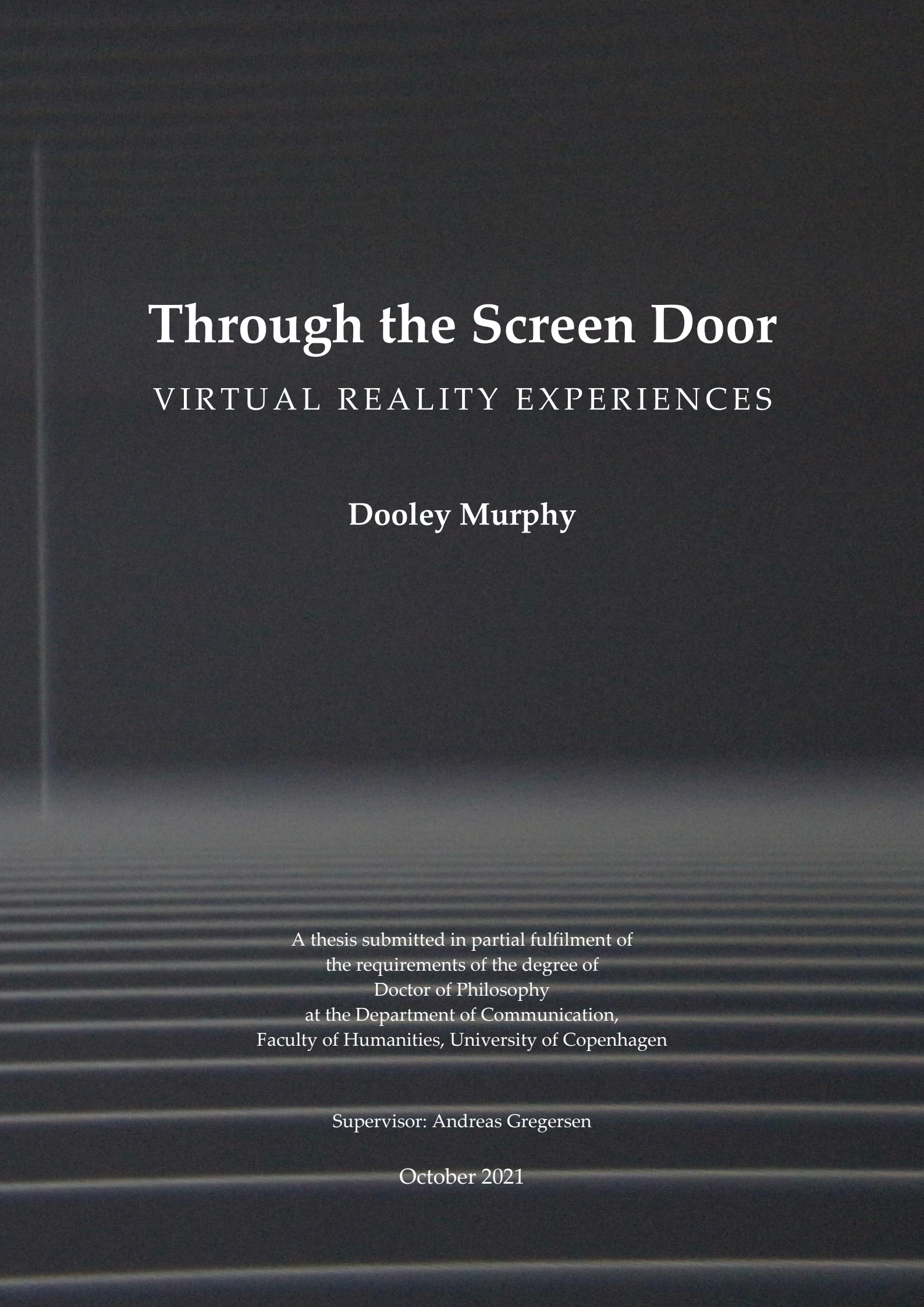

Through the Screen Door

VIRTUAL REALITY EXPERIENCES

Dooley Murphy

A thesis submitted in partial fulfilment of
the requirements of the degree of
Doctor of Philosophy
at the Department of Communication,
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Supervisor: Andreas Gregersen

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Submitted October 2021
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DOOLEY MURPHY
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Abstract (EN)

Virtual reality (VR) is a burgeoning expressive medium. Between the extremes of 'film-like' and 'game-like' software applications lies 'VR experiences': A diverse grouping that spans narrative and non-narrative artworks and entertainment. Analyses of VR experiences have historically privileged narrative, immersion, and agency. It's said that immersion is best induced by offering the participant opportunities to perform virtual actions and shape a story's course. Looking to develop this line of thinking, the present thesis asks, '**how can the participant be guided in VR experiences?**' and argues that while agency is indeed important, a neglected, corresponding phenomenon is agency's opposite number: **Patiency**—the embodied feeling of being acted upon. Sensations of patiency in VR can be just as engrossing as exercises of agency. Consider vertigo, 'butterflies', startles, or the weird feeling of having one's personal space invaded by lifelike virtual agents. The thesis works towards an account of how patiency can be used to guide the participant by first addressing some formal considerations (what *is* a VR experience? how do they 'position' the participant relative to the action? how do they convey stories or otherwise represent events?) before exploring VR experiences' psychological functions. I extrude working definitions of presence and immersion, suggesting that the latter, attention, affect or emotion, agency, and patiency are all deeply entangled. Immersion, construed as a fragile state of enthrallment, is argued as easily engendered by leveraging self-reflexive concerns at the nexus of attention and emotion. Participants may be most amenable to designers' attempts at guidance when 'hot', affect-laden cognition leads them to engage with aspects of a virtual environment *pre-reflectively*. Patiency—both a design strategy and a force or dynamic akin to agency—is thus framed as an indispensable way of guiding the VR participant that surpasses 'mere' spectacle.

