the gaming hardware, and the system mechanics; it provides an example of an entity which reveals the limits of human action and agency.

These limitations arguably form part of the narrative's wider concern with control and the corporeal. The ethical dimensions of the unhuman are arguably the central force within *Inside;* players are forced to consider the underlying systems of control within the game, the ways through which the technologies present within its world reconfigure subjectivity, and their inherent implications. The huddle is the subjectivity which powers the network it is controlled by; its brute matter is an energy source. In this sense, the world of *Inside* is depicted as one giant network-body. Its entanglements of wires, generators, and intricate mechanisms all link back to the huddle. When the boy is

[70] Ibid, p.155.

absorbed into its mass of flesh, becoming part of its "beastly body"[71] the player then moves through the world as the huddle, navigating its bodily rhetorics and controlling the disorientating and unbalanced mound of flesh as it crashes through the glass walls of the vat and collides with the walls of the gamespace. The huddle utters eerie moaning sounds as it moves, replicating the sounds of deep, distorted human groaning; there is a conflicting sense of pain, a hint that the huddle is something that was once human but is no longer.

The affective tie between the player and the huddle is marked by a fluid and unstable link between the actions they take through the control pad, the feedback sent via the controller, and the movement of the huddle on the screen. The game draws attention to this disjunct, using it to form part of the game's overall aesthetic—after all, the game is focused precisely on the compromising of control. By forging this narrative aspect onto the player through its mechanics and subsequent affect, the player becomes more immersed in the narrative (the relationship between unruly affect and immersion will be explored more thoroughly in the following chapter). Though the player pushes the huddle forwards, it moves with its own fluid and unhuman momentum; its limbs stretch out in various directions, it stumbles, condenses and expands its own fleshy substance. The player must subtly learn to control and balance its unhuman fleshy body as it crashes through the gameworld. The affective sensations of moving the huddle replicate the eerie organicity of its bodily parts. The game makes the player aware of the suggested discomfort of the huddle by making them feel uncomfortable themselves; the player is forced to ask how they are implicated in the game's plot, and what role they have played in the events that have led them to this entity.

Though the huddle is horrific and yields its own unruly corporeal agency, it is seemingly bound to the underground corporate entity that created it in the first place. The huddle remains, to some degree, ungraspable; it enables a reconsideration of valorised player control as a means of progression through the gameworld. The affective modality of interacting with a videogame marks the medium's capacity to attend to realms beyond the human, producing new agencies which escape and exceed human grasp. This sense of ungraspability does not necessarily reference a literal holding onto something like a hand controller, it allows for a reconsideration of valorised player

[71] Gallagher, p.103.

control as the central means for progression through a gameworld. If we look back at the images presented in the previous chapter, with these ideas in mind, we can see that they do little justice they do to a medium which has the capacity to push these unruly interactions even further. Like *Inside*, VR should ask more of its audiences to consider agents beyond themselves. The most memorable moments of VR experiences, particularly in my own engagements with the technology, have been those where unanticipated actions and interactions emerge. During these interactions, the simulation and the body of the user become more present; this materiality should be the form of presence that VR pays further critical attention to.

Having considered the unhuman in relation to its affective contours, I want to end by turning specifically to the circulation of unhuman elements in the game *Inside* via its hidden mind control networks. Here, I argue that the diegetic representations of agencies beyond the human bleed out of the gameworld, and are mirrored by the player's own relationship with the avatar's they control. The parasitic entanglements of agency overtly represented in the game squirm out of, and slip beyond the plot, as they simultaneously shape the relation between avatar and player. The mind control structure is first hinted at earlier in the game, when the player moves the young boy through a field full of scattered pig corpses. All of the corpses are being consumed by small parasitic worms. Moving past the heap, a living pig charges towards the boy; if the player does not steer clear of its path, the boy gets trampled by it. The pig groans uncomfortably as it moves, and follows the young boy in whichever direction the player moves him. Upon closer inspection, it appears that a worm is attached to the pig's head. The animals are being controlled by some kind of alien creature that dictates that they too must try to sabotage the boy as he gets closer to the game's *Inside.* Such parasitic elements of *Inside* have been discussed by Andrew Bailey in his paper 'Authority of the Worm: Examining Parasitism Within *Inside* and *Upstream Colour.*'[72] Bailey notes that parasitism "functions as a tool for the boy to make subversive use of the same systems that are being used to take control of his world."[73] There is a multidimensional agential problem at the core of the game, where the player must manipulate the boy to progress, whilst the boy enacts the manipulation of a number of figures. In the early stages of the game, such agency follows

[72] Andrew Bailey, 'Authority of the Worm: Examining Parasitism within *Inside* and *Upstream Colour*,' *Journal for Comparative Studies and Theory*, 4.2 (2018) pp.35-53.
[73] Ibid, p.49.

the rules of bodily rhetorics that function on a primarily instinctual level – where there emerges a threat, run or hide from it. The boy's movement is fairly self-explanatory to begin with, and the player must simply follow the multisensory cues provided within the environment in order to solve the puzzles. Yet these puzzles become more and more complex, as the dimensions of the networks in the game reveal themselves.

As the player navigates through various spaces, the camera pans in and out to reveal backdrops in the distance of masses of drone-like human bodies, marching outside the buildings.

Image 28 Unhuman drones, *Inside* (2016).

The player gains brief visual insights through small crevices and windows of the lines of unhuman bodies, moving in perfect synchronicity towards an unknown location. Not dissimilarly to the mind-controlled pigs earlier in the game, these figures move as if they are being controlled by something. These figures ignite unsettling feelings during gameplay, because the player has very little sense of who or what these figures are, and who they are being controlled by. Clambering across rooftops and sliding down pipelines, the young boy eventually falls through a gap in the roof and stumbles into a line of the drone bodies as they drudge forward through a space where they are monitored by multiple surveillance cameras and figures wearing lab coats. These drone-like bodies lack any kind of humanity, beyond their being human bodies. Their bodily movement differs, for example, to those they are being monitored by: animate human-beings, with lifelike qualities who are wearing smart business attire and lab coats. As they stand taking notes,

below the overbearing gaze of an inscrutable surveillance camera, the player must learn to adjust to the rhythm of the figures, moving perfectly in time with them. If they fail to do so, a claw emerges from the surveillance camera, dragging the boy out of line and presumably to his death.

The player, in other words, must adapt the boy's bodily rhetoric within the game to the rhythm and motion of the unhuman figures it portrays. In this sense, the player has to compromise their agency and do what the system asks of them to progress. The players themselves are incorporated within the game's dystopian network control. Here again we see that the game asks for the human to be left to the side, to be thrown away from centre stage. This, in many ways, can be likened to the process of the human body acting within the parameters of VR environments; there is a sense that the user has to adapt their own bodily rhetorics in order to move and take action in this in-between space. This is not reductive, instead it acknowledges that VR isn't a wholly empowering system which validates player agency. Instead, it questions and challenges it; this notion should be embraced and not hidden behind the guise of seamlessness and immateriality.

In addition, the player of *Inside* must affectively respond to the intense situation they are thrown into, and learn as they go along. Any action that occurs outside of the synchronous rhythm of the system warrants death, and the puzzle restarts. Such unhuman bodily rhetorics mark the emergence of the unhuman subject under "the individualising fragmentation of labour power"[74] within the gameworld; each body becomes a unit that is monitored under the premise of a kind of lifelessness. Any hint at "humanity" or messy movement results in a removal of the body. The line, then, marks the surveillance of efficiency under the unknown institutional order that marks the core of the game's narrative system. As such, affective embodiment is seemingly eradicated, a shift towards a "bodiless reality"[75] where movement is dictated by the narrative's central political machine. The unhuman presented here manifests a bodily docility. This, in and of itself, marks an uncomfortably affective player experience: the strange movement of the docile unhuman bodies is tense and unsettling. Yet the player must adjust their control accordingly in order to fit this unhuman mould.

As the game progresses further towards the *Inside* the game's title alludes to, it becomes more evident that these unhuman figures are being controlled by an ominous

[74] Foucault, p.148.
[75] Ibid.

and parasitic mind control system. There are increasingly frequent encounters where it is evident that more "human" bodies are surveilling and monitoring the "unhuman" bodies, and this is primarily revealed by the bodily rhetorics each of the bodies enact. The unhuman bodies slouch and stumble forward, their faces not even looking in the direction they are walking. They seemingly resemble the undead, the zombie – a kind of regurgitated stumble. They represent a compromised form of (un)humanity that is produced in order to fulfil a system functionality, created in order to be completely unconscious and docile.

Within all the strange and disorienting puzzles that the player must solve, there remains a compromised sense of agency that ties to the ethics of play; the player has to use the docile unhuman bodies depicted in order to solve the puzzles and move onto the next stages. Despite the fact that there is an ominous control system at play, the player themselves participates in this control system by utilising their own agency over the unhuman figures whose agency is being compromised. In one particular section of the game, the boy moves through an abandoned mining shaft, and is followed by unhuman miners who seem to be drawn to him. The player must escort the miners through the shaft, using them as material mass to trigger a platform that unlocks the door to exit. When the player has recruited 20 miners, all of whom follow the young boy in whichever direction he moves, the entrance into the next part of the game unlocks. Whilst the miners remain in stasis on the platform, the boy runs towards the exit, leaving them abandoned in the bleak underground space. The game often sheds light on the injustices of its own mechanics, where the player must participate in the system the game portrays, and the subjection of bodies that are neither living nor dead is the central concern of its narrative.

Should players participate in its hidden and sedimented subtext, *Inside* goes further to suggest that the young protagonist, might too, be unhuman. Though the boy participates in the manipulation of other bodies in order to progress, the game implies that the same manipulative tendencies are built into the player's own control over the avatar protagonist. A number of yellow wires are seen during certain parts of the game. Should the player follow them to their source, straying off the path toward completion, they come to small generators that the boy is able to unplug. When unplugging the generators, they spark and force the boy to retreat backwards. Such an act is made to feel as though it is a form of resistance, not just in the way it feels as though it is a breakage of the diegetic network, but also in that it requires player to venture away from the

intuitive paths presented. All of the generators are hidden away in nooks and crannies that veer away from the central path towards the game's inside. This oftentimes requires that the player simply see if turning around or jumping through small enclaves will allow them to gain access to hidden areas. If the player manages to locate all of these hidden generators and unplug them all, the player can then load and return to one of the earliest scenes in the game where the boy runs through a wheat field. Amongst the high grass lies a hidden entry to an underground hideaway. The player can embark down a step ladder within the opening and find themselves in an abandoned bunker. If the player wanders through the space, they locate a pad; opening the door leads onto an extensive tunnel where a central power source can be located. Seen within the background is a large mind control helmet that is infiltrated with wires. When the player unplugs this final power source, the mind control device in the background explodes. At the same time, the boy's body slowly slumps forwards as if he too has been unplugged – and the game ends. This alternative ending adds even further dimensions to the agencies implicated in the game: either the power prevents the player from controlling the boy any longer, or it suggests that the actions the boy takes were dictated by another unknown network the entire time, a network which the player has participated in. It is implied that the boy might have actually been the central unhuman subject of the game from the outset. The implication that the boy is also being controlled inadvertently implicates the player in the game's dystopian network of actors. The games layers unfold outwards; though the game purposefully leaves many questions unanswered, the player is revealed to be the hidden force behind the wired systems and networks at play.

Inside has the unique capacity to make its players feel unhuman themselves, not just through its representation of unhuman subjectivities, but through their being part of its morbid, unhuman system. Every seemingly resistant act or attempt to break or reveal the hidden networks within its world only leads the player to feel responsible for the cruel fate of other subjects. Even having reached the game's *Inside* and solving puzzles in order to break the huddle out of the eerie buildings and infrastructures, leads to a dead end. The game ends with the huddle rolling out onto a beach, where its grotesque flesh lays bare against the moonlight. Momentum is halted, and the credits roll, leaving no sense of whether the player's actions led to any retribution. Though this might seem to be an almost disappointing ending, *Inside* asks for a shift of focus – away from the sense of fulfilment achieved through progress and 'doing well' in a game, rather towards the

feelings gameworlds are able to produce. Feelings move from fear to frustration, monotony to excitement, simplicity to impossibility, fulfilment and emptiness. Though all games necessarily implicate some of these feelings, *Inside* asks of its players to truly acknowledge how it feels to be played; its affective impact is realised through aligning sections of its narrative, much of which are comprised of the player failing and trying again.

Inside marks the realisation of unhuman agency: as a congealed body of human and nonhuman actors, the unhuman is revealed both literally (via the subjectivity of the huddle) and subtly through the interconnections of player, narrative and gaming narrative. As one of the most successful realisations of the unhuman within a videogame, I argue, *Inside* does not pride itself on the agency of its players. Instead, it marks a shared distribution of agency between its networks, the gaming system, and the figures within the game. The ontologies of *Inside* congeal and this makes the revelation of the huddle in its finale more visceral and impactful. The game's affective dimensions see players reside in the smeared space of the in-between. Players are not given total access, and the game operates to gradually reveal hidden elements and uses unruly interactions in order for the player to be granted access to the narrative. It is in these ways that we might consider the game as a frameless fiction: the huddle enacts the fleshy body which escapes the grasp of the human, forming a strange oscillation between here and there through the affects it produces on the player. It is a game that provides some of the grammars for thinking through the unhuman, flesh, agency, and access that VR should attend to; on the whole, the game *Inside* emphasises materiality and embodiment, and in so doing realises the *presence of the unhuman*.

What both *The Girl Who Was Plugged In* and *Inside* share is the realisation of the unhuman flesh, and its being used as sources of energy to fuel their respective network; it is only when the carnal flesh of the unhuman becomes unruly and breaks away from the power structure which houses it, that these systems are made present. The carnal presence of the flesh reveals hidden structures, and the unhuman depicts the complex entanglements of agency and technological systems. In changing the focus of presence to the absolute presence of the flesh, the focus simultaneously shifts from the proliferating ideals of absolute agency and access that we have seen illustrated in Chapter 1. Rather, there is a focus on unruly technological interactions that break these framings; the flesh smashes through the ideology of seamlessness. Wendy Chun acknowledges the

importance of revealing networks, "empowering agents by making the invisible visible."[76] In the texts explored in this chapter, networks are made visible through the corporeal rupturing of unhuman flesh.

The kinds of presence explored in this chapter are not reliant on the successful interfacing of the body with technology. Rather, presence marks a kind of failure and breakdown, where our technologies do not act in a way we perhaps desire or intend, but in so doing reveal their materiality and existence beyond framing. Dylan Trigg emphasises that the unhuman figure is tied up with presence as it is bound to materiality and embodiment, marking "a constant presence that is at once immersed in the world of things but at the same time resistant to being identified with those things."[77] The predominant framings of presence and immersion, which have become synonymous with VR and its unique capabilities, obfuscate the entanglements of bodies, hardware, technological networks, and the ways they emerge as an unruly collective. The flesh pushes at the membrane of the human world, and instead enacts forms of framelessness. Though this chapter has looked away from VR narratives specifically, it has, instead provided a set of texts which best realise the generative possibilities of unruly interactions between virtual environments and the body, possibilities that we will further unpack in the remaining chapters.

The following chapter will continue into the realms of the other-than-human, and consider where the un- and post-human may exchange with one another to expand the complexities of agency, access, and phenomenological representations of frameless worlds. Taking into account the concrete 'framings' of VR in Chapter 1, and their erosion into flesh in this chapter, the following looks more closely at 'weird affect,' as it has been introduced in this chapter. Building out of this chapter's attention to presence as the carnality of embodiment, and the earlier chapter's focus on disorientations of VR, the following two chapters will continue to explore the technology's potentials when it might embrace moments where human agency and access is compromised, and how these can promote the production of new subjectivities.

[76] Wendy Hui Kyong Chun, *Updating to Remain the Same: Habitual New Media* (Cambridge, MA: MIT Press, 2016) p.43.
[77] Trigg, p.116.

Chapter 3

Glitch/Noise/Immersion

"Affects are transitions, gateways, and passages between dimensions"

Jussi Parikka, *Insect Media.*

Thus far, this thesis has considered two varying approaches to, and interpretations of, framelessness. The first chapter sought to break down the popular framings of VR, arguing that the reliance on limitlessness and total experiential freedom ultimately offers unrealistic valorisations of user agency and access in the contemporary VR space. To this end, the first chapter introduced framelessness as an ideological challenge to this narrative—one that simultaneously challenges humanist ideals, whilst offering new potentials for disruptive encounters with immersive environments. Where the representational images of VR use in Chapter 1 showcased some examples of the neat categorisations of the human *here* and the virtual world *there,* discussion in Chapter 2 went on to consider instances of the ontological porosity of the digital interface, exploring frameless fictions of flesh, the unruly, and the unhuman. Chapter 2 illustrated framelessness at the limits of fixed ontological matter. In so doing, the chapter sought to provide new conceptualisations of presence in a way that might expand the reductive discourses surrounding VR which position its most important affect as the sensation of "feeling like you're actually in a place."[1] Presence does not encapsulate feelings of the *not quite* here/there, and yet this is where, as this chapter will continue to argue, VR has some of its most interesting effects. This second chapter outlined modes of agency and access that extend beyond the human, looking closely at how phenomenologies of the flesh and the unhuman might experientially manifest during use the of immersive technologies. In addition, it analysed some of the ways these phenomenological modes help to narrate some of the more unruly relations between bodies and their technological counterparts. As such, Chapter 2 illustrated the ways we might reconsider presence as it is entangled in issues of embodiment, materiality, and affective sensation; it left off in the in-between

[1] Mark Zuckerberg Facebook broadcast, 'Mark Zuckerberg – Safari in Puerto Rico, *Alienmode* (2017) <https://www.youtube.com/watch?v=N-MkduVh0wM>

– where the affective sensation of presence leaves users smeared between the here and there.

Following on from the preceding concerns of the thesis thus far, this chapter will continue to toy with the established terminologies surrounding VR, and explore alternative experiences, representations and theoretical approaches to *immersion*. Not unlike presence, immersion has become a somewhat elusive word in both the marketing of VR, and descriptions of its use. As has been previously discussed, the framings of immersion have become synonymous with VR hardware itself; its capacity to submerge users, as if in water,[2] into virtual worlds governed by alternative logics and rules has become the technology's definitional and experiential centre. VR experiences are difficult to narrate; there is not yet a prevalent discourse which allows users to wholly capture the unique affects VR produces. This is perhaps why neat representations, and the overuse of the terms 'presence' and 'immersion,' have become commonplace. Chapter 2 of this thesis took a step away from VR specifically, and introduced fictional worlds and artworks within other mediums as a means of accessing and revealing some of the more difficult-to-narrate experiences that are associated with the human body coming-into-contact with unruly technological systems; for example, narratives that illustrate where embodiment persists and fights against the logics and infrastructures of virtual worlds. Referring specifically to sci-fi and body-horror narratives, the flesh was shown to be the unit which is, in some ways, always in conflict with the mediated world it finds itself grappling with.

This chapter will continue to push beyond popular definitions of immersion, and what it is to be immersed, in order to attempt to guide considerations of VR down those paths that veer away from perfect immersivity towards *immersion in worlds of error*. That is to say that I am making the case for a type of immersion which is not all-encompassing, not governed solely by human action, and not a comfortable err toward realism; rather, immersion can be unruly, disorientating, and *weird.* We might come to learn more about immersion if we look toward glitch and error, and I attempt, here, to evidence the bold claim that glitches do not necessarily 'break' immersion. In fact, they produce a new opportunity for a certain kind of immersion in worlds that are not created for the user, or with user empowerment at the forefront. Glitches can cooperatively work with the

[2] Janet H Murray, *Hamlet on the Holodeck* (1999) p.98.

ambitions of immersion to surround the entirety of our bodily and perceptual apparatus, by providing users with access to unexplored hardware infrastructures. In order to make this case, this chapter will take inspiration from the literary landscapes of weird fiction, looking closely at the narration of weird affect and its conceptual alliances with forms of mediated error, including glitch and noise. Overall, the chapter wants to utilise the narrativization of weirdness to further understand immersion in worlds not-for-us[3] (humans), where the world recedes from us as opposed to welcoming us in. This, it will argue, is the emergence of frameless immersion—a form of immersion that is more than total subjective access to worlds beyond, and instead captures the ambivalences of confronting mediated *Outsides*.[4]

The weird illustrates and narrates specific and unruly forms of immersion through affective encounters with *worlds not-for-us*. The more rigorous definitional work around the weird and weirdness will come later in this chapter. However, to offer a brief definition, the weird might be considered as that which marks the interaction of the human with an unknown Outside, a place or being that is completely other than the human/world. Oftentimes, weird fiction relays the affective and phenomenological (human) responses to encounters with worlds and other-than-human beings that defy the coded logics of the human world. As we have seen already, unhuman subjectivity sees the body itself emerge as an uncanny site; the weird shares similarly unsettling sensations related to embodiment. Human agency, however, is most often challenged in works of weirdness via the *encroaching* of the nonhuman onto the human body,[5] where the body comes into physical contact with worlds and entities that are wholly beyond human comprehension. Weird things evade human logic and capture; they rely on the body in order to translate them into something comprehensible.

With this in mind, I argue that weirdness provides another useful illustration of frameless phenomena because of its resistance towards human cognition and comprehension, and their will to enframe. The weird, fundamentally, is that which cannot be framed. Referring back to Heidegger's notion of enframing, and the ambition of the human subject to frame the world for their own use, weird fiction is emblematic of the

[3] The *world not for us* is an idea taken from Thacker's work on *The Horror of Philosophy*, which will be outlined within the body of the chapter.
[4] The conceptualisation of the Outside (with a capital O) is prevalent in Mark Fisher's work on *The Weird and the Eerie,* which will be explored in detail later in the chapter.
[5] Ibid.

narration of worlds which absolutely resist human framing; any attempt toward understanding sees the world recede further away from comprehension. Weird worlds translate into strange and unsettling affects, yet they can still be immersive. In addition, I argue that weird encounters are immersive, whilst simultaneously being aligned with perceptual error. This chapter will continue to inject unruliness into the otherwise neat etymology of immersion already unpicked in the previous chapters, and argue that instances of mediated error and VR glitches enable new understandings of what immersion is, and how it manifests via affective encounters. I argue, in particular, that glitches are themselves inherently weird phenomena, as they mark disruptive chasms in seamless experiences that reveal our limited understandings of the ways these worlds are produced. Glitches and error also reveal the processes behind the rendering of virtual worlds, and *enweird* the technology for the user. The enmeshing of glitch, noise, and immersion in this chapter will exemplify another form of frameless fiction which sees mediated error not as counterproductive, but as disruptive and revelatory.

At this stage of VR development, the novel feelings produced by entering a virtual world and interacting with virtual entities, are wholly weird. Disorientation, loss of agency, and awe are common phenomenological and affective experiences in VR, yet they are not oppositional to the experience of being immersed – we just don't quite have the language to describe immersive experiences that are not seamless and neat. This chapter will argue that weird fiction, and theoretical approaches to the weird, can provide us with some of this language. The weird might offer us ways of narrating immersion not as a totalising phenomenon, but one that in reality is made up of more subtle affective encounters with otherworldly landscapes, beings and objects. Blackman notes that affect studies seek to consider the body's "immersion in the world."[6] Weird fiction, and studies of the weird, however, oftentimes illustrate affective encounters where one does not feel comfortably immersed in, or integrated within the world; rather, the world seems to resist and pull away from human subjects. The weird categorically resists "submersion" as a concept. Rather, interactions in works of weird fiction are more subtly affective than totalising. The weird, I argue below, might provide us with some experiential examples of immersive worlds which co-emerge with error.

[6] Lisa Blackman, *Immaterial Bodies: Affect, Embodiment, Mediation* (New York: Sage, 2012).

Existing discussions of weird affectivity and error in VR are very limited, though Susan Kozel has recently explored the affective implications of VR from a somatic point of view. Kozel's work in somatic materialist studies provides rigorous discussions of what she calls the "phenomenology of affect," and she conceptualises affect in VR as what she refers to as a "shimmer." The passage of intensities associated with VR affect, she argues

> is like a vibration or a shimmering, in the sense that shimmering is based on change and is not a static state. Viewed this way, affect might travel through familiar states of feeling, but it may also participate in the creation of something that did not exist previously.[7]

Any embodied action within a virtual environment ultimately affects the user, the virtual realm, and the system which produces it; the VR user is not simply an observer, but affective, affecting, and affected by the encounters. Kozel defines affect as "bleed[ing] across the borders of a single body," describing it as "more like a cloud: it is as likely to be creepy as it is euphoric and it does not just come from bodies, but encompasses objects, structures, animals, systems, and all things environmental."[8] She describes affect as being part of an ecological essence which extends beyond the human subject, considering the ways affect flows amongst all things within a given environment. It is through this ecological essence of affect that I associate VR with the genre of the weird and the manifestation of weird affect: the weird challenges human agency and access in the narration of that which exists outside of human comprehension. Weird entities challenge understandings of the world as it is framed for, and by, human beings. Kozel's phenomenological framework, as we will come to see, holds particular significance in the exploration of the chapter's central textual analysis, and will be explored in further detail later in the chapter.

I will be investigating Jeff Vandermeer's 2014 novel *Annihilation*, and the film adaptation of the same name (Alex Garland, 2018) as my central case studies here, works of weird fiction that, I argue, give novel insights into the intersections of the weird and mediated error/glitch. This is not, perhaps, the overarching aim in either of these

[7] Susan Kozel, 'Somatic Materialism or "is it possible to do a Phenomenology of Affect"?', *Site,* 33 (2013) p.159.
[8] Ibid.

narrative works. This chapter, however, considers the rich transition of the written text into the film—particularly the ways that Garland's adaptation translates Vandermeer's weird entities into visual spectacles that take inspiration from mutation and mediated error. In Garland's adaptation, the CGI rendering of the novel's central setting, *Area X*, sees natural phenomena blended with mediated imagery; it is captured by a series of perceptual glitches which mark the limits of the human world. For example, the borders of the landscape presented in the film replicate a kind of seeping interface to represent its otherworldliness and the weirdness of its infrastructure. In order to realise this chapter's claim that glitch, noise, and immersion can form a shared dialectic, it will analyse the narration and visual representations of experiential glitches within *Annihilation* as a form of frameless immersion. It will consider the ways that the texts' narration of weird entities shares common ground with experiences of unruly mediation, as they both seek to reveal the underlying contours of perceived realities –unruly mediation unravels the black-boxed architectures of technology, where the weird unravels the façade of human logic and understanding by revealing their limits. Both instances also allude to agencies beyond the human, and simultaneously produce unsettling and disorienting affects for characters, readers, and viewers alike.

Mapping out this chapter's trajectory, it will firstly take a closer look at immersion's existing definitional boundaries, including the taxonomy of immersion offered by Marie-Laure Ryan, in the already referenced *Narrative as Virtual Reality* and the writings of influential VR scholar, Mel Slater, which see immersion through the lens of technological advancement, as well as the production of realism. Through exploring writings of manifestations of immersion in virtual environments, I will then assess the ways existing definitions speak to specific conceptualisations of VR's 'insides' and 'outsides,' its insides being that of a user being immersed wholly in a virtual world, and outsides being the hardware, body, and 'real world' environment. In order to offer an alternative to these persistent framings, I will then turn more closely to Eugene Thacker's positioning of phenomenological and planetary insides and outsides, as that which is familiar and unfamiliar to human experience. With Thacker's work in mind, the chapter then turns towards the theoretical discussions of 'the weird' and its relationship to affect; establishing that affect provides an opportunity to pull immersion away from the dualistic inside/outside model. It will then look closely at Jeff Vandermeer's *Annihilation* in order to assess some of the ways existing definitions of immersion aren't wholly

encapsulating of instances where one does not feel part of a world as it is presented to them. The chapter looks closely at the text's weird entities and draw comparison between experiences of weirdness, immersion, and the ways weirdness captures immersive and perceptual encounters with error. Leading on from error's place in the weird, the chapter will then explore the ways that mediated forms of error, including glitch and noise, are inherently weird encounters in the ways that they *enweird* the ontologies between human and machine; this sub-section looks closely at the manifestos of Rosa Menkman and Legacy Russell, both of whom write of the disruptive potentials of glitch as the emerging agency of machinic infrastructures. With this notion of distributed agency in mind, I establish a taxonomy of glitches relating specifically to VR experiences and the emergence of unruly and intimate encounters. Finally, the chapter explores Garland's film adaptation of *Annihilation* in order to further consider the intersections weirdness and the visualisation of mediated error. My hope is that this chapter will allow for new considerations of the ways VR development can embrace the unruly, and how developers might work alongside the limitations posed by the technology. Perhaps most importantly, I hope that the exploration of weird encounters in VR enables an approach to the technology which pulls away from its humanist tendencies, and speaks to those agencies which escape VR's popular framings.

Immersion – what does it actually mean?

As the thesis alluded to in its first chapter, immersion has become the totalising definition of virtual reality itself. Yet, there is little nuanced understanding, particularly in its popular expressions, about what the term means, and the wide array of feelings that can be associated with 'being immersed.' Aside from the idea that one *feels part of a world* presented by a medium, whether a book, a TV screen, a videogame, or VR experience, immersion itself remains relatively obscure. In the realm of contemporary virtual environments, it appears that the 'realism' of a mediated world has become the predominant factor in determining its immersive potential.

As one example of the contemporary reliance on the term "immersion" to convey lifelikeness, a review for Rockstar's 2018 game *Red Dead Redemption 2* described the

experience of playing the game as "total immersion in an astonishingly lifelike world."[9] The review continued to write of the game's determination to immerse it's players in "the obsessive detail on show" – arguing that the overall effect of the game's level of detail was "nothing less than total immersion, the sensation of a lived experience."[10] In contemporary discourse, immersion has come closer and closer to being synonymous with recreating the experience of reality. This has the potential to stilt the exciting potentials VR offers, if it simply becomes the endless pursuit of the recreation of the perception of the real world. The framing of immersion-as-realism is seductive, because it is comfortable. However, a world's detail doesn't necessarily make it welcoming; enticing worlds, as we will come to see, can still resist us in ways that are not lifelike, but fundamentally *weird*.