Resumé (DA)

Virtual Reality (VR) er et purungt ekspressivt software- og hardwaremedie. Mellem de to ekstremer "film-lignende" og "spil-lignende" ligger "VR-Oplevelser": En alsidig gruppering af narrative og ikke-narrative kunstværker og underholdning. Analyser af VR-Oplevelser har historisk set fokuseret på narrativer, *immersion* og *agency*. Det har hidtil været antagelsen at immersion bedst opnås ved at give deltageren mulighed for at udføre virtuelle handlinger og forme en fortællings forløb. Ud fra et ønske om at bygge videre på denne tænkning, tager denne afhandling udgangspunkt i følgende spørgsmål: "**Hvordan kan en deltager blive guidet i VR-Oplevelser?"**. Der argumenteres for, at selvom *agency* er vigtigt, så er der et tilsvarende vigtigt, men overset, fænomen: **Patiency**, dvs. en legemliggjort følelse af selv at være genstand for andres handlinger eller begivenheder. Oplevelser af patiency i VR kan være lige så medrivende som oplevelser af agency. Tænk på svimmelhed, 'sommerfugle i maven', forskrækkelse, eller den underlige følelse af at ens personlige rum bliver invaderet af en naturtro virtuel person. Afhandlingen beskriver i detaljer, hvorledes patiency kan bruges til at guide deltageren i VR-Oplevelser. Først præsenteres en række formelle overvejelser (Hvad *er* en VR-Oplevelse? Hvordan positioneres en deltager relativt til deres handlinger? Hvordan formidler VR-oplevelser fortællinger? Hvordan repræsenterer de begivenheder?). Derefter udforskes VR-Oplevelsers psykologiske funktioner, og afhandlingen præsenterer og diskuterer arbejdsdefinitioner af tilstedeværelse og immersion, hvor det antages at sidstnævnte er direkte forbundet med opmærksomhed, affekt, *agency* og *patiency*. Der argumenteres for at immersion, forstået som en skrøbelig tilstand af "tryllebundethed", frembringes nemmest ved at udnytte selvrefleksive bekymringer i skæringspunktet mellem deltagerens opmærksomhed og følelsesliv. Deltagere vil typisk være mere medgørlige over for en designers forsøg på at guide dem, når de interagerer med dele af en virtuel verden på prærefleksivt niveau, grundet en affektivt ladet kognitiv tilstand. *Patiency* – både som designstrategi og som en dynamik beslægtet med *agency* – rammesættes således som en uomgængelig måde hvorpå man kan guide VR deltagere, uden at ty til virkemidler der sigter udelukkende efter det overvældende og spektakulære.

Overview

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Part One: Form

1 Hello, Worlds

'*Hello, Repair Associate, and welcome to the Robot Rehabilitation and Wellness Center!*'

It's my first day on the job.

'*You are the inaugural participant in our Human Diversity Outreach Program.*'

An upbeat synthetic voice babbles away over the tannoy.

'*You are holding dual Aperture Science prosthetic multi-tools.*'

I look down and, instead of hands, see two futuristic devices reminiscent of the wireless motion controllers I'm holding in physical reality. The devices are excellent surrogates for acting in the virtual world, tracing the movements of my absent actual hands with absolute precision. This helps me maintain a vivid awareness of my biological body despite it having no in-world representation. I've neither a visible torso nor limbs—a fact I'm surprisingly comfortable with. The system's stereoscopic screen display, spatial audio, and room-scale motion tracking help anchor my sense of presence in the computer-generated scene, incorporeality notwithstanding. I scan my virtual surroundings using natural bodily movements and quickly forget about the half-kilogram of plastic, glass, and electronics strapped to my face—not to mention the five-metre umbilical cord tethering me to my PC.

'*There is a cabinet of drawers in your repair station. Please locate it, and open a drawer.*'

I spot the repair station and suppress the urge to walk over to it, remembering that a few steps forward in the real world could take me straight into a wall. Instead, I point my non-dominant hand at the floor in front of the virtual chest of drawers, depressing a button on my physical controller. A glowing circle appears on the tiles to indicate where I will be standing once I release the button. I do so, instantaneously 'teleporting' a few metres across the room. I grab a drawer handle with one of my 'prosthetic multi-tools' and give it a tug. As it grinds open, the sensory dominance of my eyes and ears supplemented by subtle vibrotactile feedback in my hand leads me to perceive that the drawer is putting up resistance; that it is heavy or corroded despite having no physical mass. It's a surprisingly convincing cross-modal illusion.