Mel Slater's work is often cited in academic work exploring definitions of immersion in regards to VR experiences specifically. In earlier work written with Sylvia Wibur (1997), Slater and Wilbur define immersion as "the idea of external, objectively measurable characteristics that lead to a capability of placing an individual inside a computer generated environment."[11] In a 1996 article, Slater points to immersion as "an objective description of what any particular system does provide."[12] In a later article written in 2009, Slater reflects on his earlier definitions of immersion, stating:

> by definition, one system would be more 'immersive' than another if it were superior on at least one characteristic above—for example, higher display resolution or more extensive tracking, other things being equal.[13]

In this regard, Slater suggests that superior systems allow for increased immersivity. With better hardware, Slater suggests, immersion emerges through "the valid actions that are possible within a system."[14] In this piece, he continues to state that "it should be

[9] Keza MacDonald, 'Red Dead Redemption 2 review – gripping western is a near miracle, *The Guardian* (2018).
[10] Ibid.
[11] Sylvia Wilbur and Mel Slater, 'A Framework for Immersive Virtual Environments (FIVE): Speculations on the Role of Presence in Virtual Environments' (1997) p.8.
[12] Slater et al, 'Immersion, presence and performance in virtual environments: an experiment with tri-dimensional chess,' *VRST '96: Proceedings of the ACM Symposium on Virtual Reality Software and Technology* (1996) p.165. pp.163-172
[13] Slater, 'Place illusion and plausibility can lead to realistic behaviour in immersive virtual environments,' *Philosophical Transactions B,* 12 (2009).
[14] Ibid.

noted that the level of immersion is completely determined by the physical properties of the system."[15] Slater's definitions of immersion place emphasis on the quantifiable elements of the experience and on the capabilities of the hardware's capacity to mimic real-world perceptual experiences. With these kinds of definitions in mind, it is no surprise that 'triple A' (AAA) games, or those with the highest developmental budgets, are consistently described as the pinnacle of contemporary immersion. As noted above, this chapter argues that mediated error and the weird can provide gateways into further understanding immersion in worlds we *do not* feel part of. Frameless immersion places little emphasis on the innovative capabilities of the technology to hand. Rather, it embraces the unruly interactions that emerge between the body and hardware; we might learn more about immersion if we also learn to embrace error.

'Insides' and 'Outsides'

There is some novelty to be restored to the term immersion by looking at its origins and lineage within mediums other than contemporary virtual environments. Much of the discourse surrounding immersion and immersive experiences draws on ontological 'insides' and 'outsides.' The inside is oftentimes considered to be the virtual environment (the world displayed on the interface) whilst the outside is that of the real world (the physical space where the body of the user moves). Marie Laure Ryan's *Narrative as Virtual Reality* (2001) considered the ways immersion manifests in the reading of textual narratives, where readers engage in an "imaginative relationship to a textual world," forging "an experience through which a fictional world acquires the presence of an autonomous, language-independent reality populated with live human beings."[16] Ryan's work illustrates a taxonomy of immersion in relation to textual worlds. Firstly, she defines 'Spatial Immersion' as the blending of the reader's private landscape with the textual geography, providing a sense of security and rootedness. She then explores 'Spatial-Temporal Immersion' as the reduction of distance between narrator and addressee. Finally, she defines 'Temporal Immersion' as the relaying of the lived experience of time, as opposed to clock time through the implementation of suspense.[17]

[15] Ibid.
[16] Ryan, p.95.
[17] Paraphrased from ibid.

Throughout her taxonomy, Ryan sees immersion as a spatio-temporal phenomenon in which the boundaries between fiction and reality are blurred, arguing that textual narratives themselves function as kinds of virtual reality. Ryan's taxonomy of immersion, however, despite being focused on narrative and imaginative capacity, also alludes to the phenomena as one of mimicking reality to a degree, a transparency of the medium where "immersion in virtual worlds leads to a virtualisation of the experiencer."[18] Here again, we see that immersion stands in for the coming together of the 'experiencer' and the virtual world – where the space and time of the real world are reproduced. Little consideration has given to immersive experiences that resist realism, or do not have realism as their core imperative. Ryan's allusion to the virtualisation of the user implies that immersion leads to the user's body becoming subsumed from materiality into the virtual space that their action takes place within. That is to say that if the technology and the body work in totalised harmony with one another, the user somehow becomes virtual too, sacrificing their corporeality—if not in real-time experience, at least in this kind of theoretical account. We saw examples in the previous chapters where the 'virtualisation' of the fleshy body was revealed as a seductive promise of free-floating transcendence. Yet, the body persists. This thesis, rather, pays attention to the underexplored frictions that emphasise corporeality and materiality, where technology and the body do not work in total harmony with one another. Rather, there is a resistance—something, we will see, that the weird and mediated error embrace and emphasise.

In more recent work, Alice Bell et al discuss immersion in relation to digital fiction as an ontological phenomenon which can be less totalising than one assumes.[19] In their empirical study, Bell et al concluded that immersion manifests as a "fully embodied, multimodal experience that is stimulated by features inside and outside the text" and regard it as a "doubly-bodied" phenomenon.[20] Bell et al's study suggests that there is a dual ontological experience at play when players participate in an immersive experience; rather than a virtualisation of the user's body, their conclusion suggests that the user is simultaneously embodied both *inside* and *outside* a text. If we are to consider the insides and outsides of virtual environments, where immersive worlds become the perceptual 'realities' of their users, we might reflect on the affective collisions that disrupt the neat

[18] Ibid, p.31.
[19] Alice Bell et al, 'Immersion in Digital Fiction: A Cognitive, Empirical Approach,' *Literary Linguistics International Journal*, 7.1 (2018), p.19.
[20] Ibid, p.16.

ontological separations between the insides and outsides of VR experiences. And this is where weirdness, I argue, comes in as a useful means of breaking down the ontological framings of inside and outside, replacing them with an Outside, the realm of framelessness. Weird insides and outsides are more philosophically aligned with that which exists within, and beyond, human comprehension. When the human comes into contact with an Outside, however, they necessarily come into contact with the *world-not-for-us*. This world resists us; this Outside is one we cannot enter, yet we do not have a safe haven inside, either. In order to further understand how we might reconceptualise immersion to encompass experiences that extend beyond realism, we might consider the ways we can become immersed in worlds that resist us.

Before turning to the weird, I look to Eugene Thacker's philosophical tiers of worldly familiarity found in his *Horror of Philosophy* series. Within this series, Thacker explores the ways philosophical enquiry inherently evokes horror through its demarcation of insides and outsides, in the ways that it highlights the absolute, horrific unknowability of the world. For Thacker, 'the inside' alludes to that which is comprehensible and human, whereas 'the outside' marks that which is beyond comprehension and other-than-human. Thacker considers the ways we conceptualise the world we live in through various layers of understanding and experience, arguing that our world, the one within which humans reside and live out their lives, should be referred to as the "world-for-us." This world is one where human beings interpret and give meaning to "the world we relate to or feel alienated from, the world that we are at once part of and that is also separate from the human."[21] This is the world of the quotidian, the one that we familiarise through our daily lived experience; we link this to the day-to-day, our experience of the world *as it exists for us*. This with is in mind, we might consider this world to be the framed world—one that we mould around our actions and needs within it. Following this, Thacker refers to the "world-in-itself," which is the world which is described as "biting back," the world in an "inaccessible, already-given state"[22] that is incomprehensible. This might be best exemplified by images of Earth from space, an expansive view of the world that we can never wholly access and one that is, and remains, beyond our immediate experience. In the moment the human subject attempts to think about, or interpret, the *world-in-itself*, it becomes again the *world-for-us*. This is when we

[21] Thacker, *In the Dust of This Planet: Horror of Philosophy vol.1* (Hants: Zero Books, 2011) p.4.
[22] Ibid, p.5

essentially attempt to frame the world and give it meaning. Thacker delineates these different worlds through levels of removal from the human: first the World, then the Earth, and then the Planet. Each time, the human recedes further away from an imagined centre point. The *world-without-us* is one that exists totally beyond human intelligibility, one which humans can never consciously experience or interpret, a world that has been subtracted of the human. The entity of the world which we will never wholly access, the Planet, is always already beyond the human. Between these conceptualisations of the familiar and unfamiliar world, Thacker argues that the affect of horror is produced, describing it

> [n]ot as dealing with human fear in a human world (the-world-for-us), but [rather] that horror [can] be understood as being about the limits of the human as it confronts a world that is not just a World, and not just the Earth, but also a Planet (the world-without-us). This also means that horror is not simply about fear, but instead about the enigmatic thought of the unknown.[23]

For Thacker, 'the inside' stands in for that which is comprehendible to the human, whilst 'the outside' is that which is beyond comprehension; where the inside marks the graspable, the outside is the non-human and maintains the ungraspable essence of the *without-us*. Thacker outlines the difficulties of grasping and taking seriously the world outside as an important and politically fraught arena, where

> we are increasingly more and more aware of the world in which we live as a non-human world, a world outside, one that is manifest in the effects of global climate change, natural disasters, the energy crisis, and the progressive extinction of species world-wide[24]

As such, *The Horror of Philosophy* reaches toward the limit of philosophical enquiry, where "we cannot help but think of the world as a human world, by virtue of the fact that it is we human beings that think it."[25] Thacker argues that horror artworks might enable

[23] Ibid, pp.8-9.
[24] Ibid, p.2
[25] Ibid.

access to this "world outside" by enabling specific representations of the non-human entering the human world, and offering a series of encounters which disrupt the world as it is enframed within human thinking.

Thacker's approach gives some useful insight into the validity of limitation, a framework which disorients the human subject from the centre of a universe that is never for us. In so doing, Thacker almost looks at the history of phenomenological thinking from an outside, looking at human experience and saying "this is never enough." This philosophy of insides and outsides is wholly different to understandings of the insides and outsides which prevail in writing on "immersive" experiences. But Thacker's *Horror of Philosophy* provides a framework for thinking about worlds that resist us. On a planetary scale, this is difficult to comprehend. But if we bring this kind of theorisation into the VR space, we might be able to better narrate the experiences of the simulated world slipping away from us, when the nonhuman agency of the simulated *world-in-itself* doesn't do exactly as we tell it to. This is where *givenness* is compromised, and we embrace the persistent unknowability of the world, instead of trying to conquer it. The horror that Eugene Thacker alludes to is an affect which emerges when we acknowledge that the human is not in everything—when we regard the world, or the virtual environment respectively, as existing without us, our action, our agency; affective states of horror emerge when the world does things beyond our cognitive comprehension. This kind of horror is the affective epicentre of the Weird.

Weirdness

As we have seen, conceptions of immersion are often rooted within a dualistic ontological model of insides and outsides. Yet if we reconceptualise what these 'insides' and 'outsides' are, we are able to further understand the affective implications of immersion in worlds that do not place user agency and access at their centre. Rather than an unfurling coming-into-contact with a world never wholly in reach, immersion is commonly synonymous with the affects of submersion, requiring users to adapt to new conditions. We might instead draw watery inspiration from immersion's etymological roots by focusing on the porous nature of immersion, not as an all-encompassing experience, but one that instead ebbs and flows in real-time. It is here that I turn to weirdness to suggest that, as opposed to submersion, immersion entails more subtle

affective encounters with other worlds. The language used to describe interactions with weird entities, I argue, enables more nuanced ways of articulating the affects of coming-into-contact with virtual environments, and the entities within them, in ways that are not wholly encompassing. As prefaced in the introduction to this chapter, I refer to the weird as that which marks the interaction of the human with an unknown Outside that resists enframing and instead brings with it the narration of affective encounters with worlds-not-for-us. The weird's narrates embodiment through unfurling affects, resisting the urge towards totalising bodily sensations.

The weird finds its roots in a literary movement which emerged in the late eighteen- hundreds. This movement didn't find its place in the literary landscape of gothic fiction; as opposed to descriptions of eerie atmospheres where the human is seemingly absent, the weird was more invested in encounters with an absolute Outside – a hint at worlds beyond human perception. The weird pushes at the borders of other known genres, including horror and science fiction, but resists generic classification.[26] In both works of fiction and philosophical thought, the weird is invested in the narration of things that are inherently difficult to narrate. As such, the genre appeals to its audiences' reliance, instead, on the narration of embodied sensations of those things in order to try and cognise them. Take, for example, the narration of one of Walter Gilman's dreams in H. P. Lovecraft's short story 'The Dreams in the Witch House' (1933):

> Gilman's dreams consisted largely in plunges through limitless abysses of inexplicably coloured twilight and bafflingly disordered sound; abysses whose material and gravitational properties, and whose relation to his own entity, he could not begin to explain. He did not walk or climb, fly or swim, crawl or wriggle; yet always experienced a mode of motion partly voluntary and partly involuntary. Of his own condition he could not well judge, for sight of his arms, legs, and torso seemed always cut off by some odd disarrangement of perspective; but he felt that his physical organization and faculties were somehow marvellously transmuted

[26] Roger Luckhurst discusses the weird's resistance to generic classification in his essay 'The weird: a dis/orientation.' In this essay, Luckhurst argues that 'it is better to think of the weird as an inflection or tone, a *mode* rather than a *genre*.' (p.1045).

> and obliquely projected—though not without a certain grotesque relationship to his normal proportions and properties.[27]

The story tells of the experiences of Gilman, a student who moves to the fictional town of Arkham Massachusetts to pursue his studies in Mathematics at Miskatonic University. Whilst lodging in 'the Witch House,' he experiences strange dreams and hallucinations of "organic and inorganic" entities – most of which are instigated by his obsessions with the architecture, geometrical patternings, and "unearthly symmetry" of the house. In the excerpt above, we see the narrator describing Gilman's incapacity to explain the worlds conjured within his dreams. Rather, the narrator describes the ways the space enacts certain affects upon his body – a "disarrangement of perspective" where his body felt "obliquely projected."[28] The weird logics of his dreamspace remain somewhat elusive to description, but are made understandable to the reader by their imagining of the feelings the space produces on Gilmore's human body.

The horror of Gilmore's experiences are expressed through the ways that his body, his subjectivity, is made to feel "grotesque;" this element of bodily horror has been explored in Chapter 2, and will be returned to in more detail in the following chapter. Here, however, it is worth noting that Lovecraft's narration almost reads as the glitching projection of a body in another environment: when in the dream space, Gilmore feels othered from his own body, yet immersed within the "limitless abysses" of his dreamspace. This tale, along with the majority of works within Lovecraft's oeuvre, narrate a coming-into-contact with "the boundaries of the world of space."[29] In the same way, Lovecraftian narration often references the limitations of human comprehension, as well as the compromising of agency and access. If we interpret the example above as a narration of Gilmore's immersion in an unknown space, we can see that this is not a clean and comfortable form of realism. Rather, it turns to the body as the locus of feeling immersed in strange sensations and affects of the space beyond the familiar world. Weird fiction provides an avenue through which to interpret immersion in worlds not-for-us, for those that pull away from us. We could liken Gilmore's dream encounter with the encountering of an unruly virtual environment, where our bodies seem to pull away from

[27] H.P. Lovecraft, 'The Dreams in the Witch House,' in *The Complete Fiction of H.P. Lovecraft* (ReadOn Classics, Kindle E-Book, 2015) p.3371.
[28] Ibid.
[29] Ibid,p.3344.

us, and the world pulls away from us too, not dissimilarly to the unruly decapitation that I used to introduce this thesis. It is, with this exploration of weird texts written and produced for other mediums, that we might better understand the affects of framelessness in VR, when virtual environments unfold and do things we are unable to enframe; this idea will be returned to later in the chapter, where I establish a taxonomy of glitches relating to VR and its specific affects.

In his work *The Weird and the Eerie*, influential cultural theorist Mark Fisher responds to a letter written by Lovecraft in 1972 to the editor of *Weird Tales*, where 'The Dreams in the Witch House' was originally published. In the letter, Lovecraft asked for the collective of magazine writers to "leave humanity and terrestrialism at the threshold."[30] Lovecraft indicates that in order to write weird fiction successfully, one must attempt to narrate the unknowability of the world. Responding to Lovecraft's request in his own work written four decades later, Fisher notes:

> if the Outside (with a capital O) encroaches on the human subject, its alien contours can be appreciated […] the attempt to capture the boundless and hideous unknown without any reference to the human world at all is to risk banality.[31]

It is in this regard that Fisher argues the narration of the Outside relies on embodiment in order for its alien contours to be realised. He describes the weird as a hint at the conflicts and ruptures between this world and others though the "encroaching" of an experiential outside onto the human subject.[32] There is a possibility, he suggests, for the human world to open out onto an Outside through these encroaching encounters with the body, and that such encounters manifest as weird affects. He alludes to the genre of the weird as being simultaneously tied to coming-into-contact with worlds beyond, but that it is also concerned with the very limits of human cognition, arguing that the weird does not function as an opportunity to lose sight of the world we know, but to acknowledge the weird as an Outside which is beyond anything we can comprehend. He states:

[30] Mark Fisher, *The Weird and the Eerie* (London: Repeater Books, 2016) p.20.
[31] Ibid.
[32] Ibid.

> Worlds may be entirely foreign to ours, both in terms of location and even in terms of the physical laws which govern them, without being weird. It is the interruption onto this world of something from Outside which is the marker of the weird.[33]

The weird, then, is premised upon interplay and exchange: as opposed to being submerged in a world, as is suggested by the etymology of immersion, weird encounters mark a complex entanglement between here and there, the familiar and unfamiliar.

The author of *Annihilation*, Jeff Vandermeer, discusses the emergence of weirdness in literature in his own critical writings about the genre that best captures his own fiction. Vandermeer establishes how the weird differs from horror in the ways it places emphasis on the unknown:

> Unlike types of horror, the emphasis is not on fear or terror/horror, the emphasis is on this beautiful unknown thing that may be monstrous but that isn't automatically considered deadly or horrific.[34]

For Vandermeer, weird fiction offers an alternative mode or set of affects to that of horror (which will be the focus of Chapter 4), in that it is not necessarily concerned with producing an embodied or emotional response of fear, but produces affective collisions with the strange and unknown. China Miéville, another prolific contemporary writer of weird fiction, contests that where horror might be concerned with vampires and zombies, which he describes as "minimal allegorical displacements of the human,"[35] the weird would alternatively be concerned with the tentacle or limb-type, that is "suggestive of absolute alterity."[36] Roger Luckhurst describes the weird as being "difficult" and "elusive" in the way that it "dissolves generic glue."[37] In particular, Luckhurst suggests that the weird is a "mode that offers a formal rendition of *perversity,* understood as a twisting away from heteronormative destinations,"[38] and argues that the weird exemplifies a

[33] Ibid.
[34] Emily Wenstrom, 'Weirder and New Weirder: An Interview with Jeff Vandermeer,' *Bookriot* (2018) <https://bookriot.com/jeff-vandermeer-interview/> [accessed January 2019].
[35] China Miéville, 'M.R. James and the Quantum Vampire,' *Collapse IV*, R. Mackey, ed (Falmouth: Urbanomic, 2018).
[36] Ibid.
[37] Luckhurst p.1042.
[38] Ibid, p.1051.

"queer errancy."[39] These ideas are also resonant with those of queer phenomenology, revealing new spaces Outside of that which Sara Ahmed describes as a straight way of seeing – a narrativization of a slantwise orientation,[40] as we saw in Chapter 1. The weird, as a world-building enterprise built upon the movement away from 'normative' vision, illustrates immersive encounters with inaccessible spaces, or environments which pull away from the subject. Access is never wholly given, but there is an affective hint towards an elsewhere that cannot be wholly grasped.

The emergence of what has been labelled 'The New Weird' in the early 2000s was regarded as being more acutely aware of the socio-political realities of the modern world, relying on worlds beyond to explore contemporary issues from new perspectives. For China Miéville the figure of the octopus is the actualisation of what he terms a *problematised ontology*, suggesting that the octopus' tentacle marks "the epochal shift to a weird culture."[41] In his articulation of the tentacular, chaotic weirdness of the octopus, Miéville discusses the impossibility of the merging of human subjectivity with the absolute alterity of the weird and suggests rather that there is a "haptic flirtation"[42] between the two. The notion of this "haptic flirtation" provides something of a significant approach to the ways we understand embodiment in virtual spaces. A haptic encounter which at once forges an interaction between the human and nonhuman does not necessarily allow for absolute access and comprehension. Rather, there is a point of contact through which the two meet but are not necessarily given complete access to one another's worlds.

Mieville continues to articulate that within the haptic framework of the octopus that "the octopus should, with the oozability of Weird skin, merge with the skull to become a skulltopus,"[43] yet acknowledges that this is never possible; though the skull marks the loss of humanity, the antiquity of the human remains. The tentacular weird, Miéville argues, "enweird[s] ontology itself."[44] Miévelle's configuration of the octopus morphology provides a useful insight into the contact points of worlds of alterity, those which do not have the human at their centre. Though Mieville argues that touch and touchability are central to the weird in that they mark "the horror of matter" (p.120),

[39] Ibid, p.1052.
[40] Sara Ahmed.
[41] Miéville, p.105.
[42] Ibid.
[43] Ibid
[44] Ibid.

touch marks an encounter but not necessarily an understanding. It is evident that affect persists in the evolution of the weird. The human body becomes the locus for realising the presence of the Outside, but access is never wholly given. The alien contours of weird worlds emerge as affect – a form of immersion not at once totalising, but one that unfurls momentarily across the body of the human subject. In the moment that contact is made with the world Outside, tentacles reaching outward, it is marked as a form of *interruption* onto the world of human experience. As Fisher notes, the weird is differentiated by the intrusion of an elsewhere onto this familiar world. With these ideas in mind, I argue that we might be able to consider forms of mediated error and interruption as being wholly weird: forms of mediated error and the weird share their capacity to mark the limits of human access and agency. When virtual environments, (particularly those that are proximal to our bodies) do things we do not expect, they become weird. They reveal the limits of our capacity to enframe them within our familiar experience of this world, instead revealing the unruly emergence of worlds-not-for-us.

Immersion in a World of Errors

I want to return to the personal experience of a VR glitch that I relayed at the very beginning of the thesis, the moment where my body moved so abruptly in fright during a horror game that the head of my avatar came away from its body. I return to this experience because we can look at it anew in the context of the weird and understand it differently: though anecdotal, I use this as a visceral example of the unruly interactions that can occur between bodies and virtual environments through contemporary VR devices. This unruly interaction added even more fright, but also possibility, to the narrative that I was experiencing. In thinking about the oozability of the world as my body came into contact with it, or the ontological and affective fluidity of the environment, it struck me during that encounter that immersion and glitchiness might be able to simultaneously co-emerge.

I make the case here that the disparate ideas of immersion and glitch can complement one another, and simultaneously emerge alongside one another. Glitch and immersion are consistently placed in opposition to one another. Yet the weird, as a mode of theoretical enquiry and fictional genre with an established set of tropes, is premised on the essence of human immersion in worlds of error. The weird, I argue, gives life to

the *experiential glitch*: humans come into contact with weird entities that reveal the underlying contours of the 'realities' they perceive. This is not dissimilar to the potentials of the technological glitch, both in the ways that they reveal something about the underlying functioning of the technology, but also in the ways that they signal the unruly and unanticipated emergence of the other-than-human. The taxonomy of VR's specific glitches established later in this chapter will concretise the idea that, not unlike the weird, glitches mark the limits of human agency and access.

Jeff Vandermeer's 2014 novel *Annihilation* and the 2018 film adaptation directed by Alex Garland both bring together elements of immersion and glitch via the weird. The idea of the *beyond human* (that makes itself present precisely through coming into contact with humanity) is prevalent throughout Vandermeer's novel, especially via the capturing of the perceptual flux between the organic/non-organic, still/moving, object/organism. Each entity in the text is mutative, subtly changing beneath their respective surfaces. The tower that the protagonist slowly makes her way towards in the text, the example which is central in my analysis below, marks a kind of experiential glitch where a stone structure takes on a fleshy, living, and organic presence. The filmic representation of *Annihilation* represents the contours of Area X, the central setting of the narrative, through various forms of visual glitch, and disruptive digital imagery enacts Vandermeer's visceral narrative descriptions of the area's mutating surfaces. *Annihilation*, and its filmic translation, provide two contemporary texts which narrate immersion in worlds of error. By worlds of error, I speak to those worlds not for us—those which escape human enframing and exist outside the logics of the familiar world. As such, the entities, objects, and organisms which cannot be enframed are experienced by the protagonist as errors, and are described or presented during short moments of incomprehension. These 'experiential glitches,' nevertheless, immerse the characters in the weirdness of the environments they are within, environments which sit beyond the bounds of the enframed world-for-us.

Given the recent publication of Vandermeer's work, critical writing on his novels and short stories is still emerging.[45] At this stage, the relatively small pool of writing dedicated to exploring Vandermeer's work invariably focuses on its ecological

[45] Perhaps the most prolific writing on Vandermeer's oeuvre is Benjamin J. Robertson's *None of this is normal: The Fiction of Jeff Vandermeer* (2018) which places Vandermeer's work in the realm of the weird, offering useful context for some of his works' central tropes.

implications and its voicing of the nonhuman. Finola Anne Prendergast, for example, considers *Annihilation*'s underlying ethical backdrop, and the ways in which the novel's weird genre tropes "can forward theoretical conversations about environmental ethics."[46] Prendergast argues that the novel's "use of horror tropes implicitly acknowledges human anxiety about value systems that accord human and nonhuman lives the same value."[47] Though ecological implications are evidentially central to Vandermeer's worldbuilding, I want to shift the ecological frameworks in which his work is positioned and address the co-emergence of the natural and technological in the text's transition from novel to film. In particular, the depiction of what is labelled as 'The Shimmer' in Garland's film adaptation uses the visual replication of mediated error to mark the borders of the weird realm. I analyse *Annihilation* as the central text of this chapter because rich representations and visuals that mimic technological error are used to translate the written text into the visual; in particular, the film takes inspiration from visual manifestations of glitch to mark the presence of weird entities and borders into nonhuman realms. This transition enables further understandings of the ways immersion, weirdness, and mediated error can co-emerge, and specifically how glitches affect the human body. These kinds of representations are ever more important when intimate technologies like VR bring us ever closer into contact with emerging forms of mediated error.

Annihilation narrates the experiences of nameless characters, labelled only by their professions (e.g. "the biologist," "the psychologist"), as they embark on an expedition into a partitioned area of land which houses its own weird logics and lifeforms. This location, referred to in the text as 'Area X,' is inherently alien: four women are sent into Area X to find out more about what has brought its ecosystems and lifeforms into existence, and discover more about why it functions as it does. The novel is written from the first-person perspective of the protagonist, "the biologist," who writes of her real-time experiences in a field journal. The film adaptation follows a similar storyline to Vandermeer's novel, but instead refers only to the border which encompasses the area, which is labelled as 'the shimmer.' The film, starring Natalie Portman, visually narrates the expedition as the four central characters cross the borders of 'the shimmer' and

[46] Finola Anne Prendergast, 'Revising Nonhuman Ethics in Jeff Vandermeer's Annihilation,' *Contemporary Literature*, 58.3 (2017) p.335.
[47] Ibid, p.337.

experience the strange microcosm that exists on the other side. The filmic adaptation of *Annihilation* will be explored in more detail later in the chapter; to begin, however, I look closely at Vandermeer's writing of the weird, and the ways through which he narrates the coming-into-contact with the strange Outside of the novel's central setting. Area X, I argue, is narrated as a world of perceptual errors that is inherently immersive, but exceeds realism. As we will see, the ecologies within the novel form strange interactions between human and nonhuman actors, which are revealed to the reader via the affective responses of the main character.

The ecological framework of Area X operates at a level beyond human logic and comprehension, and houses strange beings that vary between the novel and film. This exceeding of human comprehension is what makes the space inherently weird, as the characters within the text are unable to enframe the space within their own understanding. Area X is an Outside; the expedition is established precisely in order to try and enframe the space and scientifically analyse and interpret it. In the written text, for example, Vandermeer depicts a "crawler" which is able to inscribe human language onto the walls of an abandoned tower through plant-like growths that depict letters. The crawler is both insect and plant-like, but remains somewhat elusive to description. All of the living entities in *Annihilation* produce strange affects for the readers and viewers of the text, each individual entity individually marking strange encroachings onto the human world by the other-than-human. According to Mark Fisher, one of the central ways in which the weird impresses itself on the human subject is via the "rhythms, pulsions and patternings of the nonhuman."[48] The nonhuman evokes weirdness through its decentralising of the human world. The landscape of Area X in Vandermeer's novel is scattered with subtle hints towards the nonhuman entities which reside within it. We predominantly encounter the environment through the first-person perceptions of the biologist. In contrast to her ecological expertise, the landscape of Area X is unruly – her expert knowledge and understandings of the ecologies of common fields, forests, and waterscapes of the human world are revealed to be insufficient for comprehending the inner workings of the space. Human understanding is revealed to never be enough.