'*Good. Now close the drawer, and open the correct drawer*.'

I try another drawer. This one contains a mouldy slice of cake.

'*Good. You have now practiced on two incorrect drawers. Please open the correct drawer.*'

Third time lucky. As the wide metal drawer slides out, a tiered structure pops up, concertina-like, revealing a drab, open-plan office in miniature. There are diminutive desks, tiny filing cabinets, and pint-sized pencil pushers going about their bureaucratic business. I lean over the unexpected diorama to take a closer look. The Lilliputian office is staffed by about twenty wafer-thin humanoids, each just a few centimetres tall, rendered as if cut from jet-black paper.

'*Good. As explained in your orientation, you should, of course, never look directly into the drawer.*'

A loud klaxon sounds.

'*Our sensors indicate that you are currently looking directly into the drawer.*'

Some of the minuscule office workers notice me gawping into their grotto and start to run amok, yelping and throwing stacks of documents into the air. Others fall to their knees and begin worshipping me.

'*You have just interfered with an Aperture Science Pocket Universe Capsule.*

You are now their god.'

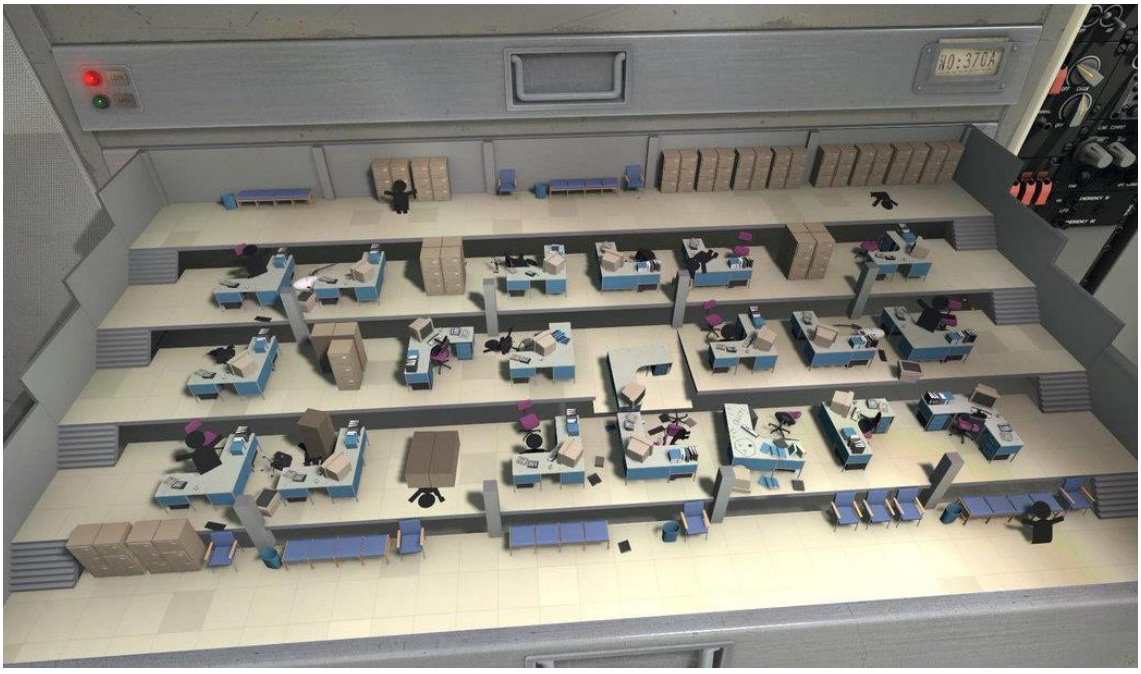

Fig. 1.1: A found 'Pocket Universe Capsule' from *Robot Repair* (*The Lab*; Valve 2016).

1.1 What Is a VR Experience?

Virtual reality (VR) can be defined as computer-generated or computer-mediated environments realised via sensorially enshrouding '3D' display systems (Murphy 2017a; Gregersen and Murphy 2018) like motion-tracked headsets or back-projected CAVEs.[1]

Experience—or *an* experience—is something subjectively had or felt by conscious organisms; most intuitively humans.

1.1.1 An Experience *Had*?

Logically, then, 'a VR experience' could refer to any subjective experience of any VR system or simulation had by an individual. 'VR experience' could refer to any phenomenal encounter had in any virtual environment presented via a non-transparent head-mounted display (HMD) equipped with now-standard features like stereoscopy, room-scale or '6DoF' motion tracking,[2] and gestural input.

But this is not how the words are generally used in combination. 'VR experience' has a more specific and, thankfully, more interesting everyday meaning.

1.1.2 Or an Experience *Intended*?

Among enthusiasts and practitioners, 'VR experience' refers to a kind of product or production. The label denotes a form or format of VR entertainment and popular or fine artwork.[3] This type of 'experience' is not an experience *had* but an experience *in potentia*: It is an *expected* or *intended* journey along a thoughtfully designed 'experiential arc' (Bolas quoted in Jerald 2015, p. 225).

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[1] 'CAVE' is a recursive acronym for 'CAVE Automatic Virtual Environment'.

[2] This thesis mostly concerns 'room-scale' or '6DoF' experiences. 6DoF stands for 'six degrees of freedom', meaning the VR HMD and/or controllers can be motion-tracked *along* as well as *around* the three Cartesian spatial axes. Compare room-scale VR with '3DoF' or 'seated' 360° video, which can only register head *rotations*—not translational movements.

[3] I use the terms 'VR experience', 'VR artwork', and 'VR work' (or simply 'work') interchangeably.

'VR experience' speaks to a participant's *anticipated* affective trajectory through meticulously designed, tightly curated virtual spaces and places, and any staged events or encounters occurring therein. The opening vignette is a prime example of how the course of a VR experience can be plotted in this way; how participants can be led to enact a designer's intentions almost pre-reflectively, to the mutual satisfaction of both parties.

Robot Repair (part of *The Lab*; Valve 2016) is a VR experience from an industry-leading studio that effortlessly guides the participant through its circa five-minute running time. Input is prerequisite to progression, and almost every successive action the participant performs is used as the basis of a 'reversal' that sets up the next interesting situation. Everyone who tries *Robot Repair* will open two 'incorrect' drawers before happening upon the colony of tiny office workers. Everyone who tries *Robot Repair* will fail miserably to fix the bipedal robot under their care, and everyone will conclude the experience being derided by their intimidating robot supervisor for lacking 'even a rudimentary understanding of advanced electromechanical engineering'.

As far as audiovisual entertainment goes, VR experiences feel fresh and arresting. Yet there's something formally familiar about them.

1.1.3 Neither Film nor Game

VR experiences are neither film nor game despite intuitively being a synthesis of the two. It's a reductive syllogism, but an inescapable one. VR experiences' head-mounted means of delivery[4] rules out many of the techniques of flat-screen filmmaking, like sweeping camera movements and a pacy rate of editing. Yet by definition, VR experiences likewise eschew many of the design patterns historically and prototypically associated with games (Juul 2003). This isn't to say that VR films and VR games don't exist, of course—just that VR 'experiences' fall somewhere between those two poles, with a liberal dash of theatrical thinking thrown into the mix. Ideally, one doesn't 'just sit and watch' a VR experience,

[4] I treat head-mounted displays (HMDs) or simply headsets as emblematic of VR hardware. This isn't to suggest that other systems don't qualify as VR—just that cheap, mass-produced headsets are increasingly commonplace, while most VR enthusiasts probably wouldn't purchase a CAVE, which can still cost upwards of $50K.

since the medium affords hands-on virtual action—or at least ambulatory, exploratory behaviour. But one doesn't 'play' and 'beat' or 'lose at' VR experiences, either, since they're practically bereft of challenge, and rarely if ever feature the kinds of victory conditions or fail states we've come to associate with mainstream digital games.

Where digital (i.e., video or computer) games often present epic or open-ended opportunities to play out action-packed struggles of heroism and control, VR experiences are short but sweet, usually lasting between five and fifty minutes, and *actively guide or usher the participant through them*. They aim only to be as challenging as befits the moment-to-moment generation of curiosity, suspense, and surprise (Sternberg 2001), which—as with film and other media—is their primary and recurrent method of eliciting emotion and sustaining engagement. Where film excels at telling stories about other people, VR experiences fulfil their highest potential when they're all about *you*. Where puzzle games' *raison d'être* is to put up cognitive resistance, and action–adventure games test the player's tactical thinking and motor skills, VR experiences aim to be *frictionless*, littering almost unmissable clues and cues throughout their orchestrated environments.

Unlike games per se, VR experiences seldom aim to frustrate. They may momentarily vex the participant for aesthetic effect (cf. Aarseth 1999), but never present serious barriers to their completion. As with film viewing, the VR participant should always be able to reach an authorially intended ending. Indeed, it's perhaps owing in part to VR experiences' increasing visibility and popularity on the international film festival and art fair circuit that their design strives not to privilege the nimble-fingered veteran gamer over less seasoned interactive media consumers. Sometimes VR experiences demand that the participant plays a central and active role in advancing the action, while other times all that's asked of them is that they don the headset and bear witness to something. Sometimes that 'something' is a coherent sequence of events featuring one or more agent(s) and clear causal connections, while other times it is not. Thus, contrary to what's commonly assumed, VR experiences are by no means necessarily narrative. *VR experiences do not always set out to tell stories*. At least, not as we know them.