The environment of Area X is narrated as encompassing a number of crumbling remnants of human-built structures and discarded objects, and provides a space in which

[48] Fisher, p.11.

the human structures maintain a stasis, whilst nonhuman elements and organisms continue to thrive and mutate with an unsettling momentum. The landscape, for example, appears to be constantly "giving way,"[49] where the crumbling human infrastructures are described as "sunken," "rotting," "rusted" or "buried in dirt."[50] The landscape radiates strange illusions of absolute stillness, with hints towards subtle, persistent movement which marks the continual growth of the nonhuman within its unruly ecology. The biologist notes that the stillness within the area dulls their "ability to gauge direction," describing the water that "never stirred, set like glass" and "the constant motionless rain of moss flowing down" (p.5). To the eye, the environment seems eerily still, yet there remain slow, subtle processes that happen beneath the surface of its appearance. What is most unsettling about the environment Vandermeer portrays in the novel is the capacity for other entities within the area to mimic, caricature, and consequently distort subtle elements of humanity. For example, the biologist describes the constant sound of "low moaning" (p.6) in the atmosphere.

In *Annihilation,* the interruption onto the human world from something Outside is most explicitly articulated through the ways the biologist perceives, and affectively encounters, the nonhuman counterparts scattered throughout the world of the novel, all of which simultaneously evoke both fear and awe. One example is the group's discovery of a strange foreboding tower that "plunges into the earth"[51] as if dropped there. The tower provides the setting of many of the strange encounters that occur throughout the novel; its walls and floors are colonised by strange and beautiful ecologies of plants and flowers which are aesthetically beautiful, but also create a foreboding fear of the unknown. Upon reaching the opening of the tower, the biologist notes how the structure "exerted a kind of presence, a blank surface that let us write so many things on it. This presence manifested like a low-grade fever, pressing down on all of us" (p.9). The tower's effect on those who encounter it is substantial: it invites both a strange fascination, but also a mimicry of the symptoms of illness and dread simultaneously. The biologist's affective response can only be likened to the feelings of a fever, alluding to the overwhelming bodily sensations of both warmth and discomfort. The biologist continues to narrate the sensation of coming into contact with the tower:

[49] Jeff Vandermeer, *Annihilation* (London: Fourth Estate, 2014) p.3.
[50] Ibid, p.5.
[51] Ibid, p.1

> Something about the idea of a tower that headed straight downplayed with a twin sensation of vertigo and a fascination with structure. I could not tell which part I craved and which part I feared, and I kept seeing the inside of nautilus shells and other naturally occurring patterns balanced against a sudden leap off a cliff into the unknown. (p.14)

As we have already seen, the weird is elusive and difficult to capture in language. Here, the biologist tries to describe the structure through the complicated and disorientating affects that emerge when she encounters it—combinations of vertigo and fascination, craving and fear, and the natural and unknown. These dualisms represent the strange horror of Area X, which does not incite absolute fear, but provokes the kind of horror Thacker, as outlined above, would align with the realisation of the unknowability of the world.

The weirdness of Vandermeer's novel is also illustrated by the strange entanglements between objects and flesh which act as uncanny markers of the human and nonhuman meshing together. The protagonist feels the sensations of the walls of the abandoned tower moving as if they are made of living tissue:

> the tower was breathing. The tower breathed, and the walls when I went to touch them carried the echo of a heartbeat. . . and they were not made of stone but of living tissue. Those walls were still blank, but a kind of silvery-white phosphorescence rose off them. The world seemed to lurch, and I sat down heavily next to the wall, and the surveyor was by my side, trying to help me up. I think I was shaking as I finally stood. I don't know if I can convey the enormity of that moment in words. The tower was a living creature of some sort. We were descending into an organism. (p.41)

The tower fluctuates between concrete edifice and breathing organism, and is described as "holding its breath, its heartbeat suddenly slow" (pp.59-60). The biologist relies on different kinds of metaphor and the anthropomorphisation of the tower in order to capture its weird essence; the tower is at once very much lifeless, but gives the uncanny appearance of being a sentient entity. None of the other members of the expedition are

able to feel the strange affects that the biologist experiences of the tower. This leads her to realise that she has somehow been granted unique access to the contours of the tower. We come to realise that the biologist has been contaminated by spores emitted from the walls of the tower, and this 'infection' enables her to perceive hidden elements of the frameless world that surrounds her.

Area X is narrated as a dense ecological landscape that blends the animate/inanimate, dead object/living tissue, nonhuman/human. Such representations, and the consequent transgression of ontological categories, share similarities with different kinds of perceptual and experiential glitches which challenge the structured unity of a system in a moment of rupture. In *Annihilation*, both Area X and the tower found within it seemingly mimic the natural world and go beyond it. Suddenly, logical structures and rules are broken, and the appearance of agencies beyond humanity are revealed. The characters' interactions with Area X illustrate the capacity of weird fiction to capture ambivalent affects within immersive worlds.

Vandermeer's text uses the human body as a jumping off point, a way of framing the ungraspable essence of the nonhuman world which "encroaches on the human subject."[52] In this sense, the weird also realises an approach which recognises human embodiment, but makes the valorisation of human subjectivity impossible. The weird is premised on the compromising of human access and agency, rather using the human body to give voice to everything which is not human; the octopus tentacle reaches out and touches the human body, and retreats back into its mysterious abyss. The weird finds possibility in moments that escape our immediate comprehension, those experiential glitches where something occurs that we are unable to grasp and make sense of. It is with these ideas in mind that I now return to mediation and virtual environments. With the formulation of a glitch taxonomy, I argue that in many ways, the emergence of mediated glitch, noise, and error share many ambitions with the weird, in that they provide us with moments where our expectations are disrupted. With the compromising of expectation, we are instead given momentary glimpses into the hidden contours of the technological infrastructures we interact with. Like weird entities, *as* weird entities, glitch, noise, and error reveal the limitless abysses of nonhuman machinic infrastructures.

[52] Fisher, p.20.

Perceiving Error

Before turning to the film adaptation of Vandermeer's novel, I will explore in more depth what I mean by mediated error and glitch in the context of the chapter and clarify their specific intersections with weirdness. I will establish evidence of some of the ways that Alex Garland's adaptation of the novel draws inspiration from the visual elements of technological error, including white noise and the broken interface, and I also make the case, however, that there are ethical ties to the ways glitches function in Garland's film, particularly in the ways that they signal and enable access to spheres and ecologies of the nonhuman. In order to understand the true impact of both glitch and noise, I turn now to a selection of writings which specifically evidence the unruly motivations of mediated error and the ways they align with the unknown Outsides of our technological apparatus. As mentioned in the introduction to this chapter, I make the case that glitches can be aligned with immersion because they provide access to unexplored hardware infrastructures, producing weird encounters with the workings of the technology. I first want to tackle the aspects of mediated error and their disruptive potentials; I will then illustrate how these encounters can disrupt the seamlessly clean, popular framings of immersion explored in the first chapter of this thesis through a taxonomy of glitches that outlines some of their aesthetic and unruly applications.

The visual and artistic elements of digitally mediated error find common cause in artworks which seek to challenge the agency of the user in an age of ubiquitous technological use. This will be more thoroughly illustrated in the following chapter, which will look closely at the ways that interactions with glitchy media inform artworks of spectrality and horror, where anticipated flow is suddenly interrupted by a presence or *unhuman* being which manifests as a disruptor. We can experience glitches in VR that we never anticipate will happen; we can suddenly apprehend a distortion without understanding what has caused it, or be taken aback by the sudden jolting of the display. In VR, glitches cause visceral bodily reactions because they are so proximal to our bodies and point of view. These instances mimic the evocative moments within weird fiction where humans come into contact with beings and entities from worlds beyond this one. These moments feel wrong, disorientating, and strange—and part of this is because they are never anticipated by their experiencers. Recent scholarship that explores glitches in contemporary culture emphasises their occurrence as "dysfunctional event[s]" within a

system,[53] their capacity to uncover obfuscated protocols,[54] and as events which inspire breaks away "from the hegemony of a social system."[55] VR enables a multitude of new glitches to emerge that have a truly affective and intimate impact on the body of the user. Such affects, I argue, are weird because they break anticipated logical systems, and reveal what lies beyond normative human perception.

To form a taxonomy of VR's specific glitches and their affective implications, it is first worth exploring theorisations of mediated error across other mediums, where these aspects of technological interaction have begun to be theorised. In his work on 'Gaming the Glitch,' Peter Krapp discusses the emergence of glitches in videogame storyworlds as "crevice[s] in experiential space."[56] In this sense, Krapp regards the glitch as a disruption in phenomenological space, an opening out into somewhere new. In a similar vein, Rosa Menkman regards the spatiotemporal manifestation of a glitch as a new dimension or experiential space that lies beyond human comprehension. She states:

> What actually happens when a glitch occurs is unknown, I stare at the glitch as a void of knowledge; a strange dimension where the laws of technology are suddenly very different from what I expected and know.[57]

Both of these analogies describe the glitch as the emergence of a new experiential realm. Menkman's work on glitch explores their artistic and aesthetic properties; rather than occurring within the realms of digital functionality, she argues that glitches, and glitch art more specifically, operate on the border of computational flows—seeing the computer as a noise artefact. She goes on to describe them as being part of a "constantly mutating materiality"[58] where the computer is neither opaque nor transparent, but part of a process of *becoming* that is, in part, to do with its interaction with human embodiment and action. The illusion of computational transparency, Menkman argues, involves

[53] Olga Goriunova and Alexei Shulgin, 'Glitch' in *Software Studies: A Lexicon*, Matthew Fuller, ed (Cambridge, Mass: MIT Press, 2008) p.114.
[54] Rosa Menkman, 2011.
[55] Legacy Russell, 'Digital Dualism And The Glitch Feminism Manifesto', *The Society Pages* (2012) <https://thesocietypages.org/cyborgology/2012/12/10/digital-dualism-and-the-glitch-feminism-manifesto/> [accessed Nov 2018]
[56] Peter Krapp, 'Gaming the Glitch: Room for Error,' *Error: Glitch, Noise and Jam in New Media Cultures,* ed. by Mark Nunes (London, Bloomsbury, 2010) p.114.
[57] Menkman, *The Glitch Moment(um)* (Amsterdam: Network Notebooks, 2011)
[58] Ibid.

layering "obfuscated protocols that find their origin in ideologies, economies, political hierarchies and social conventions."[59]

Menkman continues to explore the phenomenological implications of glitch-space in her work on the phenomenology of glitch art.[60] She attest that the glitch is an opportunity of a desire to emerge where the "viewer think[s] beyond his [/her] comfort zones.[61] Menkman articulates the affective nature of the glitch as being temporaneous, ungraspable, and unstable; they occur and emerge only for a short period of time, and are shocking because they are unexpected. In this temporal moment, the environment does not work for the user, instead, it pulls agency away from them. This, Menkman describes as a "moment(um)",[62] a term she uses to "indicate the potential of any glitch to modulate or productively damage the norms of techno-culture, in the moment at which this potential is first grasped."[63] The multitudinous possible interactions with glitches align closely with weird encounters, particularly in their implications for human agency and access. As Menkman continues:

> Glitch is a useful mode for thinking through ecologies which contain objects that don't do what we expect of them, reveal the façade of human agency and control over systems which exist outside ourselves […] The glitch's inherent moment(um), the power it needs or has to pass through an existing membrane or semblance of understanding, helps the utterance to become an unstable articulation of counter-aesthetics, a destructive generativity.[64]

Menkman also argues for the power of glitches to pull technological objects away from their "flow and ordinary discourse" and argues that, in this regard, the potential of the glitch aligns with the prospects of queer theory. Both, she argues, destabilise systems and challenge the autonomy of the artist. She states that queer theory itself "glitches the understanding of identity as a stable and fixed category by introducing noisy concepts into normative systems."[65] Ultimately, glitches are regarded as counter-experiences.

[59] Ibid.
[60] Ibid.
[61] Menkman, p.33.
[62]Ibid, p.8.
[63] Ibid.
[64] Ibid, pp.43-4.
[65] Ibid, p.38.

They are unplanned, but resist intended pathways of use and disrupt the journey towards an intended destination.

The Glitch Momentum also pays attention to the ways glitches have emerged as a specific aesthetic in representations of error and the unruly. With the popularity of glitch emulating tools, she argues, affect is exchanged for effect; the tools "tend to surrender 'affect' (the shocking *moment(um) of glitch*) in favour of 'effect'" (p.35). When glitches are used in an anticipatory way, for aesthetic purposes, the unique affects of their moment(um) are averted. Yet, the desire to appropriate glitches as aesthetic says something about their potential to signify a loss of agency, or a giving over of agency to the nonhuman. Glitches are shocking because they challenge our understanding of our interactions with technology; in a ubiquitous digital culture, users are continually faced with the potential of experiencing the unruly potential of their technological tools. The emergence of error in horror artworks is one specific example of the visual mimicry of glitch which is wholly intentional: the developer uses error to elicit a specific form of affect. The weird, on the other hand, is precisely so because it is unintentional, unknown, and unknowable. Whether glitches are intended to elicit certain affects, or whether they emerge unexpectedly, users of ubiquitous digital tools are familiar enough with glitches and the idea that a glitch could be aesthetically embedded into an artwork to elicit certain feelings, namely control being pulled away. In this culture of familiarity with the glitch, Menkman coins the terms "pure glitch" and the "glitch-alike." Where the "pure glitch" is accidental, coincidental, appropriated, found and real, the "glitch-alike" is deliberate, planned, created, designed, artificial.[66] The VR horror experience from the introduction to the thesis and this chapter is of the first type; the sudden jerk of my head and resulting decapitation was a "pure glitch," and more affective for being so. The glitch-alike might refer to the overlaying of glitch aesthetics onto images, for example, a planned reproduction of mediated error.

Olga Goruinova and Alexei Shulgin contest in their essay 'Glitch' in *Software Studies: A Lexicon* that glitches are immediately rendered as aesthetic through their unpredictable and perceivable nature. They argue that glitches are marks of "(dys)functions, re(actions) and (e)motions that are worked out in human-computer assemblages."[67] In these unruly interactions, the glitch marks the agencies of the

[66] Paraphrased from ibid, p.36.
[67] Goriunova and Shulgin, p.111.

nonhuman elements of the human-computer assemblage. Glitches enable a mode of perception which pushes beyond the boundaries of human understanding, creating a temporal rupture in the membrane of human-computer interaction. Goriunova and Shulgin continue:

> Glitches are produced by error and are usually not intended by humans. As a not entirely human produced reality, its elements are not one hundred percent compatible with customary human logic, visual, sound or behavioural conventions or organising and acting in space.[68]

The suggestion that glitches reveal a reality that is not produced by, or necessarily for, humans confirms that glitches are not always perceived to be 'productive' encounters, yet they provide a surface through which to interact with the logic and unique nonhuman behaviour of the machine.

The Materiality of Error

If we are to expand the notion that error and glitch can be regarded as immersive and wholly embodied phenomena in virtual environments, it is worth also attending to other manifestations of mediated error and the ways that they incorporate materiality. To draw attention to the multifarious types of error which bring materiality to the forefront is to surpass the illusions of transcendence and transparency that also permeate contemporary VR discourses. When we interact with error, when weird affect emerges, we encounter both the materiality of our bodies and of the hardware itself. The fleshy foundations of materiality were explored in the second chapter, where we saw the emergence of the unhuman flesh in unruly encounters with technological systems, and unhuman presence was shown to be articulated through the *noise* of the flesh – marking a rupturing of subjectivity. The mutation of the material body indicated "a form of embodiment that moves through a froth of noise as easily as a fish through water."[69] Rather than looking at the body as a specific locus of noise here however, I instead suggest that the noise of embodiment and the noise of system infrastructures enables new forms

[68] Ibid, p.115.
[69] Hayles, p.215.

of immersion built upon an ecology: a form of ecological thinking allows us to see glitch, error, noise, and the body all forming one disruptive entity.

Noise, as another commonly cited form of mediated error, pays even more attention to the ways error can emerge through multisensory channels because of its interconnections with the material. In her continued enquiry of mediated error, Rosa Menkman refers to noise as "a (often undesirable, unwanted, other and unordered) disturbance, break, or addition within the signal of useful data."[70] Noise commonly refers to an electronic signal being interrupted or accompanied by an unwanted change. Mark Nunes describes noise as a "symptom of both the creation of errors in an otherwise friction free system and a way for the system to mask and distract from otherwise existing errors.[71] In addition to its definition as a dysfunctional error in a signal, noise also commonly relates to undesired sound. We wouldn't refer to the soothing sound of a water fountain as noise, because noise is associated with discomforting affect; we might, on the other hand, refer to the sound of a drill as being noise, because it breaks comfort and is 'undesirable.' In this regard, noise is another form of affective error. In her work on sounding noise, Marie Thompson argues for its affective implications to take it beyond popular connotations of the moralised polemics of "unwanted, undesirable or damaging sound."[72] Instead, Thompson argues for the consideration of noise as a "process of interruption that induces a change."[73] She sees that the categorisation of noise as either good or bad as marking an ethical categorisation of the phenomena – to consider it in terms of affect "allows space for those interruptions and interferences that impact upon entities other than the perceiving subject," providing a framework "that allows for noise's capacity to diminish and destroy, as well as enhance and create."[74] Here, I argue that noise is another form of error which inherently escapes framing. We disregard things as being 'noise' when they provide little function, or when we cannot link it to a specific object or entity. William Cheng, for example, notes that noise marks both material and metaphor, in the ways that it draws semblance to certain objects, whilst at the same time marking

[70] Menkman, p.4
[71] Mark Nunes ed., *Error: Glitch, Noise and Jam in New Media Cultures* (New York: Continuum, 2011) p.154.
[72] Marie Thompson, 'Productive Parasites: Thinking of Noise as Affect,' *Cultural Studies* Review, 18.2 (2012) p.13.
[73] Ibid.
[74] Ibid, p.14.

an unanticipated intrusion and evoking unsettling affect.[75] This strange encroaching of the unanticipated allows users to think beyond the immediate givenness of our technological interactions.

Both glitches and noise are commonly narrated as negative attributes which disrupt our intended interactions with digital technologies. Yet such interruptions invite temporal moments in which the user is productively exposed to the hidden layers of their systems. With both phenomena, it is never entirely clear what the source that has provoked the occurrence is, yet it produces a weird encounter which alters our perception of a thing. As Thompson notes: "when noise interrupts, it demands a *reaction*; it induces a change, or modification in the system that it acts upon." (p.17. She continues: "in turn, noise can be thought of as productive, insomuch that it generates a systemic change; *for better or for worse*, an alternative order is created out of the moment of disorder." (p.18) There should be a reconsideration of glitch and noise not as unproductive or undesirable, but phenomena that can ultimately produce new understandings and unique encounters that ultimately ignite change – not for the betterment of the individual user, but between an assemblage of actors.

Both noise and glitch, I argue, should be regarded as weird encounters in the ways that they mark a certain form of encroaching on the human subject, pushing at the thresholds of the known and toward the unknown, arguably unhuman realm of technological experience. In the moment, glitches and/or noise emerge as particularly embodied phenomena via immersive technologies, the ecology of human and nonhuman agents implicated in the production of immersion is made present. Immersion is not something that VR can do, but something that is influenced by a variety of actors. This is the premise of New Materialist notions of affect, and something that is crucial to the weird: affect initiates a rethinking of ethics and interruption. In her book *Meeting the Universe Half Way*, Karen Barad illustrates an approach to the study of human and nonhuman agents through what she refers to as "agential realism." Barad defines agential realism as:

[75] William Cheng, 'Monstrous Noise: Silent Hill and the Aesthetic Economies of Fear,' *The Oxford Handbook of Sound and Image in Digital Media*, ed. Carol Vernallis et al (New York: Oxford University Press, 2013) pp.173-90.

> an epistemological-ontological-ethical framework that provides an understanding of the role of human *and* nonhuman, material *and* discursive, and natural *and* cultural factors in scientific and other social-material practices, thereby moving such considerations beyond the well-worn debates that pit constructivism against realism, agency against structure, and idealism against materialism. Indeed, the new philosophical framework that I propose entails a rethinking of fundamental concepts that support such binary thinking, including the notions of matter, discourse, causality, agency, power, identity, embodiment, objectivity, space, and time.'[76]

Here, Barad brings agency into conversation with its material and sociocultural entanglements beyond the human. Barad's conceptualisation of Agential Realism reflects on the notion that "phenomena are constitutive of reality"[77] and here defines phenomena as "the ontological inseparability of intra-acting agencies,"[78] as humans and non-humans are not in the world, but are *of* the world. Reality, in this sense is "an ongoing dynamic of intra-activity." (p.206) Intra-action offers access into the ways material is always *becoming,* through a mode of realism "that is not premised on a metaphysics of essence or the representational nature of knowledge." (p.207) Barad's investigations into Agential Realism seek to re-engage readers of materiality to think about all bodies, and not just the human body. As such, Barad creates conversations with the works of Foucault and Butler in order to expand their notions of bodily materiality, so that they might come to include nonhuman agents which reflect their practice. Taking the idea of matter explored in Butler's work on 'Bodies That Matter,' Barad notes that "matter is substance in its intra-active becoming—not a thing but a doing, a congealing of agency." (p.210) There is something to offer to an ethics of the material here, as Barad's "congealing of agency" sees that bodies are always in contact with other forces which continually shape them. They continue:

> Matter as a process of materialization is theorized beyond the realm of the human and the social, providing a more complete and complex understanding of the

[76] Karen Barad, *Meeting the Universe Half Way: Quantum Physics and the Entanglement of Matter and Meaning* (NC: Duke University Press, 2007) p.32.
[77] Ibid, p.206.
[78] Ibid.

> nature of practices and their participatory roles in the production of bodies (p.210).

In this sense, I would argue, glitch and noise manifest as processes of materialisation that mark the congealing of both human and nonhuman agents in the process of immersion. If we are to see immersion as the seamless becoming of humans and perceptual technologies, then glitches and noise reveal the matter behind this process. This is ever crucial to the critical interpretations of error in VR, in that the materiality of the body forms part of error's emergence; my head movement, for example, triggered the proximal glitching of the VR headset in *Kitchen*. At the same time, the proximity of this error made me feel the materiality of my body. As we have seen in previous chapters, there is a need to pull away from the idea that VR is, or should act as, a transparent technology. We must critically consider its materiality and how this contributes to its unique affects – in this case, weird affects.

A Taxonomy of (Immersive) VR Glitches

I want to spend some time here establishing a new taxonomy of glitches that reveals their unique affective potential in the realm of immersive and haptic virtual environments. All of the aforementioned weird and unruly elements of glitch interactions are experientially pushed further in VR simulations, where the human-computer assemblage is perhaps the most proximal and felt, where the mediated world replaces the whole of the user's immediate perception. Thus, when the virtual world does something unanticipated, the user's proprioceptive vision is essentially momentarily disrupted via random machinic error. Glitches are experienced, more so than ever, as wholly affective and immersive realms of new understanding: the user, in a sense, perceptually encounters the emergence of the nonhuman system in an affective and embodied manner. It remains that glitches in VR, and the feelings they produce, cannot be completely captured by or through language; indeed, there is a tendency to anthropomorphise machinic agencies in order to *frame* them. It remains, however that elements of their functioning escape capture, as was also a central feature in my analysis of the weird above.

My attempt to generate a taxonomy of glitches, then, is not to produce further anthropomorphised visions of the glitch. Rather, it is an attempt to capture the unique affects of proximal VR glitches, and the ways technological error more broadly encompasses moments where human and nonhuman actors interact in a variety of different ways. I thus refer to my taxonomy as a 'glitch ecology,' the ways that glitches and their interwoven affects co-emerge to produce new embodied encounters which bridge between ontological planes. I use the term 'ecology' as inspired by affect theory; Marie-Louise Angerer[79] and Tonya Davidson et al[80] regard ecologies as micro-geographies through which affects emerge. Affective ecologies mark the generative encounters between organisms and things external to them, resulting in a change in condition: ecologies of affect capture and allow the examination of the production of change or modifications that take place through encounters with other bodies. Such a taxonomy or ecology of glitches can never be exhaustive, and will continue to develop as more people begin to use and interact with immersive technologies as they become more integrated into everyday digital use.

This taxonomy originates in a provisional mapping of glitches that I myself have experienced in VR, but it also incorporates the types of glitches that are emerging in reports of VR experiences more broadly. The glitches within the taxonomy are not antagonistic to one another, but come together in a cooperative ecology through their relationship to the body of the user. This is where glitches in VR differ to more well theorised interfaces, in that their errors are proximal to the body and surround the perceptual field of vision; VR glitches are immersive. Different kinds of error in VR can occupy multiple areas of the taxonomy at once; this initial mapping brings together the various kinds of affects that certain forms of error can produce in virtual environments. Such errors are particularly close to the body and implicate embodiment in their unruly infrastructures. In capturing some of the specific instances of immersive glitches as they emerge as particular affective encounters in VR, we are able to understand the disruptive potentials of the body and technology coming together via unruly encounters. Such encounters, I argue, ultimately challenge the façade of absolute user agency; immersive glitches fundamentally alter intended experiences to create sometimes destabilising

[79] Marie-Luise Angerer, *Ecology of Affect: Intensive Milieus and Contingent Encounters* (Lüneberg: meson press, 2017).
[80] Davidson et al, *Ecologies of Affect: Placing Nostalgia Desire, and Hope.*

and/or revelatory responses which can highlight the potentials of VR for challenging user and producer (human) agency and access.

Emergent glitches

The first modality of glitch I refer to is 'emergent.' An emergent glitch is unintentional and occurs randomly during use of a technology, triggering an unanticipated affective response. The affective implications might be confusion, frustration, humour, or stasis. The emergent glitch could be associated with a specific cause, or there could be a logical reason as to why the glitch occurred. In other instances, emergence can be seen through the exploitation of a game's system. That is to say that the player breaks into the coded system of a game and changes it, so that the game does something the developer could not have predicted. An example might be that of a calibration disruption in a VR headset, where a sudden movement of the body meant that the virtual environment suddenly *pulls away* from the body of the user. The abrupt movement of the body, and its concurrent movement of the hardware causes a glitch to emerge. The term 'emergence' is regarded as the capacity for variation outside the embedded rules of a system,[81] and is oftentimes associated with gameplay and the multiple outcomes based on player choice.

Emergent glitches in VR do not valorise the player or their disruption of the rules. This is because the body functions as part of the VR system, and in this way the body and proprioception of the user is automatically implicated in the uncomfortable affective space of the glitch. But what is unique about these glitches is that they are fundamentally immersive, not because they make us feel part of a world, but because they surprise us and pull us in to worlds not-for-us. Imagine being within a virtual environment, and it suddenly jolting, moving away unexpectedly, or devolving into a blank void of darkness. This is not the immersion we might have presupposed from the technology, but it is still nonetheless a form of immersion: our bodies are, for that emergent moment, fully drawn

[81] See, for example, Jesper Juul 'The Open and the Closed: Game of emergence and games of progression," in *Computer Games and Digital Cultures Conference Proceedings,* ed. by Frans Mäyrä (Tampere: Tampere University Press, 2002). Juul states "there is more to playing games than simply memorising the rules. So we need a framework for understanding how something interesting and complex (the actual gameplay) can arise from something simple (the game rules). How can something made from simple rules present challenges that extend beyond the rules?"

in to what Krapp calls the "experiential crevice"[82] of the glitch-space. In the case of VR, emergence will continually 'emerge,' so to speak, as users continue to test the boundaries of its systems.

Intentional glitches

The second version of the glitch is the 'Intentional' glitch, or those glitches which are intentionally built into a narrative or an experience to elicit a specific kind of affect. Intentional glitches are commonly found in works of the horror genre, and can include visual allusions to mediated error like white noise, or the machine acting on its own accord, signalling the presence of a likely supernatural entity which provokes ruptures in the more ruly working of the medium. Though in the diegetic world these glitches may appear to be unruly and emergent, they have been included by the producer to give the viewer or player information about something they couldn't otherwise see, like a ghost. There is no 'logical explanation' for why the glitch occurred in the realm of the storyworld, but it functions as an ontological capturing of something otherwise ephemeral. As such, the glitch signals the presence of something, or someone, else. It gives our bodies information to read, and as such, pulls us in.

Intentional glitches oftentimes bridge the line between the intra-diegetic and the diegetic—where affective responses to the emergence of error is mirrored by both viewer/player and character (shock, fear, unease). In this sense, intentional glitches allow awareness on behalf of the viewers of the artwork that another agent is present within the space, signalling the loss of agency from the human character. But this is the intent of the producer of the artwork. Thus, the glitch becomes an artistic indicator of compromised human agency, making our bodies feel vulnerable to the entities that have disrupted seamless technological flow. These kinds of glitches require responsibility from their makers, and the ethics of the intentional glitch, and their popular use in horror simulations, will be explored in depth in the following chapter.

[82] Krapp, p.114.

Ruly Glitches

The third glitch within the proposed ecology might be referred to as the 'Ruly' glitch. Ruly glitches are those that a user would accept as being part of the storyworld they experience, or the environment that they are within. The formulation of the 'ruly glitch' suggests that these kinds of glitches are not disruptive, because they form part of the linearity or feel of the world, whether or not they are part of the programmed system and events that emerge within it. Yet, ruly glitches can still be unintended like emergent glitches, but they can also be built into a narrative like intentional glitches. For example, in a virtual environment, I could encounter an object bouncing up and down; though it hadn't been the intention of the producer for this object to bounce, it may make sense for it to do so. Ruly glitches might produce strange affects, but are accepted as being part of the storyworld/environment. This might include the weird movement of the goats within the game *Goat Simulator,*[83] for example, where the world inherently glitches for the purposes of humour. Thus, the affective implications of the ruly glitch are oftentimes not uncomfortable or unsettling, but add to the intended feelings of the producer of the artwork.