1.1.4 VR Drama and Narrative VR

The terms 'VR drama' and 'narrative VR' have historically been used by researchers as catch-all descriptors for actual or hypothetical VR artworks (e.g. Laurel 1986; Bates 1992a; 1992b; Murray 1997/2016a; Ryan 2001/2015; Anstey and Pape 2002; Aylett and Louchart 2003 cf. Grau 2003). The assumption that any VR work that does not emphasise its 'gameness' must instead be a story is perhaps a by-product of the fact that much early VR research was conducted during the so-called VR winter of the mid-1990s through circa 2014. Prior to and throughout this period of relative technological stagnation, the kind of VR system that's today available from high-street retailers for around €350 was prohibitively expensive, costing upwards of tens of thousands of euros, pounds, or dollars, and was broadly the preserve of clinical or university laboratories, corporate research and development departments, and other specialist institutions. Researchers at the crossroads of human–computer interaction (HCI), theatre studies, and literary theory thus began reflecting on what we might nowadays call VR experiences before the technology that enabled them was even accessible to more than a small handful of dedicated creators (see, e.g., Laurel 1991; Grau 2003; Davies 2004; McRobert 2007).

Consequently, influential early accounts of the medium's expressive potentials arguably respond more to intuitions and wishes about what VR art and entertainment could, might, or 'should' be than a (then-non-existent) plurality of evidence as to what it in fact *is* or *was*. A relative dearth of empirical material prior to 2015 meant assumptions had to be made as to what VR art and entertainment would look and 'behave' like. VR artists and designers sometimes surmised or implied that their bespoke creations were typical of the medium at large (e.g. Pausch et al. 1996). Theorists had little choice but to focus on a small sample of VR artworks that were treated as archetypal of the emergent form (e.g. Brenda Laurel and Rachel Strickland's *Placeholder* (1993) discussed in Murray 1997/2016a; Ryan 2001/2015; Grau 2003). And individuals with one foot in each camp—particularly those invested in the research and development of procedurally generative narrative (e.g. Bates 1992a; Murray 1997/2016a; Mateas 1997; 2001)—wrote as if VR was synonymous with the future of storytelling, and that the future of storytelling would inevitably be powered by artificial intelligence (AI).

One could argue that this is still the case today. A VR system can at last be purchased for less than the price of a new games console, but the creative side of

VR—its dominant aesthetics and formal best practices—remain nascent. Yet we certainly have more material to discuss now than we did three decades ago, in the 1990s. Therefore, several assumptions from a loose-knit body of almost *anticipatory* VR research must be re-examined. Outlining three premises from an earlier era of VR and VR-adjacent scholarship that today demand reconsideration will let me explain what this monograph is itself about.

The principal questionable assumption that's historically been made about VR is that it either *tells* stories, or that it *represents* stories but categorically does not *tell* them (Ryan 2001/2015). This is actually two mistakes rolled into one. The first is to suppose that because a VR participant can recount a memory of a VR experience *as* a story, then they must have experienced a narrative *at the time*. We can, of course, tell stories about sequences of events that are not, in and of themselves, stories (Aarseth 1997). A football fan can tell a story about how a match unfolded blow-by-blow despite that a sporting event is not a narrative. Or I could tell a story about an act of attending to a painting despite that my perception of that painting may barely have developed in time, involved no dramatic or narrative agents, and occurred entirely inside my head.

It makes sense, then, to acknowledge that we can discuss *experiences* of things that are decidedly not stories using many of the same theoretical tools we use to analyse actual narratives. Virtual vignettes, digital dioramas, mediated monologues, synthetic soliloquies, permutative poems, interactive illustrations, simulated sculptures, and experiential essays are all types of VR experience—some 'lyrical', others depicting agents and states of affairs—that may not amount to stories per se, yet which are worth considering alongside or *as related to* stories. An inclusive label like 'VR experience' helps ensure that we do not overlook the more exotic VR artworks—'edge cases', if you will (Laurel 2017, p. 257)—that escape the narrower purviews of stipulative groupings like 'VR drama' or 'narrative VR'.

The second part of the first questionable assumption involves following Aristotle's *Poetics* too closely or literally, and hence supposing that narrative and drama (or diegesis and mimesis) are mutually exclusive categories or modes. There's a tendency to study VR drama (Laurel 1991/2013; Murray 1997/2016a), narrative VR (Ryan 2001/2015), or even film (Bordwell 1985) through the lens of 'purely' mimetic theories because it's flatly supposed that mimesis and diegesis don't mix. Some theorists have described VR as 'a nonnarrated narrative' (Ryan 2015, Ch. 2, n.p.) without explaining the terms' historico–technical meanings and/or why the phrase 'nonnarrated narrative' is not in fact a paradox.

The polysemy of 'narrative' can make it hard to follow narratological arguments if clear explanations of the terminological specifics are not offered beforehand or throughout. As I show in Chapter 3, literary narratology's go-to view of drama and narrative—of mimesis and diegesis, or (reductively) showing and telling—as an 'either/or' categorisation is a false dichotomy that can be easily remedied. Illustrating that the two are mutually *in*clusive in more ways than is implied by the mere existence of Homeric epics (the 'mixed' mode) is a vital move if analysis is to tap the wealth and breadth of not-necessarily-narrative-*or*-dramatic works that can be considered VR experiences.

1.1.5 Not Necessarily 'Well-Formed'

One consequence of VR artworks having first been theorised alongside the hypertext fiction and text-based adventure games of yesteryear is that the presumptive teloi of the latter are foist onto the former. In 1986, Brenda Laurel submitted her doctoral dissertation, *Toward the Design of a Computer-Based Interactive Fantasy System*, which outlines the possibilities of interactive fiction in which a hypothetical AI 'drama manager' plots and steers the action. Others (e.g. Bates 1992a; 1992b; Murray 1997/2016a; Mateas 1997; 2001) picked up on Laurel's ideas, and it is now tacitly accepted by many in the field of research and development known as interactive digital narrative (IDN) that AI-based storytellers capable of generating infinitely multicursal (i.e., permutative or multi-linear) stories on the fly is *the* logical conclusion of the community's collective efforts. Though only tangentially related to Laurel's original vision for an AI storyteller, a quixotic version of 'VR' gets held up as the promising poster child of IDN's still largely text-based endeavour, and the chimeral concept of the 'holodeck' (Murray 1997/2016a)—named for Gene Roddenberry's fictive creation in *Star Trek: The Animated Series* (later, *Star Trek: The Next Generation*)—becomes emblematic of what VR putatively should or may one day be: An infinitely explorable matrix of dynamically computer-generated possibilities (Ryan 2015); 'the future of narrative in cyberspace' (Murray 1997/2016a).

Sure enough, the dream of an omni-responsive, infinitely generative holodeck-style framework for VR story-words *is* being passionately pursued. Hackers, tinkerers, and self-styled 'cyberbards' are hard at work integrating speech-based natural language-processing AIs into VR environments such that non-player

characters (NPCs) will one day be able to respond to players or participants' every utterance without scripting or intervention. Text-based natural language-processing games like *AI Dungeon 2* (N. Walton 2019) show that AI-generated plots featuring beginnings, middles, and ends can, given sufficient player cooperation, just about be teased out of natural language models. It's easy to appreciate how AI-assisted worldbuilding will one day be a popular way of co-authoring and interacting with(in) VR environments. But this is certainly not the medium's be-all and end-all, and has relatively little to do with VR at present. The holodeck metaphor does not come close to running the gamut of what VR experiences can be, and is lightyears ahead of capturing how VR is being used today as an expressive medium by practicing artists, designers, poets, sculptors, illustrators, storytellers, students, and dabblers of all stripes.

Fig. 1.2: The holodeck—a fictive, AI-powered, VR-generating room—inspires Murray's vision for 'the future of narrative in cyberspace'. In *Star Trek*, as in Murray's writings, the holodeck works best when recycling genre tropes, and apparently also necessitates wearing a hat.

The issue with the notional holodeck is not the idea that AIs can devise interesting scenarios in which we'll feel immersed (cf. Salen and Zimmerman 2003, pp. 450–455; Lantz 2005). Rather, the problem with the holodeck—as sketched by Laurel, named by Murray, and pursued by designers and engineers like Joseph Bates (1992a; 1992b), Michael Mateas (2001), and Andrew Stern (Mateas and Stern

2005)—is that discussions of how AI drama managers might function invariably privilege the Eurocentric ideal of 'well-formed' structures or plots, 'well-formed wholes', and 'satisfying situations' over any and every other kind or quality of representation (Laurel 1991/2013, pp. 59, 81, 205; Murray 1997/2016a, p. 63; Ryan 2001, pp. 19, 248, 256).

Espen Aarseth (Aarseth 1997, p. 129) suggests that the preoccupation with 'well-formed[ness]' can be jettisoned given that computerised authoring systems' successes may never be as interesting as their abject, often endearing failures. We're too obsessed, he believes, with having machines ape a human writing style. But the prescriptive ideal of 'well-formed' things that's typical of an Aristotelean poetics isn't only a constricting way of evaluating AIs' attempts at humanlike creative output: In our globalised, transnationally cosmopolitan culture, prizing 'well-formed' representations above any- and everything else is a normative and problematic (if unintentional) way of championing mainstream Western aesthetic values over emergent, experimental, under-represented, or otherwise lesser-known ones.

If, painting in broad strokes, we take 'well-formed [plots or wholes]' to refer to Aristotle's recommendations in *Poetics* or, say, Roman playwright Seneca's five-act structure (later formalised into Freytag's pyramid; 1863), are we to conclude that anything that does not fit the cookie-cutter formula of exposition, rising action, climax, falling action, and resolution is aesthetically inferior? Would the devout 'neo-Aristotelean' (Aylett and Louchart 2003, p. 5) hold that Japanese *noh* plays are not 'well-formed' because they instead adhere to the triphasic principle of *jo-ha-kyū*, perhaps being altogether disinterested in climaxes or denouements? The point is not to browbeat neo-Aristoteleans into ignoring the wisdom of the Classics. The point is rather that treating European drama as the pinnacle of story construction blinkers us to the near-infinite appeal, successes, and potential of VR experiences that are deliberately or by definition *not* 'well-formed', and which may not even be stories in the traditional sense.

As Marie-Laure Ryan observes, pioneering VR researchers and designers like Joseph Bates (*The Oz Project*; Bates 1992a) and Brenda Laurel (of *Placeholder* fame; Laurel and Strickland 1992) 'demonstrate a greater allegiance to the aesthetics of classicism than to postmodern taste' (Ryan 2001, p. 329), which is all too ironic given where their creative interests lie.