Unruly Glitches

The last glitch I cite within my preliminary taxonomy is the 'Unruly' glitch. An unruly glitch has the potential to completely alter the user's experience of a virtual environment by modifying their anticipated experience and exposing the inner workings of the technology. The unruly glitch is, in effect, the weirdest glitch, precisely because the emerging error marks a unique and wholly unpredictable interaction between the body and the environment, such that it exceeds both the user and the producer's comprehension. It is not programmed to occur by the producer, nor is it anticipated by the user. Rather, it emerges out of an instantaneous random interaction between body and hardware, or processing action. In VR, an example of an unruly glitch might be when the user's hand moves *through* an object as opposed to picking it up, where a rupture in the programmed logic interrupts the intended interaction. Another example might be the

[83] *Goat Simulator,* Skövde: Coffee Stain Studios (2014).

walls of a world breaking apart, code appearing within the headset interface, or the environment glitching away from the user's body. All of these examples of the unruly glitch absolutely challenge the autonomy of both the player and the producer alike, in that they solely emerge in a unique temporaneous moment where the body and technology in a specific way.

As previously mentioned, this taxonomy is not all encompassing, and will continue to develop and grow as more people engage with immersive technologies—a greater number of new experiences will require a language to describe them. The most notable uniting factor of all of the instances of glitch described above, however, is that the body forms part of the glitch ecology in each instance. It is during unruly interactions that the experience mutates beyond common practice and anticipated action. Within the VR space explicitly, both in development for the medium and use of it, such instances provide chasms of experience where user agency is challenged. This does not only encompass glitches that the user can visually see, but touch, hear and engage with on a deeply multisensory level. Noise, for example, similarly marks an 'undesirable' disturbance or break in the intended functionality of an object.

Annihilation and the Visualisation of Error

Image 29 Natalie Portman in *Annihilation*, dir. by Alex Garland (2018). Image source: <https://collider.com/annihilation-movie-explained/>

The taxonomy above has outlined some of the initial examples of mediated errors within VR, and the kinds of affects they are capable of producing. In focusing on their affective implications, the taxonomy has sought to highlight the ways glitches in VR are

inherently immersive, because of their incorporation of, and proximity to, the body; our bodies are pulled into unruly realms, where we directly perceive some of the hidden contours of the technological system and its functioning. In a similar vein to the fleshy phenomenologies discussed in the previous chapter, the phenomena of glitch and noise push at the membrane of the frame. The frame, as it is defined by anthropomorphised definitional boundaries, is exceeded by the unruly emergence of error. Glitch and noise are becoming more closely aligned with our physical bodies, affectively touching us and producing novel forms of contact between human and nonhuman actors. In order to spend more time thinking about how glitches and noise align with the weird, and the ways we might conceptualise a form of immersion which is not defined through seamlessness and neatness, I turn back to the text *Annihilation*.

Earlier in the chapter, close readings of Vandermeer's novel explored the narration of the human/non-human ecologies within Area X, and the ways the character-protagonists attempt to narrate the affect of coming-into-contact with weird entities; the analysis considered the ways weird Outsides resist framing, and mark the limits of human agency and access. The chapter thus far has introduced some of the central tropes present within the narrativization of weird affect, and has gone on to show how glitches and error mark a similar resistance to framing. Alex Garland's film adaptation, in contrast, draws explicit links between mediated error and the weird. The film relies on the visualisation of technological error in order to represent the weird entities that it presents to its audiences; Garland toys with the visual landscape of 'Area X,' referring instead only to its borders which are termed 'the shimmer.' To bring this chapter to a close, and to cement the case for the co-emergence of glitch, noise, error and immersion, I argue here that *Annihilation*, as a frameless fiction, can illustrate and provide some of the grammars for the use and incorporation of error to produce immersion. Such immersion, in worlds not-for-us, should be considered in VR development and use, in order to broaden popular conceptions of the term, and illustrate the unruly potentials of virtual environments; I hope that these kinds of visual and textual languages will enable VR discourse to push beyond the bounds of absolute user agency and access. Indeed, weirdness and affect encourage us to pay attention to ambivalent forms of immersion that pay attention to the materiality of experience, as opposed to fetishizing the idea of technological and bodily transparency.

In a documentary entitled *The Making of Annihilation,*[84] various members of the creative teams behind the film adaptation discuss the choices made to depict the settings and entities taken from the book in a way that appeals to various motifs that are central to the weird, including mutation, the uncanny, and otherworldliness. Garland notes during the documentary that he wished to reflect the journey of the protagonist (the biologist, played by Natalie Portman) as a journey from suburbia to psychedelia. The film spends more time relaying the backstory of the biologist, who is more humanised than the biologist of the book, and is named Lena. We learn about the intricacies of her personal life: her complicated relationship with her military husband, her affair with her co-worker, and the ways her earlier life experiences shape her later experiences whilst on the expedition.

The arena of weird activity in the film adaptation provides a visually psychedelic atmosphere, which is oppositional to Lena's quotidian and all-too-human life. When the five central female figures (played by Gina Rodriguez, Tessa Thompson, Jennifer Jason Lee, Tuva Nuvotney in addition to Portman) embark on the expedition, the viewer is initially exposed to the space through distorted perceptions: things move uncannily; objects and creatures unsettlingly appear and disappear; the sky appears to be in a constant state of rupture. The film amalgamates natural landscape with layers of computer-generated imagery (CGI) – layering things not of this world onto recognisable objects and beings in order to unsettle them away from their normalised form. In the documentary, the visual teams and designers discuss their inspirations for the design of the weird landscape, including cell imagery, tumour growths, microscopic creatures, and plants, and visualisations of radiation and mutation in plant cells. The decisive focus on microbiology makes the film's affects emphatically weird because of the ways in which the absolute insides of natural lifeforms become Outsides; existing cellular components are made weird because they illustrate and reveal the ways in which the biological make-up of the entities mark a weird congealing of both the human and nonhuman. Slow, subtle movements and mutations form the basis of the visual design of the area and its ecosystems, and the weird contours of the depicted environment are defined through small changes which manifest perceptually as errors to the human eye.

[84] *The Making of Annihilation*, dir. by John Mefford (2018).

One example the team come across is a collection of flowering bushes whose branches have woven to mimic the structures of the human skeleton, and that part of the organic make-up of the bushes has replicated the human on a microbiological scale. As illustrated throughout the landscapes depicted in the film, weird entities eerily replicate human embodiment and recognisable objects and uncannily reshape them: they are impossible to frame via human cognition because of their fluctuation and mutation between human and nonhuman forms. As the image below shows, the weird logics presented in Garland's adaptation take the human body and make it weird. The depictions, not unlike the rupturings of flesh in Chapter 2, push representations of the human and nonhuman further, by representing them as sharing one body—a body that looks human, but isn't quite.

Image 30 Natural plant forms replicate human DNA, Annihilation, dir. by Alex Garland (2018). Image source: <https://techcrunch.com/2018/02/23/annihilation-review/?guccounter=1&guce_referrer=aHR0cHM6Ly93d3cuZ29vZ2xlLmNvbS8&guce_referrer_sig=AQAAAC5WBNA8hUafZ1hxkh>

The bushes are one example of the rupturing growth of otherworldly organic objects in the film adaptation of *Annihilation*. In taking organic lifeforms and allowing them to visually erupt into something strange, otherworldly, and yet eerily human, the film represents the presence of the Outside within Area X—something beyond human which influences the logic of the ecosystem and the microbiological coding of its entities. These intertwinings of the human and nonhuman realise the films portrayal of what Barad has referred to as intra-action, as weird entities are designed around the congealing of agencies in their consistent state of *becoming*. In their mimicry of the human body, the nonhuman lifeforms pull agency away from the human subject by revealing the otherworldly forces at play within the area. The visualisation of the weird via its

"encroaching onto the human body,"[85] both through the affects enacted upon the central characters, and through the mimicry of abstracted bodily structures, reveals the unframed world that exists beyond human cognition. These images constitute what I referred to as the 'experiential glitch' earlier in this chapter: that which reveals the underlying nonhuman contours of the world, and their enacting upon the body.

Iterations of bodies which amalgamate the human and nonhuman remain central throughout the film. Later on, in perhaps one of the more horrific scenes, a mutant bear threatens the group's base camp, mauling the expedition member, Cas, to death. After her violent death, the bear re-emerges, and its presence is signalled by the eerie, imitative sounds of Cas screaming 'Help Me!' Appearing in the abandoned house the characters are in during the scene, the bear's long snout emerges to reveal the mutant make up of its skeleton – an alien combination of human and bear sharply protruding out of its shattered flesh. Slowly opening its jaws, the bears growls combine with the echo of Cas' final screams. In the act of destroying Cas, the bear's DNA appears to have combined with human elements, creating a grotesque and unnerving biological assemblage of human and bear.

Image 31 Mutant bear, *Annihilation*, dir. by Alex Garland (2018). Image source: <https://bloody-disgusting.com/movie/3500147/want-see-nightmarish-monster-bear-annihilation-glory/>

[85] Fisher.

The bear, along with all of the other assemblage-beings present in the text offer visualisations of the weird components of human biology when combined with other lifeforms. The film production places particular emphasis on the erratic, glitchy makeup of the weird beings it represents. It marks a truly ecological system where each being congeals on an elemental level; the human is not the sole agent, but forms just one part of the microbiological basis of a weird system of multiple nonhuman agencies.

One of the central visual depictions which marks the borders of the weird ecosystem, is what is referred to in the film as 'the shimmer.' In the written text, the borders of Area X are narrated as being invisible to the naked eye; the characters are unable to acknowledge it when they cross the boundary into the new realm governed by alternative laws. In Garland's adaptation, however, the border has a very distinctive visual presence. The Northern Lights were claimed to be a huge inspiration for the design of the shimmer, particularly in the ways that this natural phenomenon visualises light refraction in the atmosphere.[86] The surface of the shimmer emulates a combination of a flowing watery surface with a digital spectre. It looks almost like a petroleum puddle which constantly moves and mutates, blending colours through its translucent surface; the shimmer stands in stark contrast to the natural landscape which surrounds the area.

Image 32 The Shimmer, *Annihilation*, dir. by Alex Garland (2018) Image source: <https://www.reddit.com/r/CineShots/comments/89qbdt/annihilation_2018_dir_alex_garland/>

The characters are sent into the area to try and discover what has created the shimmer, and what has provoked its existence. Alex Garland describes the shimmer as "a prism, but

[86] *The Making of Annihilation.*

it refracts everything."[87] The refractive effects of the shimmer are scattered throughout the film and manifest as constant background movement added in postproduction – it never merges with the natural landscape around it but marks the boundaries of a weird arena. The surface of the shimmer was created in VFX by decomposing three-dimensional fractal mandelbulbs.[88] The mandlebulb dictates its own movement; though it is a mathematical structure, it is visually organic. The use of the mandelbulb to create the walls of Area X in the film places emphasis on nonhuman agency, as the walls of the area dictate themselves, marking a surface of constantly mutating materiality. The visual depictions of the shimmer, and the ecology housed within it, are particularly immersive because of their affectivity. The contours of the space are represented through the amalgamation of digital VFX and recognisable lifeforms to create sensations of disorientation through forms of ontological fluidity: the weird entities presented evade capture and cannot be categorised. The film's visual focus on the borders of the area, and its name 'the shimmer,' acknowledge the affective potential of the text's weird enterprise. The term 'shimmer' evokes an affectivity associated with awe, fright, and fleeting temporality.

The shimmer, outside of the filmic landscape, is the central basis of Susan Kozel's work on affect theory in the virtual reality space specifically. As introduced in the introduction to this chapter, Kozel uses 'the shimmer' as capturing the emergence of particular affects of "a mixture of strangeness and delight that arises when expectations do not quite map directly onto perceptual flow and create a small rupture."[89] As I have argued throughout this chapter, *Annihilation* provides a set of grammars and images for thinking about the emergence of weird affect. It is in this way that I bring together Kozel's framework with Garland's depiction of the shimmer. If we combine the text and Kozel's understanding of rupturing affects, we can better understand how mediated and perceptual error forms specific kinds of affective immersion. Kozel's work explicitly aligns strange affect with the evasion of capture. Thus, such affects can be considered as frameless. In one example, she argues that the shimmer manifests as both a positive and negative experience during use of VR technologies. She states that:

[87] *The Making of Annihilation*.
[88] The mandelbub is a shape that uses spherical coordinates, a mathematical structure which sees 3D replications of 2D equations.
[89] Kozel et al, 'The Weird Giggle: Attending to Affect in Virtual Reality', *Transformations*, 31 (2018) p.2.

> The shimmer can […] take the somewhat more unnerving form of a flinch, when bumping into a wall that is not really there; or an unexpected reaction to an object or sensation in the real world, post VR immersion, when a hitch or disjunctive moment in the physical world is perceptually mapped onto the VR world glitch.[90]

Here, Kozel puts forward the idea that immersion in a virtual environment creates certain kinds of disjunctions in the 'real world.' The shimmer represents the imaginary interface between this world and the virtual world, an interface that emerges through unanticipated encounters that see the two worlds comingle phenomenologically. Kozel goes on to label the affect of "the weird giggle" which marks the movement of the shimmer as

> the strange ripple of reality that is pre-reflexively sensed and escapes from the body in a shudder or a jolt. Disorientation and delight converge, together they reflect the appeal and controversy of VR.[91]

We might then take the visual representation of 'the shimmer' in *Annihilation* as a visualisation of the disorientation and delight posed by the weird. As we have seen throughout both the narratives of weirdness, and the weird affects associated with mediated error, we can see that immersion is actualised through "strange ripples in reality"[92] which extend beyond realism and immateriality. In the case of VR, glitches take on new kinds of material manifestations as they collide with the body in proximal ways. The glitch no longer means a dysfunctional event within a computer system, but instead becomes a perceptual experience where an encounter with the digital interrupts our 'real-world' sensations, and vice versa. Our perceptual systems experience a rupture where the real and virtual, and human and nonhuman, collide, consequently producing weird affects that disorient users and reveal ecologies of agents.

This chapter has argued for the co-emergence of glitch, noise, and immersion as they are united through bodily affect. In order to make this case, it has focused on weird fiction,

[90] Ibid, p.20.
[91] Ibid.
[92] Ibid.

and theoretical writings on the weird, as a set of frameless fictions which incorporate unsettling affects as part of the production of worlds. The weird, I have argued, marks that which cannot be framed. By looking closely at the narration of coming-into-contact with the weird, it has illustrated that such forms of contact manifest via unfurling affects, as opposed to immediate immersion in limitless and unbounded worlds. Though this chapter's central analysis has not been focussed on VR specifically, Chapters 2 and 3 have turned to other mediums in order to consider the ways the persevering discourses of VR might be rethought and reshaped to account for its unruly realities; VR is not a perfect machine. With the ideas the thesis established in Chapter 1, we can see where the popular conceptualisations of the technology fall short in terms of what VR is capable of doing, and what is to be gained when the body and technology come together in unruly and unexpected ways. This chapter, then, has introduced a new set of frameless fictions which might reconceive and reconfigure VR's relationships with error as being wholly negative, and cause us to look, instead, at where these errors might be generative.

The chapter began by looking at the neat definitions of immersion that have become embedded in the VR space. Such definitions do little to account for the nuanced affects that VR produces, including disorientation and compromised agency. Rather, immersion is often conflated with realism, or the capacity for VR to produce worlds that are as real as the world we move through every day. In order to provide a counternarrative to immersion and the immersive potential of VR, the chapter looked closely at Eugene Thacker's theorisation of the inherent unknowability of the world, and the ways we might reconceptualise the world as not being, and never being, solely for the human. Thacker's writings expose the world when it is not enframed within human understanding. Rather, his work pays attention to that which is Outside human comprehension and understanding. Such an understanding of the world evokes certain forms of unsettling affects, which I have argued could be incorporated into a reconceptualization of VR immersion as a means of disrupting the valorisation of human agency and access in frameless, mediated worlds.

Following on from the establishment of the world-not-for-us as, a new form of Outside, the chapter turned to The Weird in order to look at examples of the narration of worlds not for the human – narratives which explore worlds where the nonhuman is emphasised. Tracing the literary genre of The Weird back to its roots, we saw the ways Lovecraft formulated narrations of the limits of human cognition and comprehension. In

works of weird fiction, as Mark Fisher articulates, the world Outside human understanding "encroaches" upon the human body and, in so doing, reveals its "alien contours."[93] Contemporary approaches to the weird, including the writings of China Miéville, considered the preoccupation of the weird with merging of ontologies; Miéville's 'octopus morphology' saw the unfurling of a subjectivity that emerges with the human, but is not of the human. With some of these ideas in mind, the chapter then looked at Jeff Vandermeer's *Annihilation* and considered the ways that the text's protagonists encountered, and affectively responded to, the weird Outsides presented in the novel. It argued that such encounters were narrated as 'experiential glitches,' where the encounters exceeded expectation and revealed the nonhuman workings of the novel's central setting, Area X.

In order to align the weird's approach to worlds Outside with virtual environments, writings on glitch and error in contemporary technoculture were considered. I argued that such writings needed to be expanded in order to account for the visceral embodied nature of VR glitches, where the body is immersed within mediated error. Errors in VR are inherently material phenomenon; when something goes wrong in VR, the hardware, and the user's body, become more present. This is oppositional to the fetishisation of VR becoming transparent during use, which was illustrated in Chapter 1. As opposed to error being oppositional to immersion, this chapter has argued that VR glitches mark a form of immersion in worlds-not-for-us. With this in mind, both noise and glitch can be regarded as weird encounters, as the user is exposed to underlying, obfuscated technological systems. The work of Karen Barad was discussed as a way of thinking through the ways glitches mark a rupturing where the intra-activity between human and nonhuman agents is revealed. Through the consideration of the intertwinings of the human subject with nonhuman elements in VR experiences, the chapter established a taxonomy of VR glitches, followed by Alex Garland's adaptation of Vandermeer's novel in order to further explore the visual depiction of the weird, as it has been inspired by forms of mediated error and mutation. It ended by considering how Susan Kozel's affect theory enables greater understandings of the affects of disorientation.

[93] Mark Fisher.

VR is a weird machine. It remains unnerving to look at, to experience, to feel. It remains a difficult task to leave an experience in virtual reality and have the language and grammars to describe it. The human body's pairing with VR is a strange assemblage. I have linked VR to the realm of the weird here because of the unique affects and ontological collisions it produces. The genre of the weird initiates new insights into collisions with other worlds, offering rich discourses that extend beyond individuals entering new realities and maintaining a sense of unlimited access to them; there is always an embodied limit. VR highlights the weird contours of this reality by affectively evoking the weirdness of entering another. By untangling VR from predetermined expectations of absolute immersion, there can be more active awareness of the unravelling sensations of interacting with virtual worlds. Its 'dualistic' ontological model must be reconsidered: the chaotic, messy and material potential of VR persists. The affordances, and dis-affordances of the medium should be utilised by developers to do something different than simply looking at the world-for-us; the advantage of an interface is that it can function as a nonhuman layering which alters perception, creating something wholly different to looking at the world through human eyes.

Chapter 4

Embodiment, Horror, and the Horror of Embodiment: The Compatibility of VR and the Horror Genre

Sections of this chapter feature in the published article 'Frameless Fictions: Exploring the Compatibility of Virtual Reality and the Horror Genre,' *Refractory: A Journal of Entertainment Media,* 30 (2018).

"to haunt does not mean to be present"

Jacques Derrida, *Spectres of Marx*

In *Spectres of Marx* (1993), Jacques Derrida poses an alternative form of ontology, which he calls *hauntology*. He describes hauntology as being applied to the logic of haunting – as being beyond a thinking of Being.[1] Hauntology, he argues, is dedicated to the element that is "neither living nor dead, present nor absent: it spectralises."[2] Hauntology encompasses being and all of its potentials—that which is ontologically located, and that which is never grounded in ontology but exists instead as potential. Derrida states that "it is necessary to introduce haunting to the very construction of a concept. Of every concept, beginning with the concepts of being and time."[3] Hauntology captures the ambivalences of presence and absence, of being and unbeing, and is loosely aligned with the thematics of ghosts, entities, and events that remain on the verge of existence. Derrida's philosophy of hauntology exists on the limits of binary states— of that which is dead and alive, present and absent, being and unbeing. So far in this thesis, framelessness has similarly been articulated by ontological ambivalence, a sense of slippage between the physical and virtual environments within which users of immersive technologies finds themselves. The ambivalence of framelessness has also been shown, here, to be down to the muddied lines between bodily presence, materiality, and flesh versus what is oftentimes conceived of, or represented as, an immaterial conjuration of virtual space. Building on these ideas, I refer to Derrida's philosophy here as a starting point to the thesis' final chapter, the key thematics of which include the horror of feeling present and absent simultaneously, the horrors of ontological porosity, and the novel spectres made possible by technological error. These concerns have been present

[1] Jacques Derrida, *Specters of Marx: The State of the Debt, the Work of Mourning and the New International*, trans. Peggy Kamuf (New York: Routledge, 2006) p.10.
[2] Ibid, p.63.
[3] Ibid, p.202.

throughout all of the previous chapters, yet this chapter provides a 'putting into practice' of the thesis' main points of contribution to the fields it speaks to. It will do so by looking closely at specific popular examples of horror games and experiences for VR, arguing that horror's popularity in the immersive space emerges through the genre's framelessness. By this, I suggest that horror actualises many of the core facets of framelessness: the decentring of human agency, ontological porousness, the incorporation of glitch, weird affects, and an embracing of unruly interaction.

What genre but horror can capture the ambivalences of that which is both dead and alive, present and absent, tied to being and unbeing than the horror genre? Horror, though perhaps differently to Derrida's framework, is still concerned with the ontological experience of spectrality, and how our bodies come into contact with that which haunts, that which is potential, and how these entities are translated into bodily affect. Derrida's hauntology captures the complex nature of presence as that which is ontologically grounded. Framelessness, too, is concerned with the complexities of presence, but of the particular sensations and affects one might feel in moments of 'being there, but not quite,' which formed the premise of Chapter 2. It is in this chapter then, that we will see how the horror genre mediates presence through specific bodily affects. Specifically, this chapter argues that horror provides the most successful implementation of framelessness in the contemporary VR space, both in how framelessness is used as a particular narrative trope, but also the ways in which it emerges through material engagements with hardware.

Horror has subtly shaped each of the previous chapters, spectrally revealing itself beneath their surfaces through the exploration of weird affect/s. Simultaneously, each chapter thus far has considered where VR's popular discourses fall short of capturing the strange sensations and unique affects VR technologies produce, such as jarring sensations of materiality and weird spectrality. Chapter 1 gave some examples of the horrors of neoliberalist discourse in the VR space (what is more frightening than Mark Zuckerberg masking an audience in headsets?), but also the horrors of depictions of compromised agency when using VR hardware (think back to the image of Palmer Luckey as free-floating flesh). Chapter 2, whilst considering the potentials for the phenomenology of the flesh, also considered the horrors of fleshy substance and body-horror more specifically. It also looked at examples of the otherness of the unhuman body, and the ways flesh produces new understandings of presence in relation to virtual

worlds. The previous chapter focused on the weird genre in order to explore what is known in Mark Fisher's work as the "strange Outside,"[4] and examined the ways certain outsides are produced in immersive environments that pull away from and resist human cognition and embodiment; the chapter premised the limits of interaction with virtual worlds, and the potentials of acknowledging these limits. Both Chapters 2 and 3 considered where critical and theoretical works aligned to unhumanity, the phenomenology of the flesh, and the weird might inspire new thinking about VR experiences and contribute to the shaping of some of the grammars and language to communicate discomfort, disorientation, and unsettling affect.

Indeed, Chapter 3 showcased the beautiful and awe-inspiring horror of the weird, and the philosophical horrors of worlds beyond the human; the previous chapter highlighted two variations of 'horror,' both of which play an important role in the thesis as a whole. There was first the horror as related to generic tropes that elicit certain feelings upon their audiences – those associated with artworks that have recognisable tropes that allude to horror including otherworldly creatures, unfamiliar settings, and potential threat. On the other hand, there was the kind of philosophical Horror forwarded by thinkers like Trigg and Thacker, as that which entails coming-into-contact with the limits of the human,[5] where we are forced to confront that which exceeds human cognition and understanding. Throughout this thesis, horror has emerged as a philosophical, political, and cultural form, but also as a mode of *affect.* In this chapter, I want to focus in on what Noël Carroll has famously termed 'art-horror' in his *Philosophy of Horror*; Carroll's work focuses on cultural productions of horror artworks which "elicit a certain kind of affect" or "emotional state."[6] It is in this chapter then that I turn attention to the affective and generic applications of horror in the VR space and elsewhere.

In this chapter, I argue that VR brings these kinds of intersections of horror as a philosophical, political, and cultural form together via its specific affective impact; it is through the intersection of art-horror and philosophical horror/s that the dichotomies of outside and inside can be rearticulated to account for permeabilities in immersive experiences, rather than divisible dualisms. As such, this chapter will consider framing metaphors and the ways they are challenged by both horror and virtual reality as cultural

[4] Fisher.
[5] Thacker, p.8.
[6] Carroll, Noël, *The Philosophy of Horror, or Paradoxes of the Heart* (New York: Routledge, 1990).

objects. Building out of the manifestations of framelessness in the previous chapters, I will analyse the role of the frame in horror artworks across various mediums. I will look at the ways the genre promotes the transgression of frames to account for their permeable borders, and consequently muddies the separation of the human and nonhuman, inside and outside, alive and undead. The co-emerging materiality and virtuality present within both horror and VR comingle via weird affects and interactions with the beyond-human and the unthinkable world.[7]

This chapter will unite the phenomenological approaches that have been premised in the thesis' previous chapters to argue that the horror genre can teach us about how these theoretical ideas tie into, and play out in, specific experiences and interactions for VR. The reference to an 'us' here encapsulates all thinkers, do-ers, makers, users, and producers who are part of the landscape of immersive technologies. By 'teaching,' I mean to suggest that horror already has an established grammar of interaction with artworks that implicate embodied engagement and interaction in specific ways; the genre has a well-established set of codes and practices, where viewers, players, and users have distinguishable expectations when they come into contact with horror artworks. Some of these central elements of horror, this chapter will argue, align with emerging VR practices, but have not yet become expectations in this particular space. As has been discussed in the introduction, VR has newly re-emerged in the contemporary consumer market, and does not yet have an established grammar of use. Horror, however, might provide some facets of such a grammar, for use and engagement, in the way it pays particular attention to embodiment: horror maintains a visceral connection with embodied affectivity and practice, in some of the same ways that VR does.

I will consider horror's unique affects, particularly in terms of how they shape our relationship to media devices and disrupt expectation of seamlessness and fixed ontologies. Horror's tie to the corporeal does not just involve bodily movement, but the affective modalities of feeling, sensation, and anticipation. Affects disrupt the imagined expectations not-yet users of VR might behold by opening up the body to new and unanticipated surface experiences. In thinking about mediation in horror artworks, affect has been central to conversations around embodiment and spectatorship in particular;

[7] Paraphrased from Thacker, *In the Dust of This Planet: Horror of Philosophy Volume 1*.

Steven Shaviro, for instance, considers affect as irreducible to representation, rather manifesting as an aesthetic bodily experience which eludes capture and definition,[8] whilst Vivian Sobchack's work re-evaluates spectatorship in cinema as "carnal," or as "vision in the flesh."[9] Carol Clover's 1987 work on horror spectatorship, 'Her Body, Himself: Gender in the Slasher Film,' more specifically argues for the formulation of the 'body genre'[10], exploring the kinds of affective work tied into spectatorship, particularly the enacting of specific gendered experiences. This work will be explored in more detail below to understand exactly what elements of its affective potentials make horror frameless.

It is for these reasons that this chapter is entitled 'Embodiment, Horror, and the Horror of Embodiment.' Bringing together philosophical thinking about embodiment and embodied relations with various iterations of 'horror,' the chapter will consider the kinds of grammars we can build on from horror and apply to immersive technologies. There is a currently under-explored affective compatibility between horror and VR, and this compatibility will form the premise of this chapter. There is, however, a small repository of work on VR horror simulations. For example, Adam Daniel has written about the use of directionality and the emergence of hidden figures in VR simulations in his article 'Don't Look Behind you: the Oculus Rift and Virtual Reality Horror.'[11] Merina Staubli has also written of VR's capacity to "enhance, reinvent and reimagine powerful experiential horror techniques within new universes" in her article 'VR Unleashes New Dimensions of Horror.'[12] In media and film studies more broadly, VR is oftentimes written about as an oftentimes imaginary extension of film and games scholarship which has the potential to advance and extend audience engagement and the mediation of fear, but little of this is rooted in specific VR applications and analysis. Elsewhere, specific explorations of VR and horror have been more popular in short journalistic pieces.[13] The popularity of horror

[8] Steven Shaviro, *Postcinematic Affect.*
[9] Sobchack.
[10] Carol, Clover 'Her Body, Himself: Gender in the Slasher Film', *Representations*, 20 (1987)
[11] Adam Daniel, 'Don't Look Behind You: The Oculus Rift and Virtual Reality Horror', *Sydney Screen Studies* <https://sydneyscreenstudies.wordpress.com/dont-look-behind-you-the-oculus-rift-and-virtual-reality-horror/> [accessed August 2018].
[12] Merina Staubli, 'VR unleashes new dimensions of horror,' *Frames Cinema Journal* <http://framescinemajournal.com/article/vr-unleashes-new-dimensions-of-horror/> [accessed January 2019].
[13] See for example an article in *The New Yorker* entitled 'The Coming Horror of Virtual Reality' <https://www.newyorker.com/tech/annals-of-technology/the-coming-horror-of-virtual-reality> by Simon Parker (2016). See also 'Horror VR: How Virtual Reality might spawn a new age of horror – and why you'll never escape' by Andrew Griffin, *The Independent* (2016).

games for the medium attests to their compatibility.[14] Indeed, it seems that horror has managed to become one of the technology's most accessible genres, because of its ability to provide users with relatively short and engaging experiences that embrace the limitations of VR in its current developmental period. That is to say that the perceptual experiences of error and glitch currently common in VR experiences actually function compatibly with the horror genre, producing affective encounters which are accepted as part of the bodily experiencing of horror narratives. To refer back to the introductory anecdote of the *Kitchen* demo, this is one example of an application which allowed users to 'test the waters' of what the genre looks and feels like in VR, but also exemplifies the kinds of compatibility that emerge when experiencing error in a horror simulation. Similar short samples have also been released cross-platform, including 360-degree YouTube videos which can be played on mobile-compatible headsets; film and entertainment companies have promoted the release of new horror films in this format, such as *The Conjuring 2* and *Annabelle: Creation,* through these short, accessible experiences.[15]

As well as exploring the compatibility of VR and horror further, I want to consider the ways central concepts prevalent to the genre might provide useful platforms to think through some of the complex ethical dimensions that need further consideration in the VR space. These include user agency, expectation, anticipation, fright, glitch, and intimacy. I argue that horror at present, perhaps somewhat ironically, provides one of the more ethical modes of interacting with VR technologies for a number of reasons; most prominently, audiences have some sense of what they will experience when engaging with a horror artwork. The establishment of an 'ethical approach' here may seem like a contradiction when discussing a genre which can in cases rely too heavily on brute violence, jump scares, and unanticipated encounters with demonic ghouls and undead entities. Yet, horror is already rooted in the emergence of disruption, error, and disturbance: audiences of horror are sold embodied and affective *experiences* which incorporate and embrace unruly encounters.

[14] See the *WEAREVR* list of 'Most Popular Virtual Reality Games & Experiences;' in the top 10 games, horror game *11:57* has been downloaded over 165,000 times, and *Insidious Chapter 3* over 52,000 <https://www.wearvr.com/browse/popular> [accessed July 2020].
[15] See 'The Conjuring 2 – Experience Enfield VR 360,' <https://www.youtube.com/watch?v=A6aRkhlqWu> (Warner Bros, 2016) and 'Annabelle: Creation VR – Bee's Room,' <https://www.youtube.com/watch?v=OwX-YlAa8XQ> (Warner Bros, 2017)

An ethics of horror is not a given; horror runs a particular risk of going in an anti-ethical direction if not done with the user's safety, comfort, and consent at the centre of its development and evolution. Indeed, when it comes to horror simulations in particular, developers should take ethics extremely seriously, particularly on account of the genre's highly affective, proximal, and haptic nature in VR spaces. On the other hand, in many ways, horror draws attention to its own ethical implications, and the ethical implications of the mediums through which its stories are told. This is something horror has always done, frequently reflecting societal concerns about the use of new technologies by drawing attention to what they can make possible. Take, for example, a film like *Unfriended* (2014) which reveals the insidious nature of social media platforms. In this film, the viral leak of a video online prompts the friend of the film's cohort of protagonists to commit suicide. The whole film plays out in its entirety via the interface of a MacBook computer, and sees Laura's supernatural re-emergence through the friends' respective webcam feeds. The film captures the ethical problematics of virality online and the implications for collective harassment on social media, whilst also maintaining its focus on the medium through which these ethical issues emerge. Xavier Aldana Reyes argues that horror always locates itself within debates in contemporary societal concerns:

> The genre (horror) which is most notoriously invested in mapping the landscape of nightmares has adapted to fit contemporary anxieties derived by new media and, more importantly, the way these are currently lived or experienced.[16]

Horror films, Reyes goes on to argue, "hold an uncomfortable mirror up to society in order to examine the representational limits of violence and the spectator's corresponding ethical engagement."[17] Horror can be self-reflexive of its own ethical stances, and can encourage its audiences to be similarly self-reflexive in considering their role in viewing and/or being part of the story that they are engaging with.

This chapter builds on the concept of ethical reflexivity in considering how VR and horror are compatible in ways that extend beyond their embodiment ties and focus on feeling. Below, I demonstrate how framelessness emerges as an affective and ethical

[16] Xavier Aldana Reyes, *Horror Film and Affect: Towards a Corporeal Model of Viewership* (London: Routledge, 2018) p.5
[17] Ibid, p.8.

phenomenon in the co-emergence of horror and VR. I also consider the ways framelessness plays out through specific aesthetic encounters with error and glitch, encounters which acknowledge the existence of that which always-already exists beyond human enframing. Firstly, this chapter will explore horror's affectivity across the mediums of films and games to establish the chapter's theoretical approach to horror-as-affect. It will then consider the ways framelessness is already established within the genre, using Gore Verbinksi's *The Ring* (2002) as a case study for popularising the visualisation of framelessness in Anglo-American new media culture. It will then look at the ways VR produces novel interactions with horror narratives and why VR might be considered as a form of 'dark media;' this section uses the 2016 game *A Chair in a Room* as the central text for exploring the incorporation of affect, unruly interaction, and immersion in VR horror. Finally, the chapter will illustrate some of the ethical parameters of VR horror, and how certain implementations might be useful to consider for horror simulations within the VR space.

Feeling Horror

A house infested with unforgiving supernatural beings. A human body possessed by a vengeful demon. A world interrupted by alien creatures. The planet left desolate after an ecological disaster. All of these familiar horror narratives realise and represent intermingling insides and outsides. Where one side is a realm familiar to the human, the other is a world or entity that exists beyond human agency. All of these examples produce specific affects: they are unnerving combinations that entice viewers and/or players because they illustrate the familiar interfacing with fearful outsides. Horror, both as a mode of experience and a specific genre, is not simply an externalisation of our all-too-human fears, but produces embedded, entangled, and embodied affective states which see us experience the outsides beyond humanity within ourselves. Horror's affective potential lies in its capacity to unleash the presence of the unknown; the limitations of conceptualising the world as enframed within the horizons of human understanding are brought to light. In many ways, our relationships with ever more immersive technologies do something similar: as we have seen, they encourage active participation in systems, infrastructures, and virtual worlds which are wholly new and unknown. To access an other-than-human body in VR might be likened to a kind of hauntological presence: a

there, but not quite. Derrida's hauntological framework outlines a post-ontological approach, where self-identical presence is seemingly impossible. This leads Mark Hagglund to liken the figure of the spectre to a state of being that cannot be fully present which "has no being in itself but marks a relation to what is *no longer or not yet.*'[18] VR, in particular, requires our cognitive and perceptual systems to negotiate 'in-between' experiences, moments where we embody ourselves as being-in-the-world, whilst simultaneously traversing virtual space as a mediated 'other'. As we have seen in Chapter 3, experiences where insides and outsides intermingle cause the body to experience particular feelings and sensations.

Horror is felt, then, when our familiar bodies encounter unfamiliar outsides. I want to turn back to Dylan Trigg's *Phenomenology of Horror* as discussed in Chapter 2, where Trigg describes the human body as being simultaneously the most familiar and unfamiliar site of experience. Trigg's phenomenology sees the "collision of the human and non-humanity inhabiting the same body"[19] as the emergence of the unhuman. His approach to the philosophy of unhumanity appeals to the body as a site for experiencing otherness. The phenomenology of horror gives voice to this materiality of the body beyond subjectivity. Though Trigg emphasises the existence of "another" phenomenology, one which exceeds humanist phenomenological approaches, this is precisely enabled through a newly informed focus on the body, its messy materiality, and its limitations. Trigg's approach to horror formulates an alternative to enframing; rather than regarding the empowerment of the human body, 'body-horror' becomes representative of the human becoming unhuman. These jarring conceptualisations see the body's affective relationship to forms of horror. It is precisely this relationship that marks horror's framelessness, because it exists beyond human capture – instead translating into strange affect.

So, what can horror do? How does the genre speak to its audiences, and what do audiences of horror expect? What does, and what can, horror feel like? I want to look away from VR in the first instance in order to establish what the horror genre more broadly is capable of, before returning to its specific realisations in virtual environments. I want to argue, first and foremost, that horror critically engages audiences through various implementations of framelessness. By this, I mean to suggest that frameless

[18] Mark Hagglund in Mark Fisher, 'What is Hauntology?' *Film Quarterly,* 66.1 (2012) pp.16-24.
[19] Trigg, p.55.

fictions of horror produce unsettling affects when nonhuman entities seep out of the corners of our screens, our phones, or our headsets. This is an inherently critical capacity that horror yields, because it enables its audiences to face the illusion of containment, the illusion of insides and outsides as being wholly separate realms that remain disparate from one another. It also reveals the illusions bound to enframing and total human agency and cognitive comprehension. When we engage with technology, for example, where we are actors, so is the technology itself: human agency is not at the forefront of technological use, and this should be made apparent in VR (something horror can give further understanding of).

In this regard, we might consider horror as an overtly *leaky* genre and affect. Wendy Hui Kyong Chun explores the phenomenon of leakiness in relation to new media technologies in her 2016 *Updating to Remain the Same*.[20] In the work's preface, Chun describes new media as being "wonderfully creepy"[21] as they unsettle the oppositional positions of the new and old, banal and exciting, but also in the ways that they are sold to us in such a way where their being eerily present in our day-to-day lives becomes commonplace. Wendy Chun describes the leakiness of networks, and asks how we take seriously the leakiness of new media.[22] Chun regards leakiness as "revealing a logic of containment, which is always imagined as transgressed."[23] It is not only the content we engage with through new media technologies, but their infrastructures, that ooze out of the hardware. In so doing, "new media erode the distinction between the revolutionary and the conventional, public and private, work and leisure, fascinating and boring, hype and reality, amateur and professional, democracy and trolling."[24] I also attest to the leakiness of VR and horror specifically in the ways that they produce affects associated with their infrastructures; horror characterises the unknown and unhuman actors that are built into our technological infrastructures. Not dissimilar to our interactions with weird entities, we rely on affective contact with these leaky entities in order to understand and comprehend them. VR is a leaky object, not one that is contained as its bulky exterior might encourage us to believe. The horror of VR emerges because of its leakiness, the ways it touches our bodies and opens it up as a domain for datafication and

[20] Chun, *Updating to Remain the Same*
[21] Paraphrased from ibid, p.ix.
[22] Ibid.
[23] Ibid, p.12.
[24] Ibid.

tracking. Though these elements are not inherently affective, the affective potential of horror allows us to reflect on the intimacy and proximity of VR hardware to the body. It is here that I turn to horror's legacy in philosophy and film studies to assess its implications for further understanding embodied intimacy and affect, and the ways these experiences enable self-reflexive approaches to VR's infrastructures.

Horror and/as Affect

Firstly, it is worth looking closely at horror films and the spectatorship of horror; there exists a rich corpus of scholarship dedicated to horror films and the embodied implications for spectating horror. To introduce the phenomenological approach to spectatorship in this chapter, I am focusing on what film philosopher Vivian Sobchack refers to as carnal viewing, "vision in the flesh," or the ways the body *feels* the moving images present to the viewer.[25] Embodiment is an integral part of all experiences of horror. When we watch fictions, we engage with them with our flesh; words and images evoke sensory experiences which capture what it means to be embodied. The rich academic discourse around horror, body, and technology attests to the affective potentials of the horror genre and the ways our bodies become implicated in horror texts. VR brings us that one step closer to the horror on the other side.

Noël Carroll's *Philosophy of Horror* is often cited in work which attempts to understand horror's relationship to the body and the world. Carroll's work marked an early interjection where horror artworks were considered alongside affect, whilst horror is described as being an affect in and of itself. Published in 1990, Carroll's research explores the endurance of horror across the ages, precisely because of the effect, and affect, it has on its audiences. Carroll formulates what he refers to as "art-horror," i.e. the ways works of horror "elicit a certain kind of affect… an emotional state, which emotion I call art-horror."[26] Art-horror, then, captures the bodily and emotional impact that horror narratives carry with them onto their audiences; Carroll's work is less concerned with the interfacing of works of horror with the body, and more concerned with the ways

[25] Vivian Sobchack's widely cited *Carnal Thoughts: Embodiment and Moving Image Culture* considers the way we engage with, and interpret, our sensory experiences when we live our daily lives. In particular, she considers how our sensory experience of moving images and films engage the senses in particular ways, engaging "aesthetic and ethical senses 'in the flesh.'"
[26] Noël Carroll, p.74.

they make audiences feel certain things. These emotions, Carroll argues, are commonly shared between the characters and the audience. He continues:

> In works of horror, the responses of characters often seem to cue the emotional responses of the audiences […] The emotional reactions of the characters, then, provide a set of instructions or, rather, examples about the way in which the audience is to respond to the monsters of fiction—that is, about the way we are meant to react to its monstrous properties.[27]

It is evident that horror narratives carry within them visceral 'instructions' about how audiences should respond to the gruelling stories that they interact with. Audiences of horror are particularly attuned to the environments presented to them, responding to multisensory cues which reveal elements of the narrative. Carroll poses the question as to whether emotional responses mark a form of identification with characters in horror plots, asking:

> Is there something special about our relation to the protagonists in horror fictions? Do we, for example, *identify* with these characters—is our fear of monsters their fear of monsters?—or is the relation one other than identification?[28]

Part of the process of engaging with characters in horror plots is their dictating the movement and action of the viewer throughout the world, direction which viewers willingly follow, but do not have to make decisions about and therefore cannot affect the events that follow. Carroll argues that, rather than a process of identification, there is simply an emergence of elements of parallel emotions, where the emotional responses of audiences, to a degree, reflect that of the characters. Part of this, Carroll argues is "that the audience is outside [of the action] while the protagonist is inside it, which implies a substantially different affect."[29]

[27] Ibid.
[28] Ibid, p.59.
[29] Ibid, pp.92-3

How, then, might this change when the audience, or user, is the protagonist of the text? How do emotional parallels emerge in virtual reality simulations, where the avatar's emotions are literally those of the player? The disparate realms of inside and outside that underpin the history of horror as a genre are broken; the frame is shattered and framelessness persists. Carroll's approach to horror and/as affect remains a useful starting point for considering the power of horror to move its audiences; the idea that horror provides a set of recognisable grammars is important because it allows the user to prepare themselves for certain circumstances within horror simulations. For example, if a noise is heard outside of shot, then the user can interpret that there is someone or something else in the surrounding environment and respond accordingly. When users place a headset on, it is crucial that they are given multisensory cues and information about the environment around them. Users want visual information about whose body they are in, about where they are located, and to cognise the sounds of the objects and the world around them. These cues are different to the generative emergent encounters which have been discussed in the previous chapters; though these unanticipated encounters are likely to occur, it is still the responsibility of developers to prepare their users for the kinds of atmospheres and programmed encounters they might experience. To take the *Kitchen* RE7 demo as an example, users can look down and see a presumably white male body, hear the avatar breathing, and see their hands tied together in front of them. The ominous events that follow are indicated somewhat by scattered blood across the floor of the dishevelled room; in this way, the emergent glitch that occurred when I played the demo added to the already unsettling atmosphere which the game had established. We will come to see later how horror can also disclose diegetic information about the broader perceptual experiences VR makes possible, and how these elements are weaved into the genre's narratives.

Horror is oftentimes analysed as evading frames and containment in its various forms. In the introduction to their edited collection *Transnational Horror Across Visual Media*, Dana Och and Kirsten Strayer write of the horror genre's ability to circumvent borders and delimit territories.[30] In their considering of adaptations of horror as they are translated for transnational audiences, Och and Strayer suggest that the body's prominence as a site of horror makes for the reason that the genre translates so well

[30] Dana Och and Kirsten Strayer, *Transnational Horror Across Visual Media: Fragmented Bodies* (London: Routledge, 2013) p.2.

across cultures, arguing that the "core identification process with the body remains intact, even as the body mutates, transforms, becomes-animal, or fractures."[31] They continue:

> Through remakes and transformations, regional tales of vengeful ghosts and cursed pasts are culturally adapted, internationally disseminated, and instantaneously transmitted into our homes through digital devices and networks such as the internet. The resulting transnational and transmedial matrix of fear blurs the boundaries between original and remake, foreign and native, sender and receiver, and creates a web of postmodern horror mediated by digital technology, one in which distant ghosts and curses might become our own.[32]

The embodied proximity of horror, alongside the use of digital technologies, make horror unique in its capacity to appeal to global audiences. As I have previously suggested, this is partly because of the genre's well-established grammars for interaction: audiences willingly submit themselves to fearful tales in order to feel the unsettling affects of their narratives. Yet the genre specifically emerges alongside, and adapts to, new technological advances. As new technologies become available and integrated into the day-to-day lives of the contemporary user, the horror genre intervenes, asking us if we truly know the technologies we have come to interact with. This is precisely what makes VR horror particularly affective; immersive horror environments, in particular, take advantage of the body as a habitus for horror to take place within.[33] The embeddedness of digital technology and its capacity to forge new connections across the globe, lead Och and Strayer to argue that horror texts are able to reach larger audiences than ever before. It also means that global audiences are exposed to transnational horror texts that speak to the genres effects in a variety of different ways.

[31] Ibid, p.7.
[32] Ibid, p.17.
[33] Paraphrased from Och and Srayer.

Breaking Frames

Horror disrupts the capacity to frame by problematising ontological stability and revealing the borders, or limits, of the enframed world. As we have seen throughout the thesis thus far, these ontological ambivalences emerge in specific ways in VR. The particularities of VR horror texts will be considered later in this chapter. It is worth exploring the types of horror texts that appeal to forms of framelessness, and the ways mediation and media are incorporated into frameless horror fictions. As an example, Kjetil Rødje discusses the "stylistic framing" of the found footage horror film.[34] The style of found footage films[35] encourages the visibility of the technologies which produce them, including cameras, computers, and mobile phones. Whilst illustrating certain forms of authenticity, i.e. the viewer finds the footage along with the characters in the films,[36] these artworks oftentimes simultaneously promote their inauthenticity by creating a very specific form of watching for the viewer. The visibility of the technology, Rødje contests, creates spatiotemporal limitations and rigid constraints; this means that though the genre implies that something beyond the human will emerge and threaten the characters in the film, the spatiotemporal limit posed by the technological frame means that the viewer is also limited in what they can perceive and be made aware of at any given time. Rødje argues that this produces an intradiegetic role for the camera "as a character the film," and a "creative outlet for cinematic experimentation that points towards the potentials of exploring modes of distributed agency through the medium of film."[37] He argues for the consideration of the actor-assemblage in the found-footage film, where both human and material entities play active parts in the motion picture images. Via the medium of camera, the viewer moves with the movement of the camera as well as the person holding it. Human vision is mediated by the camera, which is then the premise of the film viewing experience. Using Deleuze and Guattari's conceptualisation

[34] Kjetil Rødje, 'Intra-Diegetic Cameras as Cinematic Actor Assemblages in Found Footage Horror Cinema', *Film Philosophy*, 21.2 (2017).
[35] Notable examples include *The Blair Witch Project* (1999), *Rec* (2007) and the *Paranormal Activity* films (2007-)
[36] The Paranormal Activity franchise plays with this trope throughout its films (see image to follow). In particular *Paranormal Activity: The Ghost Dimension* (Blumhouse: 2015) sees a family move into a new home and find tapes that link back to the original film.
[37] Ibid.

of "assemblages,"[38] Rødje argues that the found-footage mode relies on the interrelationships of body and movement as a dynamic collective. The medium-frame in this instance both limits the viewers way of seeing, but also enables the spectator to view the events via the perspective of the nonhuman technology, as it jolts and trembles, moving with the body of the character who holds it. Though the mode of seeing is essentially framed, the affect that this viewing experience enables pours out onto the body of its viewer.

Image 33 Camera screenshot from *Paranormal Activity* (Blumhouse, 2007) from *The New York Times* <https://www.nytimes.com/2009/10/09/movies/09paranormal.html>

Horror ultimately relies on technology and bodies in order to exist. Special effects, uncanny and photorealistic gameplay, the capacity to layer virtual images onto the real world, all of these evolutions across mediums enable horror, and our experiences of horror, to evolve. As technologies and our expectations of them begin to change and evolve, so too does horror and its ability to shed light on the horrific.

The found-footage genre is just one example in a large repertoire of horrific modes. In his work *Limits of Horror: Technology, Bodies, Gothic* (2008), Fred Botting explores the ways horror and technology are intertwined. Botting argues that the evolution of technological effects ultimately enhances horror's affects, further "engag[ing] and repuls[ing] audiences in the staging of often overwhelming and unbearable images."[39] He explores the potentials of technology to enhance the sensory engagement of the audience and the shared properties of technologies and horrific

[38] Giles Deleuze and Felix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia* (London: Continuum, 1987).
[39] Ibid.

entities, arguing that "ghosts become ordinary figures for the operations of new technologies and their hallucinatory, virtual effects."[40] He also notes the ways in which horror disintegrates solid borders and boundaries:

> The uncanny crossing of borders between life and death forms part of horror's general disturbance as it tears through framed images and dissolves boundaries between art and real, image and audience.[41]

It is this capacity of horror to escape the containment of the mediums which produce it which make it arguably the most affective, and frameless, genre.

There are also horrific modes which excessively capitalise on their audience's capacity to feel horror, disgust, and fright, such as the slasher genre. These kinds of texts exceed affect – producing narratives which base themselves around the impact on the human body and the destruction of the body-as-frame. Carol Clover's influential work turns to the slasher film to suggest that horror is in itself a "body-genre." Clover's essay on horror spectatorship explores the ways certain forms of femininity and masculinity emerge in slasher movies. She states:

> Unmediated by otherworldly fantasy, cover plot, bestial transformations, or civilised routine, slasher films present us in startingly direct terms with a world in which male and female are at desperate odds but in which, at the same time, masculinity and femininity are more states of mind than body.[42]

The slasher film, Clover argues, marks a fascination with the flesh as that which is otherwise hidden from view.[43] She considers the ways that the body emerges in horror narratives, and the ways the genre shares, with pornography, a devotion to the arousal of bodily sensation.[44] With the evolution of special effects, Clover argues, we are able to "see with our own eyes the 'opened' body."[45] The slasher film's vision of the

[40] Ibid, p.10.
[41] Fred Botting, *Limits of Horror: Technology, Bodies, Gothic* (Manchester: Manchester University Press, 2008) p.139.
[42] Clover, p.188.
[43] Paraphrased from Clover, p.189.
[44] Ibid.
[45] Ibid.

deconstructed flesh of the body is made more visceral as visual effects become more advanced. By viewing the events of horror, Clover argues its force is truly realised in the ways that viewers are exposed to both sides of the story – both victim and killer. She argues that these roles inevitably maintain gendered states:

> Cinefantastic horror, in short, succeeds in incorporating its spectators as "feminine" and then violating that body—which recoils, shudders, cries out collectively—in ways otherwise imaginable, for males, only in nightmare.[46]

Clover's writing of the gendered violation of the body in the slasher film actualises horror's unique alignment with agency and the affective, and affecting, body. The threatened body on screen creates vulnerability for the audience of viewers in this inherently felt genre. Though academic discourses surrounding horror's use of, and destruction of, frames illustrates its sensory potentials, we also miss out on the instances where the human body is made to feel strange, othered, and ontologically spectral. As has been made clear, there is a broad field of academic writing concerned with the bodily implications of horror texts. As VR continues to develop, and push at the boundaries of existing ideas relating to horror and bodily affectivity, there is required a new push to understand its specific implications. Though the genre itself has set expectations in terms of audience engagement, the technologies which mediate horror inevitably give rise to new forms of experience that audiences will, on the whole, be unfamiliar with.

Engagement and Expectations of Horror

As has thus far been explored, horror is concerned with a number of phenomenological modes relating to bodily experience: by enabling specific kinds of contact between human and nonhuman entities, the genre raises a number of questions that can be regarded as existential, or relating to being and experience. Don Ihde defines existential phenomenology as that which is concerned with "the body-as-experiencing, the embodied being, who is the noematic correlate of the world of things and others."[47] As

[46] Ibid, p.213.
[47] Don Ihde, *Experimental Phenomenology: An Introduction* (Albany: State University of New York Press, 1986) p.49.

such, we are only truly are given access to things that are beyond our comprehension because of our bodily experience of, and with, these things. Existential phenomenology, therefore, also accounts for the always-already unknown both inside and outside the sensing subject, our strange bodies, and wandering minds. There are, at the core of horror, certain questions of agency and access, a number of which I have introduced in each of the previous chapters. Yet, horror can provide us with some of the language and embodied grammars associated with compromised agency and access that also look beyond the human. Existential phenomenology places emphasis on subjective experience, whilst horror challenges human agency by enabling certain kinds of access to that which is beyond the human, or beyond the limits of human framing. Horror, too, complicates human access by the suggestion that we will truly never know that thing we have come into contact with. In this light. Stephen Asma considers the potentials of the horror genre to have "unique powers to sculpt our somatic markers […] it is not a representation of a feeling of horror, but a contagion of horror."[48] Contagion enacts a pre-conscious state which sweeps over the body of the subject. There is a sense that human agency is challenged, precisely because our bodies enact specific kinds of arduous and unexpected affects. As immersive technologies become closer to our bodies, these forms of contagion are mediated in novel ways.

These forms of arduous and unsettling affects could generally be seen as a hindrance to VR's 'taking off' in the consumer market. However, a willingness by users to embrace these weird affects as part of gaming narrative experiences in VR is highlighted by the popularity of horror games developed specifically for the medium. Consumer VR is still in its early stages, but horror in particular is able to provide a platform where its current technological limitations actually become part of the gameplay itself. To revisit the instance when I played the *Kitchen* RE7 demo for the first time, the limitations of the system itself became a believable and even impactful part of the gameplay despite it being wholly unintentional and emergent. In his essay on '*Silent Hill* and the Aesthetic Economies of Fear' (2015), William Cheng notes that, in the development of survival-horror video games in the late 1990's/early 2000's, fear was elicited "by teasing the player with an illusion of control, only to snatch it away at the worst moment."[49] Indeed,

[48] Stephen Asma, 'Monsters on the Brain: An Evolutionary Epistemology of Horror', *Social Research: An International Quarterly*, 81.4 (2014) p.954.
[49] Cheng, p.175.

his analysis of the player's control of Harry Mason, the protagonist in the first *Silent Hill* game (1999), considers the unruly movement of the virtual character through the game space as only serving to emphasise the player's lack of agency due to "awkward controls" and "clumsy combat."[50] As such, horror's unique ties to the physical grasp of the player and/or viewer inevitably mediate how we affectively respond to their stories. Control over the environment is seemingly stripped away, and technological limits and consequential errors enact the agency of that which is other than human.

Angela Ndalianis' work *The Horror Sensorium: Media and the Senses* (2012) further draws horror criticism towards media, technology, and the body, arguing that the interface functions "as a space where medium and body collide."[51] Ndalianis considers how horror, and horror fictions, moves across sensory geographical spaces, evaluating their embeddedness in mediated environments (films, videogames) as well as physical environments, including theme park settings:

> In the fictional expansion that occurs across media, the sensorium turns its attention to an intensive cognitive and sensorial immersion into fictions that are dispersed across multiple media environments, which also include the 'spectator's' actual geographic landscape.[52]

The Horror Sensorium explores the ways that horror has always been invested in unruly affect by "translating their sensorial enactments across our bodies."[53] Ndalianis argues that the affective power of horror encourages our engagement in the social critiques works of horror showcase to their audiences, in the ways they expose the instability of social systems and muddy social orders. She states: "the horror film is about crossing boundaries. One side of the border constitutes order; the other chaos: the horrific manifests itself where meaning, which is established by civilisation, collapses."[54] Ndalianis argues that horror artworks demand their audiences to respond to their fictions in certain ways. Though this is the case to some degree, in that there is a broad familiarity with a number of horror tropes, oftentimes the most horrific of experiences

[50] Ibid.
[51] Angela Ndalianis, *The Horror Sensorium: Media and the Senses* (North Carolina: McFarland&co, 2012) p.3.
[52] Ibid, p.165.
[53] Ibid.
[54] Ibid, p.15.

occur when something happens that audiences cannot anticipate; the challenge to total human agency primarily manifests when we are exposed to arduous and unexpected affects. In these instances, the borders of chaos and order collapse and the two sides intermingle. It is in line with this that this chapter pushes beyond the interface as the gateway into the affective potentials of horror.

Expecting the Frame to Break?

Thus far, affect and horror have been explored via Noël Carroll's conceptualisation of art-horror. They have also been considered through writings that explore the genre's entanglement with human bodies, and the ways horror narratives translate from representation to affect by interfacing closely with the body. I argue that we might consider framelessness as a certain affective experience in VR specifically, considering the ways cognition and embodiment in VR can be captured through an approach which leaves borders, frames, inside/outside dichotomies, and ontological division behind. Focusing on the Anglo-American J-Horror remake *The Ring* (2002), this section will consider how breaking frames is already a familiar trope within the genre, and how the breaking of frames produces new forms of contact between human and nonhuman, inside and outside.

The Ring is perhaps the most well recognised representation of ontological disparity and the 'breaking out of the frame' trope in twenty-first century horror cinema.[55] Based on the collection of novels by Koji Suzuki[56] and the original Japanese *Ringu* films (1998; 2002)[57] directed by Hideo Nakata, the remake follows protagonist Rachel Keller (Naomi Watts) as she attempts to find the source of a 'killer video tape' which, upon being watched, will kill the viewer, following a telephoned warning that they will die in seven days. Upon tracing its origins, Rachel discovers the backstory of Samara Morgan, the unhuman supernatural entity whose spirit possesses the tape. When the 7 days have passed, Samara's spirit hacks into the technologies within the victim's home, and they become part of a network which emits her undead presence. If the chosen victim faces the television during the moment of Samara's haunting, she emerges out of the television

[55] *The Ring,* dir. by Gore Vernkinski (Macdonald/Parkes Productions, 2002).
[56] Koji Suzuki, *Ring* (Tokyo: Kadokawa Shoten, 1991).
[57] *Ringu,* dir. by Hideo Nakata (Ringu/Rasen Productions, 1998).

screen, breaching the barriers of the material frame, and killing the human on the other side. In an attempt to halt the circulation of the tape and the consequent deaths, Rachel seeks to discover more about its supernatural inner workings.