> 'Nothing could be more remote from the subversive spirit of postmodernism and of its rejection of "grand narratives" in favor of purely local

> meaning patterns than this ideal of user-friendliness, the protective role attributed to the [AI drama manager] system, and its top-down control of the plot.'
>
> (Ryan 2001, p. 329)

Accordingly, this monograph does at least two things to set its scope apart from VR scholarship circa the 1990s through the mid-2000s (and, separately, from current trends in popular, non-academic VR discourse).

First, I reject that VR experiences should embody the ideals of 'well-formed' drama or narratives, and instead take what Ryan calls 'local meaning patterns' at face value. I hope that by embracing all manner of extant VR object—no matter how experimental or unclassifiable—it's possible to paint a fuller picture of VR's expressive state of the art.

Second, I proceed under the assumption that holodeck-style VR in which an AI generates and governs the action—besides being a distant dream—is no more important or desirable than any other way of designing and implementing VR experiences. Contrary to the revamped version of cyberspace discourse currently being reignited by online 'influencers' and tech 'evangelists', I reject that VR's singular destiny is to underpin a 'metaverse'; a parallel digital universe. The most interesting and innovative VR experiences available today do not simulate vast, unitary, networked, and persistent virtual worlds, but exist as discrete, spatio-temporally bounded slivers of possible places.

These fragments of realities—like the 'Pocket Universe Capsule' found hidden in a drawer in *Robot Repair*, itself nested in a VR hub environment called *The Lab*—are not created by AIs, but meticulously and painstakingly hand-crafted by artists and asset designers, and assembled by game engine specialists and generalists; programmers, animators, sound designers, audio engineers, and many other types of craftsperson. Accordingly, unlike Laurel's interactive fantasy system or Murray's hypothetical holodeck, present-day VR artworks are constrained *not only* by computer processing power and storage space, but also by human labour hours. Every virtual object seen, every item 'touched', and every branching path navigated is a product of blood, sweat, and tears. VR creators would surely *love* to build fully generative, wide-open worlds that encourage a go-anywhere, do-anything attitude; in which every nook and cranny hides a secret; in which every character boasts a rich, believable, and unique backstory. But it's just not commonplace or even particularly feasible yet. As IDN researcher Hartmut Koenitz

points out: 'Providing choice means to always provide 'more', which constitutes a challenge for tight production budgets and available project time' (Koenitz 2015, p. 55).

Owing to these inherent 'limitations' of the art form, it becomes necessary to devise methods for guiding participants through VR experiences such that they neither miss the main attractions nor become side-tracked poking and prodding at the limits the simulation. To those who prefer open-world games, the following may sound stringent. But a key consideration in VR experience design is to formulate strategies for *guiding the participant*. That is, developing medium-specific techniques for ushering, steering, routing, shepherding, marshalling, directing, or orienting VR participants towards objects and areas of interest that will help them find—and to stay on—the designer's intended experiential arc or path.

1.1.6 Beyond Agency

The third major assumption historically made concerning VR experiences is that *agency*—often defined as giving players or participants frequent, 'meaningful', and 'satisfying' opportunities to shape a story's outcome (Murray 2016a, p. 123; Stang 2019, *passim*)—is the *sine qua non* of VR experiences. It's thought that offering ample agency (Laurel 1986; 1991; Murray 1997/2016a) or 'interaction' (Ryan 2001/2015) is the best way to scaffold the psychological state of *immersion*, which is rightly posited as typical of—and as central to—compelling VR experiences. Murray's revised conceptualisation of the holodeck is that it can be used as 'shorthand' for the following kind of situation.

> '[W]e would just walk into the room, be surrounded by characters; they would respond to us, everything that we touched or saw would reinforce our sense that we were in that world. … [W]e'd be scripted to want to do certain things, and every time we did something and it was rewarded …, *that* would reinforce our immersion[,] which would then reinforce our desire to do things that would give us the experience of agency.'
>
> (Murray 2017, n.p.)

This vision gets three things right. First is that immersion—cursorily, the suspension of disbelief (Coleridge 1817 cf. Murray 2012b); a pre-reflective sense that the thing happening 'is real' (Bates 1992a, p. 2; 1992b, p. 135)—is essential. Immersion

may be epiphenomenal to other cognitive–psychological states or processes (Jennett 2010; Grimshaw, Charlton, and Jagger 2011), but one cannot deny that it is a desirable aspect of most media experiences; not only VR. Second is the idea that immersion can be scaffolded by 'scripting the interactor'. Roughly, 'scripting the interactor' (Murray 2012a; Koenitz et al. 2017) refers to the processes and conventions by which participants are led to infer or do certain things conducive to the traversal of an interactive artwork. If they are to play a character, then 'scripting the interactor' may entail letting the participant know about their role. If they are to press a button or pull a lever, then scripting the interactor might simply involve signalling that an affordance is present (Norman 1988/2013).