Rather than a lingering human figure, Samara is represented as a weird glitching-static entity embodied in a physical human-like form whose movement and supernatural capacities exceed human comprehension. Her emergence through the television screen does not see her transformation from a mediated virtual entity to a fully realised human, rather, the representation of Samara is unsettling because she is mediated and exists in the real world as an uncanny not-quite-human; Samara breaks the boundaries between real and mediated embodiment/s. Not dissimilarly, as Lacefield notes, such a breaking of boundaries explores the intrusion of the technological into the realm of the subject.[58] The incapacity of the frame to inform a boundary between fiction and reality, and thus also the supernatural and the natural in *The Ring* sees the human body threatened by the unknowable unhuman whose existence goes beyond the rules and experiential capacity of the human world.

The transgression of the frame, in this case a television, is initially signified by the movement of a still image of a fly moving from representation ('within' the screen) to reality.

Image 34 Fly escapes the screen, Part 1 taken from *The Ring* (2002) 'The Ring (3/8) Movie CLIP - Nose Bleed (2002) HD, Movieclips (1.45)

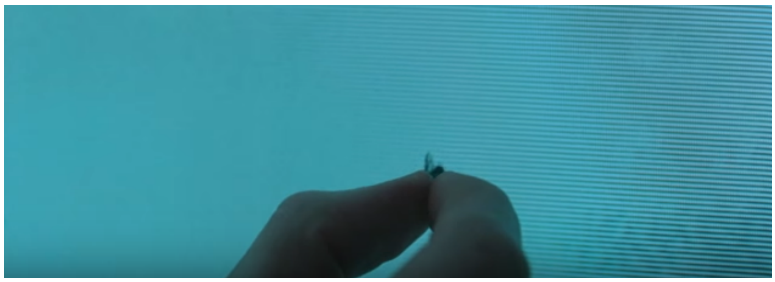

Image 35 Fly escapes the screen, Part 2 taken from *The Ring* (2002) 'The Ring (3/8) Movie CLIP - Nose Bleed (2002) HD, Movieclips.

[58] Kristen Lacefield, *The Scary Screen: Media Anxiety and The Ring* (London: Routledge, 2010).

Image 36 Fly escapes the screen, Part 3 taken from *The Ring* (2002) 'The Ring (3/8) Movie CLIP - Nose Bleed (2002) HD, Movieclips.

Rachel studies the tape, pressing buttons on the VCR and replaying certain parts of the recording to see how it works. She stops it on one seemingly still image of a fly on a blank screen. The fly looks relatively ordinary, scuttering across the still surface—until Rachel looks closer to see that the fly has somehow escaped the confines of the mediated image, and now exists independently of the screen: the ontological frame of the television is broken. In disbelief, Rachel attempts to analyse the underlying workings of the tape by persistently fast-forwarding and rewinding it. This oscillation defies Rachel's cognition and control. The presence of supernatural logic here, the seeping of the contents of the television into the real world, marks an inversion of ontological categories. This inversion provokes confusion and unsettlement for Rachel and the audience alike; this is the trial run, a warning for the audience that this ontological porosity will only be exacerbated as the story continues. The fly is later followed out into the world by Samara's undead body which emerges from, and returns to, the television screen throughout the film. Following durations of white noise, an image of a well appears on the screen, with glitching frames of footage marking Samara's corpse emerging out of the well and walking towards the boundary of the screen. Her limbs then seep out of the screen, marking her unruly presence in the real world and killing those who are entrapped by the tape's footage.

Indeed, we might consider that Samara's presence escapes even the containment of the film itself as she manifests as bodily affect on the film viewer. In the same way that Samara is physically represented as moving through the medium-frame and impeding onto the bodies of her victims, her presence is simultaneously felt by the film viewer as she evokes horror-as-affect. The film marks a frameless orientation, where Samara's presence marks the inversion of ontological categories, as well as the inversion of human agency. Though the film leads to the discovery of more information about Samara's

human past, her unhuman presence prevails. It is never fully understood how she makes herself present through the mediums in the film, and the viewer is forced to ask themselves what she might be capable of next. *The Ring's* frameless orientation sees it both manipulate the rules of fixed ontologies, whilst simultaneously presencing horrific entities through mediated error.

The intrusion of the supernatural, or the emergence of alternative logics which defy those of a human world, are inherently unruly encounters. Not dissimilarly to the unruly glitch posed in Chapter 3, they disrupt expectations, and as such mark the emergence of the other-than-human. When mediation is unruly, such as the tape playing without consent, this unruliness signals the conjuring of a supernatural apparition. These examples reflect the ontological disparities of the frameless, whereby a strange, or haunted, form of communication between two sites causes distinct ontological divisions to dissolve and seep into one another. The sense of non-definition depicted in *The Ring*'s horrific visual representations is what provokes fear in the viewer; the hauntings seem to defy all forms of human control and communicate unruly presence. The presentation of unhuman bodies provokes distinctive weird and affective responses for the viewer, as attention is drawn to the frameless bodies that defy ontological categorisation: an interruption, such as Samara's emergence from the screen, implicates the mediation of unruly presence. *The Ring* has become a well-known horror narrative because of its visualisation of the porous interface. Horrific encounters like that within *The Ring* mark an unfixed phenomenology of that which exists beyond the realm of the human subject. As Dylan Trigg notes, in representations and experiences of horror, another phenomenology persists.[59]

Unruly Horror and VR: *A Chair in a Room* (2016)

Horror spectatorship reveals the complex relationships bodies have with visual horror fictions. Whether it is from the representation of disintegrated flesh, or the body inversed, horror fictions make us *feel* things. It is in this way, too, that they are the most frameless of fictions: entities escape containment, crossing diegetic and non-diegetic borders to grab hold of the bodies of characters and audiences alike, and this, in turn, provides

[59] Trigg.

audiences with the realisation of the richness of the bodily apparatus and its capacity to absorb fictions through the flesh. However, horror fictions also particularly capture our critical minds, as we think of the power that representative media hold. I say this to suggest that images can enable us to realise the power that visual media have to truly make us feel. In so doing, they highlight the intimacy of immersive visual experiences and how they can impact us in the flesh.

In the case of VR horror, other dimensions become part of the experience, including the intimate interaction with the technological hardware and the specific engagements we have with the virtual worlds of elsewhere. Developments in immersive VR simulations are continually battling the cognitive, embodied, and epistemological challenges of the technology's interactions with our bodies. VR development constantly strives to avoid negative affects associated with the technology, including motion sickness, uncanny movements, glitches, and breakdowns—all of which are seen to impede the immersive potential of the hardware. These expectations of VR are firmly rooted in the culture the technology has brought with it from the 80s and 90s, where the future of the VR experience was to 'inevitably' feel more and more like reality. This thesis has sought to break this illusion by exploring VR's potentials when it does not feel like reality, but reveals other elements which exist beyond immediate human comprehension, agency, and access. These elements are important to consider, because where unruly interactions and error are inevitable, they should be embraced. Horror invites a new approach to error which is not negative, but that overtly muddies VR's neat narrations in popular culture and asks users to acknowledge the limits of interactions between the hardware and the body.

As we have seen in the previous chapters, through explorations of 'The Phenomenology Implications of VR,' 'Presence and the Phenomenology of the Flesh,' 'Glitch/Noise/Immersion,' and here 'Horror, Embodiment, and the Horror of Embodiment,' experiences such as uncanny movements and perceptual errors in VR escape the technologies perceptual framings; they produce weird kinds of affect which root the body in its fleshy presence, whilst simultaneously hinting at the coming-into-contact with the *world-without-us*. Both works of horror and VR independently, but also works of horror made explicitly for VR, enable the realisation of different kinds of immersion which mark the strange intertwinings of reality and un-reality, dead and alive, here and there, inside and outside, us and them. As has already been explored, horror

does this primarily through enabling unruly encounters between the human and the nonhuman. Horror initiates new critical understandings of VR as the technology and content produced for the medium sees its users experiencing instances where hardware does not work seamlessly with the body, and the ways these experiences mimic the weird sensations most commonly associated with horror. Though VR development, at least currently, overwhelmingly seeks to replicate human (or human-seeming) embodiment and interaction in alternative virtual worlds, the feeling of ontological inbetweenness doesn't see this happen, and this can be arduous, frustrating, and uncomfortable. The compatibility of horror and VR is further accentuated through questions of agency and potential affective discomfort and disorientation. Experiences of unruly movement in immersive simulated spaces not only highlight technological limitations, but they also highlight the limitations that are deeply rooted in human subjectivity itself, limitations that we often tend to miss, and which horror reinforces, primarily through the revelation of agencies and actors which exist outside of humanity, and thus consequently outside the parameters of human understanding.

VR is able to affectively produce the sensation of coming into contact with the limits of human perception. Such aesthetic encounters with the frameless encourage us to acknowledge the existence of that which can, and always-already does, exist beyond human enframing. The kinds of bodily and affective slippages that horror encourages can, in fact, be reconsidered as a radical new aesthetic of/for VR experiences, bridging discourses of embodiment, horror, and technology. The affects elicited by errors oftentimes mimic sensations that are already intrinsic, and specific, to the horror genre, those that makers and audiences of horror thrive on, including: awe, fear, anticipation, proximity, disorientation, and wonder.

The VR horror game, *A Chair in a Room* (2016)[60] bridges the gap between body-horror, weird sensations of uncanny re-embodiment in virtual space, and an already well-informed trajectory of genre tropes which inevitably immerse the player via physiological, cognitive, and emotional responses. The game was first released in 2016; its description on the Steam store reads:

[60] *A Chair in a Room* (Greenwater, 2016).

> Explore your surroundings as the protagonist of your own horror story as you immerse yourself in this tense VR thriller set in America's Deep South. Navigate your way through your memories, piecing together the clues and puzzles, to solve the mystery of how you have awoken in the sinister Greenwater Institute…[61]

Immediately, the prospective user is pulled in as the protagonist of the story. This draws us back to the overtly recognised 2nd person references in the VR advertising space discussed in Chapter 1. However, here the difference is that the user is told that they will navigate their way through pre-empted memories to find out why they have woken up in the Greenwater Institute. Rather than taking action, the user is told that the line of events has already been decided for them. When stepping into the body of the protagonist, only referred to as Patient No. 6097, they must come to terms with the past events which led them to find themselves held captive in a room (with a chair). Here, though discretely, the user is prepared to submit themselves to a predestined plot, to surrender any illusion of total agency. And it is this surrendering of agency that contributes to the intended effects/affects of the game.

The general plot of *A Chair in a Room* explores a number of themes including addiction, religious immorality, and murder. The accessing of Patient 6097's/your memories sees you grappling with the implication that you are a killer, and have found yourself in the institute following a series of erratic episodes. After what has supposedly been a time of psychological trauma following your committing the murder of a young boy, the institute relay your memories in order to regain a sense of rootedness in reality. Beneath the surface, a selection of clues scattered throughout the plot reveal that institutional corruption is part of the reason you have been detained, and that the Greenwater Institute is not a safe haven for you/your avatar. Over the course of the experience, it becomes clear that the institute is controlling and dictating artificial memories, relaying fake information in order to convince you that you have committed a murder. The player finds themselves repenting in a confession room, escaping a run-down hotel and being confronted with the continual spectres of the dead body of the boy who you may (or may not) have killed.

[61] <https://store.steampowered.com/app/427760/A_Chair_in_a_Room__Greenwater/> [accessed May 2020].

The game utilises room-scale simulation, which calibrates the movements the user makes in the real, physical environment with the scale of the simulated environment, and vice versa. If users do not have the luxury of an expansive space completely free of clutter, the fear of walking into something, or someone, adds even more to the fear of the unknown in the simulation itself. When I played this game for the first time, the fear of hitting the wall, or coming into contact with something that could match up with something horrific in the simulation, made the game even more intense to play. Upon entering the game's virtual environment, it begins in a clinical, whitewashed room with posters filling the walls. There are minimal objects for the user to interact with at the beginning, only bottles, a chair and a radio. This introductory environment precedes the gameplay of the main storyline, providing a settling-in space where the player has time to familiarise themselves with the game mechanics and how the movement works in the simulation. The user finds themselves controlling the body of Patient 6097 and is able to use handset triggers to move the character's photorealistic hands, interact with the objects, and look and move around the room. This introductory setting, though it functions to accustom the user to the virtual environment and game mechanics, also hints at what might be future experiences of weird affectation within the space. Indeed, *Chair in a Room* draws attention to the ways the technology might feel to use to the game narrative itself.

When the player enters the main game plot, at the beginning of the first chapter, they find themselves in a room not dissimilar to the introduction – aside from a window with clouded glass. Behind this window can be seen the silhouette of a nurse wearing white. The nurse instructs the player to "please take your medication," and following this a small green pill in a cup is dispensed through a slot in the cell door. If the player examines the posters on the wall closely, one of them appears to be an advertisement for the same drug you are told to take. The drug is depicted as a bitten apple, alluding to the imagery of sin and repentance which is central throughout the game. The poster states: "one a day, to keep the visions away." As such, the advertisement encourages the use of the drug in order to avoid disturbing visions (which function as the central premise of the game.) However, upon closer inspection, a warning in small print is located in the bottom corner of the poster; within the fine print is described the side effects of the drug which

include “seizures, blackouts or convulsions and twitching or uncontrollable movement of the hands.”

Image 37 'Horror in VR! Chair in a Room: Greenwater (Part 1 of 3)' uploaded by *GTLive.*

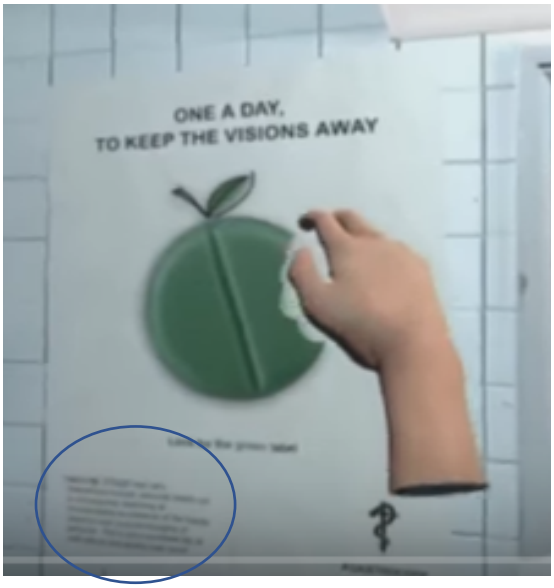

Image 38 Ibid - circled information for the player, small print.

The player comes to realise that this information provides an in-world justification for any emergent glitches that may occur throughout the game, which, in my playthrough, included my hands flying out of view and even the walls of the cell opening out onto a white void. When glitches occurred in the game space, it wasn’t totally shocking, and didn’t read as a breakdown of the technology, as it built into the fear and lack of agency that is so embedded within the diegetic plot. This links the unruly, technical glitches and the consequential strange movements of the avatar’s body in the game world with the

suggestion that the diegetic drug usage is affecting the character's movement; the inferred hallucinatory effect of the drug is aligned with the similar nausea and displacement associated with the medium itself. Motion sickness most commonly occurs in VR when movement in the virtual environment jolts sharply or in experiences that do not totally match cognitive expectation. Such movements and sensations create a sense of displacement, which has been shown to be embraced by horror narratives. By explicitly linking together the intermittent errors of the game system mechanics and registering the calibration of the player's movement, the game links the consequential affects to genre specific tropes, particularly the loss of control. Upon completion of the game, it is revealed that the drug has actually been the means through which the Greenwater Institute has manipulated your memories, forming part of a larger experiential scheme coordinated by the institute to recruit subjects for the testing of the perception-altering drug.

It is this kind of fine-tuned detail that makes this particular horror game successful: it not only ties together the intentional horrific components presented, but also accounts for your strange and glitching movement through the game's spaces. These instances of glitch inevitably produce weird affects for the player, including displacement, motion sickness, and a sense of control and rootedness being pulled away. Indeed, the strangest feeling is watching the world around you sporadically break down and experiencing the vulnerability of your own body as it feels so part of the virtual environment presented. One user review of the game remarked that "the physics and glitches are relentlessly terrifying,"[62] not acknowledging the terror of the gameplay and jump scares as other reviewers had, but instead focusing on the relentless discomfort of the glitches and virtual body moving joltingly through the space. The game intriguingly links the 'perceptual manipulation' of both the player and the patient they embody as they come to terms with the Institute's backwards experiments.

A Chair in a Room has been one of the most visceral games I have experienced in VR, precisely in its overtly acknowledging and embedding the technology's incapacity to achieve totally seamless and transparent experiences. When things go wrong in the game, i.e. when the body I am operating in the gameworld does not correspond with my

[62] 'A Chair in a Room is by far the most underrated and terrifying VR-experience on Steam. A new horror classic. Please, give it a shot!', posted by TiSoBr on *Reddit* (July 2016) <https://www.reddit.com/r/Vive/comments/4vgsqh/a_chair_in_a_room_is_by_far_the_most_underrated/> [accessed 29 March 2017].

movement in my own body, the game makes this feel like an acceptable generic inclusion. These factors mark the innate affinities between horror narratives and VR, not as a wholly orderly medium, but instead as a still emerging and unruly technology which is both unreliable and intimately tied to our embodiment. VR continues to bring embodiment to the forefront, even if it troubles it. Horror reveals the illusions of humanist ideals of access and agency, playing on the associated affects that emerge when these subjective factors are pulled away. VR and horror unite in their capacity to embrace the novel aesthetic and affective experiences that VR is capable of producing, embracing the unruly, and challenging the call to what has previously been referred to as 'perfect immersivity.'

These kinds of embodied experiences also mimic the experiences of the unhuman outlined in Chapter 2, Trigg's description of a body whose agency exceeds that of the human subjectivity. A new form of subjective experience emerges where bodily movement slips between here and there. Drawing on horrific elements made popular and familiar by films like *The Ring*, the idea that the medium has a mind of its own ultimately conveys the presence of both its nonhuman and potentially unhuman, infrastructure and processes. It plays on anxieties surrounding technologies intrusion onto subjectivity. By replicating abject sensations between diegetic and non-diegetic movement in the game, sensations that are triggered by the medium implicate the presence of emergent unhuman forces that manifest as weird affection across the body itself. This jarring sensation correlates with Trigg's unhuman phenomenology, as horror simulations such as *A Chair in a Room* present the opportunity of "the human becoming unhuman."[63] It does so by using the user's body as a site for experiencing that which is other to it, making the unhuman visible through bodily affect. The uncomfortable jolts of a virtual body moving of its own accord is rendered intimately to the VR user, allowing them to see glitch and error as direct perceptual and embodied encounters with virtual environments.

These kinds of encounters go beyond, sometimes far beyond, the persistent phenomenological model of enframing. In many ways, rather than empowering human embodiment, such forms of horror pull agency away from the user, causing the body to respond uncomfortably to the movement of the virtual space, and in ways that are hard to reconcile with our subjective experience. *Chair in a Room* uses visual cues to

[63] Trigg, p.9.

incorporate the presence of the unruly technological system into the horror experience at large. Not dissimilarly to the ephemeral fleeting encounters with the killer VCR in *The Ring*, the medium highlights the impropriety of the frame as a distinctly human ontological category, as the boundaries dividing the real and the mediated, the human and the unhuman, alive and dead, inside and outside, all become increasingly porous. Horror is already representative of framelessness as a generic trope, as has been highlighted through the visualisations and representational capturing of the frameless (as in *The* Ring), and through the emergence of specific aesthetic experiences (error and glitch). Horror, as Trigg attests, enacts a phenomenology which resides at the borders and limits of human experience; acknowledging this phenomenology, as it necessarily moves away from VR's grand illusions of empowerment and neatness, will enable new approaches to VR experiences embrace its limitations, and those of the interactions between the body and the technology.

VR as Dark Media?

In bringing together all of the aforementioned interactions with horror that involve an embodied and affective interaction with both horror and the mediums that produce and represent horrific stories and experiences, I end by arguing that it is the weird affective potentials that align both horror and VR. Breaking away from the framings of VR as overtly immersive, or inherently passive for the embodied user, I would like to conclude by analysing virtual reality as a form of *dark media*. That is not to say that VR is inherently all-encumbered by the specifics of the horror genre, but that we might learn more about VR's unique potential by breaking away from its excessive potentials of transparency and transcendence. Eugene Thacker formulates the term 'dark media' in his essay in the collection, *Excommunication* (2014).[64] This collection illustrates excommunication as that which involves a "contentious and often confrontational testing of the limits of communication."[65] Again, this line of enquiry sees potential at the limits of human articulation; all three of the contributors to the collection (Thacker, McKenzie Wark, and Alexander Galloway) in some way go beyond the human in order to confront the limits of

[64] Thacker, 'Dark Media' in *Dark Media: Three Enquiries in Media and Mediation* (Chicago: The University of Chicago Press, (2014)
[65] Ibid, p.79.

humanist thought. Thacker's focus on 'dark media' considers the ways in which communication is in some ways presupposed by excommunication—that somehow media and mediation become fantastical when the limitations of their capacities to facilitate communication are considered. This enables a challenging of the dominant calls for seamlessness and the banality of day-to-day communication via media which are so embedded in contemporary western culture. Thacker notes that his analysis is inherently intertwined with phenomenological thinking, particularly concerning relations between subject and object. He continues:

> We are not considering traditional subject-object relations, nor are we interested in the uncanny object-object relations. Instead, we are considering the possible passages between objects and things, between that which is readily accessible to us as human subjects, and that which enigmatically withdraws into a region that we can only describe as the "thing-in-itself". Note that, strictly speaking, there can be no relation between object and thing. This is the "relation" of object-thing. While objects are always objects as they appear to us as subjects, things occupy a dark, nebulous zone outside of subject-object relations altogether (including object-object relations). If objects are always objects for a subject, then things are like impossible objects, occult objects, or better, apophatic objects—objects absolutely withdrawn, leaving only a strange, fecund emptiness, an inaccessibility that knows no limits' (p.119).

In thinking about the ways VR is always, in its full reality, inaccessible to the human subject, Thacker's dark media seems a useful theoretical model which brings together some of the threads in contemporary phenomenology, Trigg's 'unhuman' and Thacker's world-without-us, both of which capture the inefficiencies of the framing function. Dark media pose as material reminders of the potentials of nonhuman, object agency, and horror allows for a particularly metaphorical conceptualisation of these agencies through the representations of the mediated supernatural, recognisable horrific figures which make apparent the aspects of our media which dwell beyond the interfaces that we never physically interact with, but lay beneath our visual, auditory, and tactile interactions.

The horror genre opens these ideas up and lays down its own limits: horror threatens this embedded familiarity of media, poses a question to the 'free-floating'

nature of communication, and ultimately poses an alternative to the expectations of noiseless, seamless and obedient communication mediums. As has been discussed in relation to the representation of the frameless mediated content in *The Ring* and the unruly body calibration in *Chair in a Room*, intersections of horror and communications mediums reveal new kinds of unfamiliarity in our media objects which invite critical interpretation and break away from our uncritical usage of them when they become readily engrained into our daily routines through familiar functionality. Instead, these horror artworks allow a communication with the nonhuman, or reveal the unhuman. Thacker's work ultimately challenges the drive towards seamless communicative process, or the idea that any line of communication can always totally communicate something from one point to another. As such, his enquiry suggests, the sender's message is always somehow reduced via mediation. He argues that dark media pull us out of the expectation of seamlessness and inherent banality in media practices. It is at this stage of VR development that it is worth pulling it away from, on one hand, its pre-existing spectacular discourses of seamlessness, and on the other, its risk of uncritical banality. If VR is to be considered a form of 'dark media,' it is to be considered as a technology that during use, actively withdraws itself from human subjectivity: VR calls for more experimentation with its nonhuman systems, a call to embrace the weird crevices that emerge between human perception and its technological infrastructures.

Thacker references Shannon and Weaver's cybernetic communication model, which depicts the polar points of mediation as the sender and receiver, and instead argues that horror opens up a space in-between "the two extreme poles of mediation – that of pure immediacy and that of total opacity."[66] Horror lands at a midway between the framed and the frameless in that it maintains reference to the materiality of digital infrastructures (opacity), whilst at the same time pays attention to functionality; the in-between is thus the process of mediation, that process which, horror makes clear, is not human. Thacker demonstrates that the horror genre immediately poses a challenge to the clean channel, bringing into question where mediation ends and something beyond it begins[67]

Thacker's work inevitably focuses on media objects that are seen to be already-embedded into contemporary communications in the everyday – and uses horror to open

[66] Thacker, 'Dark Media,' p.80.
[67] Paraphrased from ibid.

these technologies up. This is potentially what is to offer here in terms of VR and its narrated potentials: horror might enable a consideration of experiential limits, rather than unlimits. Thacker begins by thinking about this opening up:

> Indeed, a cursory glance at the horror genre today reveals a number of examples in which everyday objects—and in particular, media objects—become infused in some way with the supernatural or the paranormal. In these stories the innocuous and even banal ubiquity of media objects, from cell phones to webcams, enters a liminal space, where such objects suddenly reveal the ambivalent boundary separating the natural from the supernatural, the uncanny from the marvellous, the earthy from the divine[68].

I would go further with Thacker's analysis of the 'infusion' of media objects with the supernatural and paranormal here: what horror does is pose the question as to *how long* such objects have been containers of the supernatural and/or paranormal. There is a temporality at work, which forces the users of the possessed technologies to ask whether the demons have been there all along. As opposed to a seeming neutrality which is threatened by the presence of the supernatural, the instances posed in this chapter have shown that there was always a chance that unhuman forces were present or existing as potentials all along. Thus, though the presence is inherently mediated, it has inevitably existed in other forms previously, but now manifests in certain forms within the mediums and emerges through unruly action. Thacker uses dark media to capture the 'enigma of mediation' that is 'at once technological and theological […] mak[ing] something present that is absent […] something alive that is dead [….] creat[ing] something out of nothing.'[69] Dark media actualises and enables a framing for that which is otherwise 'unavailable or inaccessible to the senses.'[70]

Thacker notes that dark media is also, therefore, antihumanist, as a "form of mediation which does away with mediation itself" (p.86). The engagement with the supernatural that communicate through media objects do so via the mediation of their presence, but in doing so, this process goes beyond mediation itself through a production

[68] Ibid p.91.
[69] Ibid p.84.
[70] Ibid.

of the interaction between human and nonhuman. Thacker suggests that at the point that dark media reach a point of "anti-humanism," that the nonhuman "is not necessarily outside the human or separated from it."[71] This form of mediation enacts similar interactions between human and nonhuman counterparts to those explored in Chapter 2. As we saw with both P Burke in *The Girl Who Was Plugged In* and the young boy in *Inside*, when technologies interact intimately with the human body, the ontological divisions between the two lessen. This is where the presence of the flesh emerges as a material substrate for capturing the entanglements between human and nonhuman. In the instance of horror, as we have seen throughout this chapter, horrific entities manifest themselves via mediation, which converts into weird affect. To recognise these instances in VR is to recognise its potential to pull away from the humanist discourses and applications that have been built around it.

If VR is, or can come to be considered, a form of dark media, then, it celebrates the potentials for when VR is unruly, unpredictable, and challenges human empowerment as it comes into contact with new nonhuman systems. Thacker's exploration of the potentials of dark media reveals an ecology of media objects which are not tools which enable interactions between humans, but between the human and what lies beyond it. In so doing, the idea of a beyond is

> embedded into the world here and now, manifest via a paradoxical immediacy that constantly withdraws itself and cloaks itself. The supernatural seems to be as immanent as our media are—distributed, ubiquitous, in the "cloud" and enveloping us in its invisible, ethereal bath of information and noise. (p.95).

As the supernatural emerges within our immanent media objects, it disrupts these systems through the production of error and noise. This call for the simultaneity of immanence and the beyond is important for VR. The unruly is embedded and not far-fetched, it implicates the human user through common interactions that push them beyond the realms of complete knowledge of our media objects which otherwise seem so familiar. In this sense, dark media disrupt our common notions of distinct ontological categories, a comingling of the present yet absent, and the present yet absent. In many

[71] Ibid.

ways, VR's unique position at the verge of commercial success means that its true potentials remain vaguely mysterious to larger audiences. Alluding back to the first chapter's call to explore the true *givenness* of VR, the occurrences through which VR systems withdraw themselves from their users remains somewhat hidden behind the language of access and immediacy that continue to cloak's VR's darkened spaces of glitch, error, and immersion in unknown worlds. Supernatural entities provide points of reference for the potentials of a lack of givenness, or the suspense produced when objects and things don't fully reveal themselves to their human counterparts.

In his continued discussion, Thacker differentiates between three different types of media: Dead media, Haunted media and Weird media, each of which come under the umbrella of dark media, but offer different ways of experiencing gulfs between two binary ontological planes that are connected via mediation. Dead media are those objects which are no longer in use but remain active; an example might be a discarded mobile phone that continues to collect data about its location/and or use, despite the absence of human action – its nonhuman processes continue to run. Haunted media are objects that are still in use, but in a non-normative way, thus establishing a connection between two different ontological orders. Beyond the configurations of the Shannon and Weaver model, Haunted media see mediation not as "between two points in a single reality, but between two realities" (p.131). Finally, Weird media are those media which emphasise the gulf between two ontological realities, thus breaking the connection between ontological realms (not dissimilar to the discussions in the previous chapter). As opposed to haunted media, which we might see in relation to Samara's emergence out of the screen in *The Ring*, Weird media signal the presence of something which may not be apparent, or may not be capturable via human senses. Alternatively, there may be something that is apparent but not present, i.e. the knowledge of the existence in something in another dimension. Thacker states that Weird media "all objects inevitably withdraw into things. What results is negative mediation, the paradoxical assertion and verification of the gulf between two ontological realms" (p.133). Thacker's framework of dark media suggest that media objects can be most horrific when they work *too* well, or exceed expectations in our interaction with them. He concludes that

> The mediation of the supernatural allows such objects to recede from the familiar and the everyday, often to the point that the object itself becomes vitalistically

> lifelike and animate. There is, perhaps, a strange life of media that is equivalent to the slippage from "objects" to "things". In a way, then, media are the most alive precisely at the moment they are the least accessible (pp.139-40).

In the reference to objects and things, Thacker refers to a "thing" as that which does not immediately offer the option of human use—something which takes up space but is not there to perform an action or fulfil a function like other objects. Thacker contests, however, that dark media offer the opportunity to consider objects as being most alive when they are least accessible, when their nonhuman essence exceeds their enframing by their human users. The central moments I want to draw from Thacker's framework of dark media are, again, the importance of limitation, but also the articulation of that which is beyond everyday framings of technological use. There is also an important question of the inherent accessibility of media, something that horror necessarily challenges.

Taking into account the issues of access and agency raised in Chapter 1, this chapter has gone on to discuss some of the ways in which horror and/in VR represents the nuances of our engagement with immersive technology. It has also paid attention to the ways horror represents the problematised ontologies of VR that formed the premise of Chapter 2. It has considered to VR as a form of Dark media in order to again plead the case for unruly interactions with technology and the revelations these interactions make possible. Horror is the most well-established genre in the VR space for actualising the potentials of nonhuman forces and posing a challenge to the humanist tendencies of the discourses surrounding VR. It is on the note of this inseparability of the human and nonhuman that I return to the emergence of ethics within the VR space. Not dissimilarly to the discussion of posthuman ethics in the first and third chapters, the final point of discussion within this chapter aims to pull together the concerns of each of the previous chapters, and ask how they might congeal to form an ethics of embodiment and horror, and/or the horror of embodiment. This chapter and the thesis at large have asked how VR touches us in very specific, novel, and ambiguous ways—in the ways that it produces novel connections between technology and the body and, consequentially, novel affects. VR as one example of a device whose functioning requires rich and proximal sensory and haptic input, or a maintains a dependence on touch, ultimately forges new affective relations to the bodies of its users. In the first chapter, this was tied to new ethical implications, primarily that of self, other, and 'the face.' It also considered the push

toward a non-unitary approach to ethical subjectivity, where the human subject is regarded as one of many actors in the generation of multiple becomings with objects, bodies, and nonhuman others. Throughout, this chapter has further considered how affect and agency are implicated in the horror genre explicitly, arguing that it provides a genre through which inherent interactions with VR – namely intense, unruly affects and compromised agency – can be embedded into experiences as anticipated encounters. The horror genre already has established grammars and expectations when it comes to audience engagement and response; while VR does not have this yet, this genre provides a useful route into considering VR's affective potential and the ways this can be built into narrative engagement.

Ethics Revisited: Horror, Compromised Agency, and Ethical Application

I want to end this chapter by considering further the ways in which VR and horror's inevitable extensions beyond representation, and towards proximal touch and tactility, require new ethical formulations for not just human-user interaction, but also the connections between non- and un- human counterparts. Much of the still relatively small field of existing scholarship on VR and horror refers explicitly to its new capacities that extend from the legacy of filmic representation and audience engagement in horror texts. Whilst exploring points of the computability of VR and horror through engagement with new audiences, this chapter has also attested to the importance of considering that which emerges beyond the human and the human body in horror texts.

With this newfound proximity between the human and multitudinous "others" (hardware; software; unhuman subjectivity; objects; voids of error) comes new ethical challenges. Indeed, as we saw in Chapter 1, traditional notions of the ethical surfaces of 'the face' and 'skin' face radical new formations. The thesis at large has explored the signification of 'the flesh' and the ways in which surfaces become dimensional and dispersed through affective encounters and narrativisations of encounters between the body and virtual environments. Theories of the flesh are innately horrific because they open up the ethical surface of the skin, disrupt our ideas of the boundaries of subjectivity and allude to intersubjective collective modes of being. In many ways, flesh provides the material substance through which we are able to capture the strange affectivities that VR produces that go beyond surface level touching. This is to say that VR does not just enable

new forms of touching, but actually touches us in ways that go beyond surface level contact.

In a paper written in 2009, Dave Boothroyd acknowledges the need to reconsider potential routes into the ethical encounter to account for the development of haptic technologies. Boothroyd defines his approach to the haptic as that which references touch technology and affectivity and how the haptic "bears on the notion of the ethical by virtue of the part it plays in the production of ethical subjectivity."[72] He considers the ways in which technologies like VR produce new forms of sensory extension that go beyond imaginings of mediated environments as free-floating spaces of representation, suggesting that immersive media environments are "embodied, sensory and tactile, rather than […] disembodied, symbolically structured *representation[s]* of experience."[73] Oftentimes, the exploration of the worlds that VR visualises particularly appeal to such ideas of disembodied representation. Boothroyd argues instead for the consideration of what he terms the "haptic body-machine assemblage."[74] By this, Boothroyd argues that the body and hardware together forge new haptic ecologies that fundamentally challenge traditional notions of the ethical encounter and what it means to forge ethical contact with someone, or something, else. This, I would add to Boothroyd's approach, should include nonhuman subjectivities and actors that form part of this ecology: though an ethics of VR requires us to pay attention to its implications for the body, it should also look away from human subjectivity in order to pay attention to the actors through which these new ecologies are forged. Boothroyd asks:

> How does the digitization of sensory information and its communication (by way of data, inputs/outputs, feedback) bear upon our understanding of the ethical, given that the ethical is also rooted, one way or another, in the communicative practice of *contact*?[75]

In posing this question, Boothroyd alludes to the ways in which immersive technologies fundamentally impact the production of ethical subjectivity itself.[76] It is in this respect

[72] Dave Boothroyd, 'Touch, Time and Technics: Levinas and the Ethics of Haptic Communications', *Theory, Culture & Society*, 26.3 (2009) pp.332-3.
[73] Ibid, p.332.
[74] Ibid.
[75] Ibid, p.335.
[76] Ibid.

that mediated environments and the haptic technologies they emerge within, and from, ultimately extend beyond the ethical lines of representation. Indeed, the frame asserts its role in forming the ontological boundaries of representative media. The frame requires that those who interact with the content within its borders acknowledge that such content is regarded as representation. As a frameless medium, VR enables new forms of experiencing contact with multiple Others that require its ethics to pay attention to real-time, emergent and physical contact, as well as representation. Referring back to Levinas' narration of ethical contacts with the Other, Boothroyd argues that haptic communications are "consistent with, rather than reductive of, the ethical relation to the Other."[77] It is evident that the tactile relations of VR to the bodies of its users require further ethical consideration, one which might be aligned with a non-unitary subjectivity and processes of becoming, where the user is one agent within a greater assemblage. As discussed in Chapter 1, such an ethical relationship does not necessarily have to involve the user and a mediated Other (necessarily human), but instead the relationship forged between the body of the user and the technology itself requires unique critical attention. This is particularly important as VR technologies push further the tracking (seeing) capacities of new media technologies—seeing users come into more proximal contact with nonhuman actors and forces that still remain relatively underexplored. Horror, I conclude, offers rich insights into the ways we can understand and imagine these nonhuman actors and the multiple ways we can encounter them.

VR has the advantage of building out of the rich lineage of horror's affective grammars: users know what they are going in for. Well-established horror tropes of the glitch and unhuman agencies visualise and exacerbate the invisible forces that articulate the digitally mediated spaces, allowing audiences to affectively respond to the very real implications they pose. Take the example of *The Ring*, and the questions it asks of the affectivity of representation and the possibilities that telephones, television, and computer interfaces might enable for communications between the living and the dead.

I have argued that horror provides the most successful set of frameless fictions: horror is built around problematised and porous ontologies that enable us to understand the affective potentials of the mediums through which we experience it; this, I argue,

[77] Ibid, p.334.

functions as another example of horror ethics. By visualising the porosity of frames and depicting a variety of depictions of seeping content, horror is able to visualise and characterise its unique affects. Take, for example, the body of Samara emerging from the screen in *The Ring*: Samara's body stands in for the unruly potential of a videotape, and the ways its content touches those who watch it. In the same way, horror films localise their affective potentials through the characterisation of their embodied affects. Samara stands in for all of the visceral fear that *The Ring* and its fatal VHS stands for. Though she is not always visibly present, in moments where the affective intensity is high, viewers of the film are made aware of this through the emergence of her unhuman body—this, along with the awfully unsettling sounds that come with her. Horror, as Noël Carroll's work shows, has a well-established and diverse set of signifiers that stand in for their potential affects.

In addition, horror's embedding of mediated error, glitch, and noise also accounts for some of these multisensory affective cues. Not only do glitches visually signify the presence of demons and monsters, they also ontologically ground them to a degree. When we take these kinds of errors to the more embodied dimensions VR realises, we see that emergent glitches actually disrupt some of the intense affects that the genre puts onto its audiences. Like the subtle narrativized warnings in *A Chair in a Room*, works of horror uniquely prepare their audiences for the experiences they make possible; they prepare us for failure. Failure is embedded into the architecture of horror as representation and as gameplay. The genre highlights the ways in which failure, error, and glitch can be inherently immersive elements of engaging with a narrative.

As has been discussed from the introduction to this chapter, horror unites and puts into action the concerns displayed throughout this thesis, and this, in particular, through the genre's realisation of nonhuman agency in the VR space. As we have previously seen, contemporary VR advertising does little to attempt to draw attention to the specifics of its systems and infrastructures. Leading hardware developers like Oculus emphasise images of otherworldly virtual environments in their advertising, paying little attention to the way VR machines really operate and the information they are required to collect about the bodies of the users and the domestic spaces these technologies are used in. Horror already enables this critical work by realising invisible infrastructures and affects through depictions of undead and otherworldly forces.

Conclusion

This thesis has demonstrated how we might reconfigure popular framings of Virtual Reality (VR) technology by considering the weird, wonderful, and specifically embodied and affective potentials of *frameless* mediated realities which are ontologically complex and unruly. It has found that contemporary discourses surrounding VR do little to account for the real-time unruly experiences that a huge audience of new users will likely experience, arguing that these moments of unruliness deserve further critical attention.

The discussion here has endeavoured to offer a range of new grammars that VR might draw from, and has provided a novel approach to contemporary VR which locates some of these grammars in literary and critical, theoretical texts that enable us to understand more fully the potentials of VR to produce nuanced affects which implicate the body in a variety of ways. To this end, the thesis has explored VR technologies through a number of different lenses, including (but not limited to) disorientation (Chapter 3), body-horror, the flesh, and the unhuman (chapter 2), the weird, and proximal horror (Chapters 3 & 4). In so doing, it has argued that VR offers new ways of experiencing and understanding embodied relations with contemporary new media.

It has drawn attention to the persistent, popular framings of VR from 2016 onwards, at a time where its audiences are perhaps bigger than ever, and at a time where the possibilities for embodied interactions continue to grow as more people engage with VR as a form of new media. The work has shown that many of VR's unique possibilities for interaction, more specifically those that are unruly and ambivalent, are largely ignored in favour of neat narratives of perfect immersion and bodily transcendence. In response to these narratives, the thesis has coined what it terms *Frameless Fictions* as a means for considering hybrid experiences where VR sees the human body affectively encounter that which exists moderately outside our (human) comprehension, our capacity to frame and cognise. These encounters make our bodies feel strange, producing crevices where experience oscillates between an ontological here and there. Such experiences have been further located in narratives of extended realities, where the body and technological system simultaneously pull away from each other, yet produce unanticipated connections between one another through forms of mediated and perceptual error. To this end, a combination of texts including novels, films, videogames,

and VR applications have enabled a broader scope of the narrations, representations, and real-time experiences of the body's unruly interactions with new media more broadly.

Overall, this thesis has provided a critical starting point for understanding VR through the lenses of affectivity, embodiment, and unruliness. Speaking to experts, as well as new audiences who are interested in learning more about this novel (and still relatively inaccessible) technology, it has provided some key examples where the predominant language used to describe VR falls short of its true potentials. The thesis has aimed to reconfigure what 'presence' and 'immersion' can mean, and how they can be applied in new ways that account for the re-emergence of VR in the contemporary consumer market. It has located and challenged VR's popular framings in order to consider where, and how, unruly interactions with immersive technologies take place. Such unruly interactions have otherwise been overlooked, or haven't quite found a home in academic scholarship. Instead, language used for a real-time phenomenology of VR has relied on well-worn terms that centralise human agency and access. This work has argued that we might learn more about VR, the experiences it makes possible, its infrastructures and embodiment ties, if we explore its complex implications for agency and access.

Chapter 1 paid close attention to the ways virtual reality experiences are 'framed,' and how these frames have influenced popular perceptions of VR as it has entered the consumer market. It argued that many of these representational framings do little to account for the ambivalent experiences that can be forged between the technology and the body. VR's marketing maintains a focus on transparency, transcendency, and limitlessness. Looking at phenomenological accounts of enframing and the decentring of the human, the first chapter illustrated the ways in which we might draw attention to *agency* and *access* in order to better understand what it means to be immersed in virtual worlds. By attending to instances where agency and access are pulled away from users, we can consider important ethical implications, as well as exploring the ways VR forges experiences with worlds and beings beyond realism and distinctly human subjectivity/ies.

Chapter 2 proposed a reconfiguration of 'presence,' one of VR's central capabilities, to instead focus on bodily, or *fleshy*, presence. This chapter looked to sci-fi and body horror narratives to explore where bodies and technologies resist one another, and the ways the body becomes smeared between ontological realms. I argued that this

smearing produces unhuman subjectivities, where bodily presence takes on an "alien materiality" cohabited by the human and nonhuman.[1] *The Girl Who Was Plugged In* (1973) illustrated where illusions of transparency and transcendence are shattered, particularly through Tiptree Jnr's evocative discourses of flesh and its melding with the dystopian technological infrastructure imagined within the novella. In a similar vein, the videogame *Inside* (2016) illustrated the ways virtual environments produce subjectivities beyond the human (the *un*human), and the affective implications for player interaction. Both of these texts, I argued, illustrate grammars for thinking through flesh, agency, and access that VR should attend to, grammars which emphasise affectivity, materiality, and the disruptive potentials of unruly encounters with immersive technologies.

Chapter 3 argued for the co-emergence of glitch, noise, and immersion. It considered the ways immersion is possible in unruly landscapes that are forged by mediated error, and that are neither seamless nor wholly accessible. In order to illustrate this, it turned to accounts of the weird and the ways immersion in worlds beyond the human are narrated through bodily affect. The chapter also looked at writings on glitch and error in contemporary technoculture, arguing that both glitch and noise can be considered to be weird encounters, as users are exposed to the inner workings of technological systems. Looking at the novel and film adaptation of *Annihilation* (2014; 2018) as case studies, it looked at the ways encounters with the weird share common ground with experiences of unruly mediation, where the limits of human logic and understanding are revealed. Following out of Chapter 2, it again emphasised the importance of materiality and the intra-action[2] of human and nonhuman actors in VR experiences, and established a glitch ecology in order to capture the weird, unruly encounters that VR makes possible.

Chapter 4 located the concerns of all of the previous chapters within examples from the horror genre, attesting to its popularity in the VR space. Uniting the themes of embodiment, body-horror, mediated error, and the unhuman, it argued that the popularity of VR horror emerges from its implications for framelessness; these include horror's decentring of human agency, ontological porousness, the incorporation of glitch, and an embracing (and preparedness for) unruly encounters. The final chapter argued

[1] Dylan Trigg.
[2] Barad.

that VR is a form of Dark media, in that it challenges human empowerment and resists total access on the part of the user. It argued that horror provides the most successful set of frameless fictions, as its preestablished grammars concerned with ontological porosity, affective engagement, and embodiment prepare its audiences for the experiences it makes possible.

We are not yet equipped to frame experiences of VR, due to the absence of familiar experience, embodied grammars, or sufficient discourse. This thesis has argued that we might instead draw attention to grammars which focus on the incapacity to frame, and embodied affect enables us, further, to *produce* these grammars and the discourses which might also frame them in turn. As we have seen in narratives of the weird and of the horrific, the body accepts that it is not able to truly know the forces that exist beyond human subjectivity, but narrates them through bodily affects that emerge when the human interacts with that which exists moderately beyond them. With these ideas in mind, the thesis argues that the perpetual narratives of transcendence, disembodiment, and limitlessness in the VR space are wholly insufficient. Bodily affectivity is the locus for understanding VR's unique potentials, including unruly moments of glitch, error, and disorientation.

VR experiences are hard to narrate, and maybe that is something we should embrace. Like the prose of Lovecraft, we might find the most generative descriptions of VR if we attempt to narrate the ways it interacts with our embodiment, rather than simply focusing on what we see in front of us, and might articulate to those around us in the doubled space of the real world. Weird and horror fictions revel in that which is difficult to narrate, and it makes the stories they tell even more visceral as they must appeal to bodily sensation. It is truly only those unruly affects that enable us to think beyond our human selves. We embark on a frameless journey in VR where we should anticipate that it will be disorientating, and will likely reveal the limits of our perceptual systems.

In a 2019 thought piece on VR, Rindon Johnson asks:

> What's the point of having a body if I could theoretically make or step into so many? The self has been made malleable by the opportunity to become a form of language. Does the language form a version of code of the self? If I want to fly, I search "fly." If I want to know what it might feel like to try and cross the Mediterranean as a refugee, I search "refugee" and I can, and out of curiosity, I

> have. When I look down in these scenarios, I do not often have a body that resembles what I look down and see without a headset on. Sometimes, I see the remnants of a tripod, sometimes a swirling nothingness, sometimes I see the people in the virtual space I'm meant to feel I am in. I'm still me then, I think.[3]

Johnson's essay grapples with the enforced desire for VR to make us question what it is to need a body, whilst simultaneously always being reminded of its presence. He considers the ease at which one can search for VR experiences where the body of anybody, or anything, else is simply a case of searching through the VR store. Johnson relays his experience of VR as opening "The virtual space *I'm meant to feel I am in*…" This statement reveals the ways that the permeating discourses of total agency and access in virtual environments are not enough; they do not capture the emergent interactions that occur when we simply do not, and cannot, feel part of the virtual environment, or simply become another body. Such chasms of experience, this thesis has argued, provide "experiential crevices"[4] where we can, for a moment, critically consider what it means to embody someone or something else. These moments realise that the transparency or immateriality of media technologies are simply illusory, and that VR, more than anything else, makes us feel weird and overtly embodied. Johnson states that, in his own experiences as an artist, VR functions best when its "effects and produced sensations are purposely difficult to name."[5] There needs to be alternative avenues of describing and coming to terms with our complex and ambivalent experiences of virtual environments, and a rigorous approach to affect can provide us with this—something this thesis has sought to contribute to. Despite the calls to immediate access and re-embodiment, Johnson concludes:

> All of this also exists in the actual space of now. With the climate melting and the confusions of race and class and power and all of these things, one can become constantly but can one transcend? I'm sure, with enough money, eventually I might not need a body, I think, although I do like mine. I don't think I'll fully be able to leave it.[6]

[3] Rindon Johnson, 'What's the point of having a body,' *Dazed Digital* (Issue 0).
[4] Peter Krapp.
[5] Johnson.
[6] Ibid.

This work has confronted the desire to leave the body behind head on. It has considered the ways that VR captures a particular cultural moment where bodily intimacy with technological apparatus permeates, and this has real and serious implications for bodily agency and access. These issues should be at the epicentre of our use and critical analysis of VR technologies, as they enable more rigorous understandings of its intersections with boundaries and limits that exist in the technologically permeated world we live in. Let us take inspiration from the lump of unhuman flesh that replaces the bust of the human, and reminds us of our corporeal, and unruly, reality.

With its references to the unhuman and horror, this thesis has provided new configurations and taxonomies for understanding a diverse range of VR experiences that stray away from the perfect path of immersivity or realism, opening a critical space for exploring VR's unruly potentials. By exploring a number of multimodal texts, the thesis has analysed VR away from its humanist framings, and opened up new avenues for thinking through VR as an assemblage technology which comprises the body, hardware, software, and physical environment. It has utilised a range of frameless fictions to provide examples where human agency and access are challenged, and where virtual environments break away from their intended functionality. It has sought to provide robust theoretical framework for analysing unanticipated and unexpected interactions with virtual environments and VR, aiming to provide thinkers, makers, producers, and those interested in learning more about this novel technology, with a set of experiential grammars that better capture its potential affects and implications for embodiment.

Bibliography

A Chair in A Room, Wolf & Wood Interactive (2016).
Ahmed, Sara, 'Affective Economies,' *Social Text* 79.22 (2004) pp.117-139.
—'Orientations: Towards a Queer Phenomenology,' *A Journal of Lesbian and Gay Studies,* 12.4 (2006) p.543-574.
—*Queer Phenomenology* (Durham, NC: Duke University Press, 2006).
Alien, dir. by Ridley Scott (20th Century Fox, 1979).
Anable, Audrey, *Playing with Feelings: Video games and the Attunement of Affect* (Minneapolis: University of Minnesota Press, 2018).
Andersen, Joceline, Now You've Got the Shiveries: Affect, Intimacy, and the ASMR Whisper Community,' *Television and New Media*, 16.8 (2014) pp.683-700
Anderson, Michael L., 'Embodied Cognition: A Field Guide', *Artificial Intelligence*, 149.1 (2003) pp.91-130.
Angerer, Marie-Luise, *Ecology of Affect: Intensive Milieus and Contingent Encounters*, trans. Gerrit Jackson (Luneburg: Meson Press, 2017).
Annabelle: Creation VR – Bee's Room (Warner Bros, 2017) <https://www.youtube.com/watch?v=OwX-YlAa8XQ&t=2s> [accessed May 2020].
Annihilation, dir. by Alex Garland (Skyland Media, 2017).
Arnold, Mathew, 'Inside the Loop: The Audio Functionality of *Inside*,' *The Computer Games Journal*, 7.4 (2018) pp.203-211.
Asma, Stephen, 'Monsters on the Brain: An Evolutionary Epistemology of Horror', *Social Research: An International Quarterly*, 81.4 (2014) pp.941-968.
Ash, James, 'Technologies of Captivation: Videogames and the Attunement of Affect', *Body & Society*, 19.1 (2013) pp.27-51.
Awan, Nishat, 'Digital Narratives and Witnessing: The Ethics of Engaging with Places at a Distance,' *GeoHumanities*, 2 (2016) pp.311-330.
Bailey, Andrew, 'Authority of the Worm: Examining Parasitism within *Inside* and *Upstream Colour*,' *Journal for Comparative Studies and Theory*, 4.2 (2018) pp.35-53.
Bailey, J. I., 'Enframing the Flesh: Heidegger, Transhumanism and the body as "Standing Reserve,"' *Journal of Evolution and Technology*, 24 (2014) pp.941-968.
Barad, Karen, *Meeting the Universe Half Way: Quantum Physics and the Entanglement of Matter and Meaning* (NC: Duke University Press, 2007).
Baraniuk, Chris, 'Feedback, White Noise and Glitches: Cyberspace Strikes Back', *The Machine Starts: How Information Technology is Changing Humanity Bit by Bit*' (2012) <http://www.themachinestarts.com/read/2012-08-feedback-white-noise-and-glitches-cyberspace-strikes-back> [accessed Nov 2018].
'BBC bringing Virtual Reality to more than 40 local libraries across the UK,' *BBC Media Centre* (2019) <https://www.bbc.co.uk/mediacentre/latestnews/2019/vr-local-libraries> [accessed September 2020].
Becoming Homeless: A Human Experience, Virtual Human Interaction Lab (2018) <https://store.steampowered.com/app/738100/Becoming_Homeless_A_Human_Experience/>.
Bein, Kat, 'Zhu Shares Nightmarish NSFW 'Dream' Video for Nero Collab, Annoices Blacklizt NYE in San Francisco: Watch,' *Billboard* (2017).

Belamire, Jordan, 'My First Virtual Reality Groping' <https://medium.com/athena-talks/my-first-virtual-reality-sexual-assault-2330410b62ee> [accessed January 2017].

Bell, Alice et al, 'Immersion in Digital Fiction: A Cognitive, Empirical Approach,' *Literary Linguistics International Journal*, 7.1 (2018).

Bennett, Alison and Megan Beckwith, 'Queering virtual reality with drag realness: a case study of a creative investigation,' *Refractory Journal of Entertainment Media*, 30 (2018).

Blackman, Lisa, *Immaterial Bodies: Affect, Embodiment, Mediation* (New York: Sage, 2012).

Blattner, William, *Heidegger's Being and Time: A Reader's Guide* (New York: Continuum, 2007).

Bogost, Ian, *Alien Phenomenology or What It's Like to Be a Thing* (Minneapolis, University of Minnesota Press, 2012).

—*Persuasive Games: The Expressive Power of Videogames* (Cambridge, MA: MIT Press, 2007).

Bolter, Jay David and Richard Grusin, *Remediation: Understanding New Media* (Cambridge, MA: MIT Press, 1999).

Boluk, Stephanie and Patrick LeMieux, *Metagaming: Playing, Competing, Spectating, Cheating, Trading, Making, and Breaking Videogames* (Minneapolis: University of Minnesota Press, 2017).

Boothroyd, Dave, 'Touch, Time and Technics: Levinas and the Ethics of Haptic Communications', *Theory, Culture & Society*, 26.3 (2009) pp.330-345.

Botting, Fred, *Limits of Horror: Technology, Bodies, Gothic* (Manchester: Manchester University Press, 2008).

Braidotti, Rosi, *The Posthuman* (Cambridge, MA: Polity Press, 2013).

— 'The Posthuman, All Too Human: Towards a New Process Ontology', *Theory, Culture and Society*, 23.7-8 (2006) pp.197-208.

—*Transpositions: On Nomadic Ethics* (Cambridge, MA: Polity Press, 2006).

—The Ethics of Becoming Imperceptible', *Deleuze and Philosophy*, ed. Constantin V. Boundas (Edinburgh: Edinburgh University Press, 2006).

Braidotti, Rosi and Patricia Pisters, 'Introduction,' in *Revisiting Normativity with Deleuze*, ed. by Rosi Braidotti and Patricia Pisters (London: Bloomsbury, 2012).

Braidotti, Rosi and Maria Hlavajova, *Posthuman Glossary* (London: Bloomsbury, 2018).

Brians, Ella, 'The "Virtual" Body and the Strange Persistence of the Flesh: Deleuze, Cyberspace and the Posthuman', in *Deleuze and the Body,* ed. by Laura Guillaume (Edinburgh: Edinburgh University Press, 2012) pp. 117-143.

Brown, William, *Supercinema: a film-philosophy for the digital age* (New York: Berghahn Books, 2013).

Bukatman, Scott, *Terminal Identity: The Virtual Subject in Postmodern Science Fiction* (Durham: Duke University Press, 1993).

Campbell, Norah and Mike Saren, 'The Primitive, Technology and Horror: A Posthuman Biology', *ephemera*, 10.2 (2010) pp.152-176.

Carroll, Noel, *The Philosophy of Horror, or Paradoxes of the Heart* (New York: Routledge, 1990).

Chan, Melanie, *Virtual Reality: Representations in Contemporary Media* (London: Bloomsbury, 2014).

Charara, Sophie, 'Virtual reality: Then and now – why it won't fail this time,' *Wareable* (2015) <https://www.wareable.com/vr/virtual-reality-then-now-why-it-wont-fail-this-time> [accessed January 2016].

Cheng, William, 'Monstrous Noise: Silent Hill and the Aesthetic Economies of Fear,' *The Oxford Handbook of Sound and Image in Digital Media*, ed. Carol Vernallis et al (New York: Oxford University Press, 2013) pp.173-90.

Chun, Wendy Hui Kyong, 'Race and/as Technology; or, how to Do Things with Race', *Camera Obscura*, 24.1 (2009) pp.7-35.

—*Updating to Remain the Same: Habitual New Media* (Cambridge, MA: MIT Press, 2016).

Cline, Ernest, *Ready Player One* (London: Arrow Books, 2011).

Clouds Over Sidra, dir. by Gabo Arora and Barry Pousman (2015).

Clough, Patricia T., 'The Affective Turn: Political Economy, Biomedia and Bodies,' *Theory, Culture & Society,* 25.1 (2008) pp.1-22.

Clover, Carol, 'Her Body, Himself: Gender in the Slasher Film', *Representations*, 20 (1987) pp.187-228.

Clouds over Sidra, dir. by Gabo Arora and Barry Pousman (2015) <http://unvr.sdgactioncampaign.org/cloudsoversidra/#.X8JYwS2cZp9>

Connor, Steven, *The Book of Skin* (London: Reaktion Books, 2004).

Coole, Diana and Samantha Frost, eds. *New Materialisms: Ontology, Agency, and Politics* (Durham, NC: Duke University Press, 2010).

Cottom, Daniel, *Unhuman Culture* (Philadelphia: University of Pennsylvania Press, 2006)

Crick, Timothy, 'The Game Body: Toward a Phenomenology of Contemporary Video Gaming', *Games and Culture,* 6.3 (2011) pp.259-269.

Crignon, Philippe, Nicole Simek and Zahi Zalloua, 'Figuration: Emmanuel Levinas and the Image', *Yale French Studies*, 104 (2004) pp.100-125.

D'Aloia, Adriano, 'Virtually Present, Physically Invisible: Virtual reality immersion and emersion in Alejandro González Iñárritu's *Carne y Arena*,' *Senses of Cinema*, 87 (2018).

Daniel, Adam 'Don't Look Behind You: The Oculus Rift and Virtual Reality Horror', *Sydney Screen Studies* <https://sydneyscreenstudies.wordpress.com/dont-look-behind-you-the-oculus-rift-and-virtual-reality-horror/> [accessed August 2018].

— 'Inhabiting the image of *Collisions*: Virtual reality cinema as a medium of ethical experience,' *Fusion*, 14 (2018).

Davidson, Tonya, Ondine Park and Rob Shields, eds, *Ecologies of Affect: Placing Nostalgia, Desire, and Hope* (Ontario: Wilfrid Laurier University Press, 2011).

de la Peña et al, 'Immersive Journalism: Immersive Virtual Reality for the First-Person Experience of News,' *Presence*, 1.4 (2010) pp.291-301.

Deleuze, Gilles, *Cinema 1: The Movement-Image*, trans. Hugh Tomlinson and Barbara Habberjam (London: Athlone Press, 1992).

—*Cinema 2: The Time Image*, trans. Hugh Tomlinson and Robert Galeta (London: Athlone, 1989).

Deleuze, Gilles and Félix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia* (London: Continuum, 1987).

Derrida. Jacques, *On Touching—Jean-Luc Nancy*, trans. Christine Irizarry (Stanford: Stanford University Press, 2005).

—*Specters of Marx: The State of the Debt, the Work of Mourning and the New International*, trans. Peggy Kamuf (New York: Routledge, 2006).

Döveling, Katrin, Anu A. Harju and Denise Sommer, 'From Mediatized Emotion to Digital Affect Cultures: New Technologies and Global Flows of Emotion,' *Social Media & Society*, 4.1 (2018).

Duchaney, Brian N., *The Spark of Fear: Technology, Society and the Horror Film* (North Carolina: McFarland&Co, 2015).

Durbin, Joe, 'SuperData: VR's breakout 2016 saw 6.3 million headsets shipped,' *VentureBeat* (2017) <https://venturebeat.com/2017/02/04/superdata-vrs-breakout-2016-saw-6-3-million-headsets-shipped/> [accessed March 2019].

Dyson, Frances, *Sounding New Media: Immersion and Embodiment in the Arts and Culture* (Berkeley, Calif: University of California Press, 2009).

Elsaesser, Thomas, 'Pushing the contradictions of the digital: 'virtual reality' and 'interactive narrative' as oxymorons between narrative and gaming,' *New Review of Film and Television Studies*, 12.3 (2014).

Evans, Leighton, *The Re-Emergence of Virtual Reality* (London: Routledge, 2019).

Existenz, dir. by David Cronenberg (Miramax: 1999).

Feldman, Russell, 'Vir headsets more popular then tablets and wearables were at same stage,' *YouGov* (2017) <https://yougov.co.uk/topics/consumer/articles-reports/2017/05/19/vr-headsets-more-popular-tablets-and-wearables-wer> [accessed February 2019].

Fagan, Kaylee, 'What happens to your body when you've been in virtual reality for too long' <https://www.businessinsider.com/virtual-reality-vr-side-effects-2018-3?r=US&IR=T> [accessed December 2018].

Felt, Lindsey Dolich, 'Cyberpunk's Other Hackers: The Girls Who Were Plugged In,' *CATALYST: Feminism, Theory, Technoscience,* 5.1 (2019).

Fisher, Mark, *The Weird and the Eerie* (London: Repeater Books. 2016).

— 'What is Hauntology?' *Film Quarterly,* 66.1 (2012) pp.16-24.

Flores, Fernando and Terry Winograd, *Understanding Computers and Cognition: A New Foundation for Design* (Wokingham: Addison-Wesley, 1987).

Foucault, Michel, *Discipline and Punish: the Birth of the Prison*, trans. Alan Sheridan (London: Penguin, 1991).

Freud, Sigmund, *The Uncanny*, trans. David McLintock (London: Penguin, 2003).

'Funny VR Fails,' *Epic Laughs* (2017) <https://www.youtube.com/watch?v=bv7I8nMV914> [accessed June 2020]

Gallagher, Rob, 'ASMR autobiographies and the (life-)writing of digital subjectivity,' *Convergence: The International Journal of Research into New Media Technologies*, 25.2 (2018) pp.260-277.

—*Videogames, Identity and Digital Subjectivity* (London: Routledge, 2017).

Gallagher, Shaun, *The Phenomenological Mind: an Introduction to Philosophy of Mind and Cognitive Science* (London: Routledge, 2008).

Galloway, Alexander R. et al, *Excommunication: Three Inquiries in Media and Mediation* (Chicago: University of Chicago Press, 2014).

Galloway and Eugine Thacker, *The Exploit: A Theory of Networks* (Minneapolis: University of Minnesota Press, 2007).

Galloway, Alexander R., *The Interface Effect* (Malden, MA: Polity Press, 2012).

GDC, 'Huddle up! Making the [SPOILER] of INSIDE <https://www.youtube.com/watch?v=gFkYjAKuUCE> [accessed November 2019].

Gemeinboeck, Petra, 'Virtual Reality: space of negotiation,' *Visual Studies*, 19 (2010).

Gibson, William, *Neuromancer* (London: Harper Voyager, 2015).

Goat Simulator, Coffee Stain Studios (2014).
Golding, Dan, 'Far From Paradise: The Body, the Apparatus and the Image of Contemporary Virtual Reality', *Convergence*, 20.10 (2017) pp.1-14.
Gonzalez, Jennifer, 'The Face and the Public: Race, Secrecy and Digital Art Practice', *Camera Obscura*, 24.1 (2009) pp.37-65.
Goriunova, Olga and Alexei Shulgin, 'Glitch' in *Software Studies: A Lexicon*, Matthew Fuller, ed (Cambridge, Mass: MIT Press, 2008).
Griffin, Andrew, 'Horror VR: How Virtual Reality might spawn a new age of horror – and why you'll never escape it,' *The Independent* (2016).
Grosz, Elizabeth, 'Merleau Ponty, Iragaray in the Flesh', *Thesis Eleven*, 36.1 (1993).
Gunkel, David and Debra Hawhee, 'Virtual Alterity and the Reformatting of Ethics', *Exploring Questions of Media Morality*, 18.3-4 (2003) pp.173-193.
Hansen, Mark B. N., *Bodies in Code: Interfaces with Digital Media* (London: Routledge, 2006).
— 'Medium-Oriented Ontology', *ELH*, 83.2 (2016) pp.383-405.
—*New Philosophy for New Media* (Cambridge, MA: MIT Press, 2006).
— 'Wearable Space', *Configurations*, 10.2 (2002) pp.321-370.
Haraway, Donna, 'A Cyborg Manifesto: Science, Technology and Socialist-Feminism in the Late Twentieth Century' in *Simians, Cyborgs and Women: The Reinvention of Nature* (New York: Routledge, 1991).
—*Modest witness@second millennium: femaleman meets oncomouse: feminism and technoscience* (London: Routledge, 1997).
— 'Situated Knowledges: The Science Question in Feminism and the Privelege of Partial Perspective', *Feminist Studies*, 14.3 (1988) pp.575-599.
Hardt, Michael and Antonio Negri, *Multitude: war and democracy in the age of empire* (London: Penguin, 2006).
Harman, Graham, *Object-Oriented Ontology: A New Theory of Everything* (London: Penguin, 2018).
Hayles, N. Katherine, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature and Informatics* (Chicago: University of Chicago Press, 1999).
—*Writing Machines* (Cambridge, MA: MIT Press, 2002).
Heater, Brian and Lucas Matney 'Embattled Oculus co-founder Palmer Luckey leaves Facebook,' *techcrunch* <https://techcrunch.com/2017/03/30/palmer-luckey-facebook/> [accessed June 2018].
Heidegger, Martin, *Basic Problems of phenomenology, Winter Semester 1919/1920*, trans. by Scott M. Campbell (London: Bloomsbury Academic, 2013).
—*Being and Time* (London: SCM Press, 1962)
—*The Question Concerning Technology and Other Essays,* trans by W. Lovitt (New York: Harper & Row, 1997).
Hicks, Heather J., '"Whatever It Is That She's Since Become": Writing Bodies of Text and Bodies of Women in James Tiptree Jr.'s "The Girl Who Was Plugged in" and William Gibson's "The Winter Market"', *Contemporary Literature*, 37.1 (1996) pp.62-93.
Hillis, Ken, *Digital Sensations: Space, Identity, and Embodiment in Virtual Reality* (1999).
— 'Rituals of Transmission, Fetishizing the Trace', *Online A Lot of The Time: Ritual, Fetish, Sign* (Durham, NC: Duke University Press, 2009) pp.1-47.
Hillis, Ken et al (ed.), *Networked Affect* (Cambridge, MA: MIT Press, 2015).
Hitchcock, Peter, 'Resistance is Futile: The cultural politics of transformation in the digital age', *The Comparatist*, 42 (2018).

HOME | Aamir, *National Theatre* (2017).
Ihde, *Experimental Phenomenology: An Introduction* (Albany: State University of New York Press, 1986) p.49.
InCell VR (Moscow: Luden.io, 2015).
Inside (Denmark: Playdead, 2016).
In the Eyes of the Animal, dir. by Robin McNicholas and Barnaby Steal (London: Marshmallow Laser Feast, 2016).
Jenkins, Henry, *Convergence Culture: Where Old and New Media Collide* (New York: New York University Press, 2006).
Juul, Jesper, 'The Open and the Closed: Game of emergence and games of progression". In *Computer Games and Digital Cultures Conference Proceedings,* ed. by Frans Mäyrä (Tampere: Tampere University Press, 2002).
Kennedy, Helen W. and Sarah Atkinson, 'Virtual Humanity: Empathy, Embodiment and Disorientation in Humanitarian VR Experience Design,' *Refractory: A Journal of Entertainment Media,* 30 (2018).
Kitchen, Resident Evil 7 Demo (Osaka: Capcom, 2016).
Koschmann, Timothy, Kari Kuutti and Larry Hickman, 'The Concept of Breakdown in Heidegger, Leont'ev, and Dewey and Its Implications for Education,' *Mind, Culture, and Activity*, 5.1 (1998) pp.25-41.
Kozel, Susan, 'Process Phenomenologies,' in *Performance and Phenomenology: Traditions and Transformations*, ed. by Maaike Bleeker, Jon Foley Sherman, and Eirini Nedelkopoulou (New York: Routledge, 2015).
— 'Somatic Materialism or "Is it Possible to do a Phenomenology of Affect"?', *Site*, 33 (2013) pp.153-167.
Kozel, Susan, Ruth Gibson and Bruno Martelli, 'The Weird Giggle: Attending to Affect in Virtual Reality', *Transformations*, 31 (2018) pp.1-24.
Krapp, Peter, 'Gaming the Glitch: Room for Error,' *Error: Glitch, Noise and Jam in New Media Cultures,* ed. by Mark Nunes (London, Bloomsbury, 2010) pp.113-132.
—*Noise Channels: Glitch and Error in Digital Culture* (Minneapolis: University of Minnesota Press, 2011).
Kristeva, Julia, *Powers of Horror: An Essay on Abjection*, trans. L. S. Roudiez (New York: Columbia University Press, 1982).
Lacefield, Kristen, *The Scary Screen: Media Anxiety and The Ring* (London: Routledge, 2010).
Lanier, Jaron, *Dawn of the New Everything: A Journey Through Virtual Reality* (London: Bodley Head, 2017).
—*You are Not a Gadget: A Manifesto* (New York: Vintage Books, 2011).
Laurel, Brenda, *Computers as Theatre* (Boston, MA: Addison Wesley, 1993).
Leeder, Murray ed., *Cinematic Ghosts: Haunting and Spectrality from Silent Cinema to the Digital Era* (London: Bloomsbury Academic, 2015).
Levinas, Emmanuel, *Totality and Infinity: An Essay on Exteriority*, trans. Alphonso Lingis (Dordrecht: Kluwer Academic Publishers, 1991).
Lombard, Matthew and Theresa Ditton, 'At the Heart of it All: The Concept of Presence', *Journal of Computer-Mediated Communication*, 3.2 (1997).
'London museum partners with HTC to deliver VR experience,' *Inavate* (2020) <https://www.inavateonthenet.net/news/article/london-museum-partners-with-htc-to-deliver-vr-experience> [accessed November 2020].

Lovecraft, H.P, *Notes on Writing Weird Fiction* (1937) <https://www.hplovecraft.com/writings/texts/essays/nwwf.aspx> [accessed January 2018].
— 'The Dreams in the Witch House,' *The Complete Fiction of H. P. Lovecraft* (Readon Classics, Kindle E-Book, 2015).
Luckhurst, Roger, 'The weird: a dis/orientation,' *Textual Practice*, 31.6 (2017) pp.1041-1061.
Lunenfeld, Peter, ed. *The Digital Dialectic: New Essays on New Media* (Cambridge, MA: MIT Press, 2000).
MacDonald, Keza, 'Red Dead Redemption 2 review – gripping western is a near miracle, *The Guardian* (2018).
Manovich, Lev, 'The Paradoxes of Digital Photography,' *Photography After Photography* (1995).
Marks, Laura U., *The Skin of the Film: Intercultural Cinema, Embodiment and the Senses* (Durham: Duke University Press, 2000).
Massumi, Brian, *Parables of the Virtual: Movement, Affect, Sensation* (Durham, N.C: Duke University Press, 2002).
McCormick, Rich, 'This Image of Mark Zuckerberg says so much about our future,' *The Verge* <https://www.theverge.com/2016/2/22/11087890/mark-zuckerberg-mwc-picture-future-samsung> [accessed Jan 2018].
McDonald, Riley, 'The Frame Breakers: Thomas Pynchon's Posthuman Luddites', Canadian Review of American Studies, 44.1 (2014).
Menkman, Rosa, *Glitch Studies Manifesto* (2011) <http://amodern.net/wp-content/uploads/2016/05/2010_Original_Rosa-Menkman-Glitch-Studies-Manifesto.pdf> [accessed January 2017].
—*The Glitch Moment(um)* (Amsterdam: Network Notebooks, 2011).
Merleau-Ponty, Maurice, *The Visible and the Invisible*, ed. by Claude Lefort and trans. by Alphonso Lingis, third edition (Illnois: Northwestern University Press, 1968).
Michailidis, Lazaros, Emili Balaguer-Ballester and Xun He, 'Flow and Immersion in Video Games: The Aftermath of a Conceptual Challenge,' *Frontiers in Psychology: Human Media Interaction* (2018).
Miéville, 'M.R. James and the Quantum Vampire,' *Collapse IV*, R. Mackey, ed (Falmouth: Urbanomic, 2018).
Milk, Chris, 'How virtual reality can create the ultimate empathy machine,' *TED Talks* (2015) <https://www.youtube.com/watch?v=iXHil1TPxvA> [accessed November 2016].
Miller, Vincent, 'A Crisis of Presence: On-line Culture and Being in the World,' *Space and Polity*, 16.3 (2012) pp.265-285.
—*The Crisis of Presence in Contemporary Culture* (Los Angeles: SAGE, 2015).
Millsap, Zack, 'Virtual Boy: Nintendo's First Attempt at VR Turns 25,' *CBR* <https://www.cbr.com/nintendo-virtual-boy-turns-25/> [accessed July 2020].
Mir, Rory and Katitza Rodriguez, 'If Privacy dies in VR, It Dies in Real Life,' *Electronic Frontier Foundation* (2020) <https://www.eff.org/deeplinks/2020/08/if-privacy-dies-vr-it-dies-real-life> [accessed August 2020].
Mitchell, Ian, *Broken Brains* (Hampshire: Palgrave Macmillan, 2014).
Mølgaard, Frederik Thielke, 'Virtual Phenomenology: In the Eyes of the Animal', *Posthuman Aesthetics: Ethics and Aesthetics of the Posthuman Condition*, < https://open-tdm.au.dk/ph/2016/11/virtual-phenomenology-in-the-eyes-of-the-animal/> [accessed 25 February 2019]

Morton, Timothy, *Hyperobjects: Philosophy and Ecology after the End of the World* (Minneapolis: University of Minnesota Press, 2013).
Mufson, Beckett, 'Human Anatomy Gets a Twist in CGI Film Experiments,' *Wired* (2014) <https://www.vice.com/en_us/article/gvwqwx/human-anatomy-gets-a-digital-twist-in-cgi-film-experiments> [accessed December 2017].
Murray, Janet H., *Hamlet on the Holodeck: The Future of Narrative in Cyberspace* (Cambridge, MA: MIT Press, 1999).
Nakamura, Lisa, 'Feeling good about feeling bad: Virtuous virtual reality and the automation of racial empathy,' Journal of Visual Culture, 19.1 (2020)
—'Interfaces of Identity: Oriental Traitors and Telematic Profiling in 24', *Camera Obscura*, 24.1 (2009) pp.109-133.
Nash, Kate, 'Virtual reality witness: exploring the ethics of mediated presence,' *Studies in Documentary Film*, 12.2 (2018) pp.119-131.
Ndalianis, Angela, *The Horror Sensorium: Media and the Senses* (North Carolina: McFarland&co, 2012).
Ngai, Sianne, *Ugly Feelings* (Cambridge, MA: Harvard University Press, 2005).
Nunes, Mark ed., *Error: Glitch, Noise and Jam in New Media Cultures* (New York: Continuum, 2011).
Och, Dana and Kirsten Strayer, *Transnational Horror Across Visual Media: Fragmented Bodies* (London: Routledge, 2013).
Olafson, Frederick A., *Heidegger and the ground of ethics: a study of Mitsein* (Cambridge: Cambridge University Press, 1998).
Otto, Peter, *Multiplying Worlds: Romanticism, Modernity and the Emergence of Virtual Reality* (Oxford: Oxford University Press, 2011).
Paranormal Activity, dir. by Oren Peli (Blumhouse, 2007).
Parikka, Jussi, *Insect Media: An Archaology of Animals and Technology* (Minneapolis: University of Minnesota Press, 2010).
—'New Materialism as Media Theory: Medianatures and Dirty Matter', *Communication and Critical/Cultural Studies*, 9.1 (2012) pp.95-100.
Parker, Simon, 'The Coming Horror of Virtual Reality,' *The New Yorker* (2016) <https://www.newyorker.com/tech/annals-of-technology/the-coming-horror-of-virtual-reality> [accessed March 2017].
Petrov, Christo, '43 Virtual Reality Statistics That Will Rock the Market in 2020,' *techjury* (2020) <https://techjury.net/blog/virtual-reality-statistics/#gref> [accessed November 2020].
Prendergast, Finola Anne, 'Revising Nonhuman Ethics in Jeff Vandermeer's Annihilation,' *Contemporary Literature*, 58.3 (2017) pp.333-360.
Rec, dir. by Jaume Balagueró (Casteleo, 2007).
Redmiles, Elissa M., 'Think Facebook can manipulate you? Look out for Virtual Reality,' *The Conversation* (2018) <https://theconversation.com/think-facebook-can-manipulate-you-look-out-for-virtual-reality-93118> [accessed September 2020].
Reeves Timmins, Lydia and Matthew Lombard, 'When "Real" Seems Mediated: Inverse Presence', *Presence, Teleoperators and Virtual Environments*, 23.2 (2014) pp.191-208.
Reyes, Xavier Aldana, *Horror Film and Affect: Towards a Corporeal Model of Viewership* (London: Routledge, 2018).
Ringu, dir. by Hideo Nakata (Ringu/Rasen Productions, 1998).
Robertson, Benjamin J., *None of this is normal: The Fiction of Jeff Vandermeer* (Minneapolis: University of Minnesota Press, 2018).

Rødje, Kjetil, 'Intra-Diegetic Cameras as Cinematic Actor Assemblages in Found Footage Horror Cinema', *Film Philosophy*, 21.2 (2017) pp.206-222.
Rogers, Sol, 'Is immersive technology the future of journalism?' *Forbes* <https://www.forbes.com/sites/solrogers/2020/02/06/is-immersive-technology-the-future-of-journalism/#26935eaa7e30> [accessed May 2020].
— 'Seven Reasons Why Eye Tracking Will Fundamentally Change VR,' *Forbes* (2019) <https://www.forbes.com/sites/solrogers/2019/02/05/seven-reasons-why-eye-tracking-will-fundamentally-change-vr/?sh=48726a483459> [accessed September 2020].
Rose, Janus, 'Virtual Reality allows the most detailed intimate digital surveillance yet,' *The Intercept* (2016) <https://theintercept.com/2016/12/23/virtual-reality-allows-the-most-detailed-intimate-digital-surveillance-yet/> [accessed April 2020].
Rosen, Steven M., *Topologies of the Flesh: A Multidimensional Exploration of the Lifeworld* (Athens: Ohio Press, 2006).
Ross, Miriam, 'Virtual Reality's New Synthetic Possibilities,' *Television & New Media*, 21.3 (2018) pp.297-314.
Rossini, Manuela, 'To the Dogs: Companion Speciesism and the New Feminist Materialism', *Kritikos,* 3 (2006).
Russell, Legacy, 'Digital Dualism And The Glitch Feminism Manifesto', *The Society Pages* (2012) <https://thesocietypages.org/cyborgology/2012/12/10/digital-dualism-and-the-glitch-feminism-manifesto/> [accessed Nov 2018]
Russolo, Luigi, *The Art of Noises*, trans. Barclay Brown (New York: Pendragon Press, 1986).
Rutherford, Anne, 'Cinema and Embodied Affect', *Senses of Cinema*, 25 (2003) < http://sensesofcinema.com/2003/feature-articles/embodied_affect/> [accessed August 2018].
Ryan, Marie Laure, *Narrative as Virtual Reality: Immersion and Interactivity in Literature and Electronic Media* (Baltimore: John Hopkins University Press, 2001).
Santilli, Paul, 'Culture, Evil and Horror', *The American Journal of Economics and Sociology*, 66.1 (2007) pp.173-194.
Sanzo, Kameron, 'New Materialism(s)', *Critical Posthumanism* <http://criticalposthumanism.net/new-materialisms/> [accessed 25 February 2019]
Sconce, Jeffrey, *Haunted Media: Electronic Presence from Telegraphy to Television* (Durham: Duke University Press, 2000).
Scott-Stevenson, Julia, 'Virtual Futures: A Manifesto for Immersive Experiences,' *Immerse* (2019) <https://immerse.news/virtual-futures-a-manifesto-for-immersive-experiences-ffb9d3980f0f> [accessed April 2019].
Seigworth, Gregory J. and Melissa Gregg, eds. *The Affect Theory Reader* (Durham, NC: Duke University Press, 2010).
Shaviro, Steven, 'Gamer,' *The Pinocchio Theory* <http://www.shaviro.com/Blog/?p=830> [accessed July 2019].
—*Post Cinematic Affect* (Winchester: Zero Books, 2010).
— 'Post-Continuity: An Introduction,' *Post-Cinema: Theorising 21st-Century Film,* <https://reframe.sussex.ac.uk/post-cinema/1-2-shaviro/> [accessed December 2019].
—*The Cinematic Body* (Minneapolis: University of Minnesota Press, 2006).
Shinkle, Eugénie, 'Videogames and the Technological Sublime', *Tate Papers*, 14 (2012).

'Shot on iPhone Xs: Users share their best,' *Apple* (2018) <https://nr.apple.com/dE3h3J3d5B> [accessed December 2018].
Slater, Mel, 'Immersion and the illusion of presence in virtual reality,' *British Journal of Psychology*, 109 (2018) pp.431-433.
— 'Place illusion and plausibility can lead to realistic behaviour in immersive virtual environments,' *Philosophical Transactions B,* 12 (2009).
Slater, Mel et al, 'Immersion, presence and performance in virtual environments: an experiment with tri-dimensional chess,' *VRST '96: Proceedings of the ACM Symposium on Virtual Reality Software and Technology* (1996) pp.163-172
Sobchack, Vivian, *Carnal Thoughts: Embodiment and Moving Image Culture* (Berkeley: University of California Press, 2004).
Sperling, Alison, 'Second Skins: A Body-Ecology of Jeff Vandermeer's *The Southern Reach Trilogy*,' *Paradoxa*, 28 (2016) pp.230-255.
Staubli, Merina, 'VR unleashes new dimensions of horror,' *Frames Cinema Journal* <http://framescinemajournal.com/article/vr-unleashes-new-dimensions-of-horror/> [accessed January 2019].
Stephenson, Neal, *Snow Crash* (London: Penguin, 1992).
Stevenson, Melissa, 'Trying to Plug In: Posthuman Cyborgs and the Search for Connection,' *Fiction Studies,* 34.1 (2007) pp.87-105.
Steuer, Jonathan, 'Defining Virtual Reality: Dimensions Determining Telepresence', *Journal of Communication* (1992) pp.73-93.
Swanstrom, 'Capsules and Nodes and Ruptures and Flows: Circulating Subjectivity in Neal Stephenson's Snow Crash', Science Fiction Studies, 37.1 (2010).
'Supplemental Oculus Data Policy,' *Oculus <https://www.oculus.com/legal/privacy-policy/>* [accessed November 2020]
Surviving Syria, World Vision (2016) <https://worldvisionexperience.leadpages.co/wca-surviving-syria-vr-exhibit/>
Suzuki, Koji, *Ring* (Tokyo: Kadokawa Shoten, 1991).
Thacker, Eugene, 'Dark Media' in *Dark Media: Three Enquiries in Media and Mediation* (Chicago: The University of Chicago Press, (2014).
—*In the Dust of This Planet: Horror of Philosophy Vol.1* (Hants: Zero Books, 2011).
Tharakan, Koshy, 'Questioning the Body: From Technology Towards a Sense of Body', *Kritike*, 5.2 (2011) pp.112-122.
The Blair Witch Project, dir. by Daniel Myrick and Eduardo Sánchez (Haxan Films, 1999).
The Conjuring 2 – Experience Enfield VR 360 (Warner bros, 2016) <https://www.youtube.com/watch?v=A6aRkhlqWuE> [accessed May 2020].
The Machine to be Another Embodied Virtual Reality System (2012-) <http://beanotherlab.org/home/work/tmtba/>.
The Making of Annihilation, dir. by John Mefford (2018).
The Ring, dir. by Gore Verbinksi (Macdonald/Parkes Productions, 2002).
'The Surprising Joy of Virtual Reality,' *Time Magazine* (2015).
Thomas, Lisa May and David R. Glowacki, 'Seeing and feeling in VR: bodily perception in the gaps between layered realities,' *International Journal of Performance Arts and Digital Media*, 14.2 (2018) pp.145-168.
Thompson, Marie, 'Productive Parasites: Thinking of Noise as Affect,' *Cultural Studies* Review, 18.2 (2012).
Tiptree Jr, James, *The Girl Who Was Plugged In* (New York: Doubleday, 1973).
Trigg, Dylan, '"The Horror of Darkness": Towards an Unhuman Phenomenology', *Speculations* (2013) pp.113-121.

—*The Thing: A Phenomenology of Horror* (Hants: Zero Books, 2014).
Tron, dir. by Stephen Lisberger, *Buena Vista* (1982).
Turkle, Sherry, *Alone Together: Why We Expect More from Technology and Less from Each other* (New York: Basic Books, 2011).
Vandermeer, Jeff, *Annihilation* (London: Fourth Estate, 2014).
van der Zaag, Annette-Carina, 'On Posthuman Subjectivity,' *Journal of Cultural Economy*, 9.3 (2016) pp.330-336.
Videodrome, dir. by David Cronenberg (Universal: 1983).
'Vive ProEye, Propel Your Business With Precision Eye Tracking,' *HTC* Blog <https://enterprise.vive.com/us/product/vive-pro-eye/?utm_medium=Blog&utm_source=Tobii_Blog&utm_campaign=Tobii_ProEye_Blogpost/> [accessed June 2020].
Vernallis, Carol et al, ed. *The Oxford Handbook of Sound and Image in Digital Media* (New York: Oxford University Press, 2013).
Virilio, Paul, *The Vision Machine*, trans. by Julie Rose (Bloomington, Ind: Indiana University Press, 2007).
Walton, Sage, *Cinema's Baroque Flesh: Film, Phenomenology and the Art of Entanglement* (Amsterdam: Amsterdam University Press, 2016).
Waxman, Olivia B., 'Here are 37 of our favourite TIME Virtual Reality memes,' *Time Magazine* (2015).
Wenstrom, Emily, 'Weirder and New Weirder: An Interview with Jeff Vandermeer,' *Bookriot* (2018) <https://bookriot.com/jeff-vandermeer-interview/> [accessed January 2019].
WEAREVR, 'Most popular Virtual Reality Games & Experiences' <https://www.wearvr.com/browse/popular> [accessed July 2020].
Whitehead, Neil L. and Michael Wesch, *Human No More: Digital Subjectivities, Unhuman Subjects & the End of Anthropology: Digital Subjectivities, Unhuman Subjects, and the end of Anthropology* (Boulder: University Press of Colorado, 2012).
Wilbur, Sylvia and Mel Slater, 'A Framework for Immersive Virtual Environments (FIVE): Speculations on the Role of Presence in Virtual Environments,' *Presence: Teleoperators and Virtual Environments*, 6.6 (1997).
Williams, Joseph M., 'The Phenomenology of Error', *College Composition and Communication*, 32.2 (1981) pp.152-168).
Williams, Linda, 'Film Bodies: Gender, Genre, and Excess', *Film Quarterly*, 44.4 (1991) pp.2-13.
Williams, Vicki, 'Frameless Fictions: Exploring the Compatibility of Virtual Reality and the Horror Genre,' *Refractory: A Journal of Entertainment Media,* 30 (2018).
— 'Unhuman Agency: Reading Subjectivities in Playdead's *Inside*,' *Game: The Italian Journal of Game Studies*, 8 (pending publication, 2020).
Yang, Robert, '"If you walk in someone else's shoes, then you've taken their shoes": empathy machines as appropriation machines," *Radiator* <https://www.blog.radiator.debacle.us/2017/04/if-you-walk-in-someone-elses-shoes-then.html> [accessed July 2017].