In the earlier vignette, *Robot Repair*, the main way I was 'scripted' was by a diegetic voice: The scenario permitted that instructions could be piped into the virtual room via loudspeaker without violating principles of plausibility.[5] But I was also 'scripted' by my embodied relationship to the environment in which I found myself. Had I not been instructed to open drawers, I would surely have done so anyway on account of the fact that *it seemed as if I could*. I had a virtual hand, and the drawers each had handles, and they had indeed been programmed to slide open when grabbed and pulled. Therefore, there was an affordance (J. J. Gibson 1966; 1979; Norman 1988/2013). Andreas Gregersen refers to players' or participants' ability to detect or predict agential affordances in an almost pre-reflective manner as indicative of 'core cognitive' knowledge (Gregersen 2008), noting that it piggybacks upon and stems from our embodied experience of physical reality. In no medium is the relationship between our real bodies and the virtual actions we perform more direct and intuitable than in VR. And so thirdly, following from this observation, we can say that Murray is correct to imply that *agency* is vital to scripting the interactor or VR participant to in turn produce immersion.[6]

But something is conspicuously missing—not just from Murray's description of agency as productive of immersion, but from almost all academic accounts of VR so far. What analyses of VR often overlook is that the two-way street we call

[5] That is to say, nothing about the scenario made me question why there was a loudspeaker issuing instructions to me: It was sufficiently diegetically motivated.

[6] Incidentally, Murray gets things the wrong way around, writing that, '[t]he characteristic goal of interactive environments is agency. We create agency by scripting the interactor … so that the human being's expectations and behaviors elicit appropriate responses from the machine' (Murray 2012, p. 23). Agency is not the goal, but rather a means to an end. *Immersion* is the goal—agency is but one way of scaffolding or bootstrapping it.

'interaction' (Hornbæk and Oulasvirta 2017; Frome 2019) isn't just about exercising virtual *agency*; it's also about being recipient to embodied experiences of *patiency*.

1.2 What Is/Why Patiency?

In this thesis, I develop the claim that as far as VR experiences are concerned, *agency only tells half a story*. Scholarly analyses of VR privilege *acting*, *acting*, *acting*—to the neglect of studying how VR's multisensory representations frequently and fundamentally *act upon us*.

In academic game studies and its offshoot field of IDN, the concept of agency is sometimes seen as tantamount to shaping a story's course. This locates agency at the level of interface or code, which *dis*locates the concept and the phenomenon of agency from its physical, metaphysical, and theoretical grounding in the biological body and in mental intention (Davidson 1980; Wilson and Shpall 2016; Schlosser 2019). Agency in games and interactive media has been prescriptively defined as pertaining *only* when a player or participant performs button-presses or inputs that have immediate, observable, and (above all) *intended* narrative outcomes. This desensitises us to exercises of bodily agency that—while perhaps not registered by the system as relevant to a simulation's advancement—shape how participants engage attentionally, perceptually, emotionally, and cognitively with the form and content of virtual artworks.

My major contention is that VR participants (or, in applied contexts, VR 'users') aren't just agents; they're alternately agents *and patients*, and that an account of the feeling of being acted upon—of being literally, corporeally *moved* by an audiovisual representation—is what's long been missing from discussions of technologically mediated (inter)action, particularly VR.

Patiency is a term taken from linguistics: It is agency's conceptual counterpart. Patiency is not an absence of agency—it is not a *lack* of opportunities to act, or the revelation that a choice was only ever illusory (MacCallum-Stewart and Parsler 2007; Stang 2019)—but rather *the feeling of being acted upon oneself*. Traditionally, patiency—the fact or felt quality of being a patient—is considered a 'thematic' or 'semantic role'. In a sentence like, 'the hippopotamus flattens the missionary', the hippo is the agent, and the apostle is the patient: The latter undergoes a change

in state, in this instance becoming pancake-shaped. In the context of VR, patiency need not presuppose simulated physical force transfer like being virtually hit (cf. Gregersen 2008; 2016), though seeing it this way gives us a clear initial example.

When playing a classic fighting game like *Street Fighter II* (Capcom 1991) on a conventional screen display, I observe my avatar–character (that is, my fighter) alternate between agent and patient roles as I command them to throw punches and unsuccessfully evade our opponent's blows. I may get excited as I play, perhaps fidgeting in rhythm with the fight, but the fact that I perceive my avatar–character allocentrically in distal screen-space means motor empathy does not permit me to identify with the manipulable figure strongly enough to *feel* like a patient alongside them. I may jostle around *as if* I were fighting, but I do not have involuntary bodily reactions in anticipation of *myself* being punched. By contrast, when I play a VR boxing game like *The Thrill of the Fight* (Sealost Interactive 2016), it is extremely likely that I will flinch and recoil *involuntarily* and in a lifelike manner as my virtual opponent throws punches at my avatar–character's face. That is, at *my* face: At *me*.

Fig. 1.3: A virtual pugilist in *The Thrill of the Fight* (Sealost Interactive 2016). He may not look like much, but it's a different experience when he's ducking, weaving, and jabbing at your face.

The overarching argument of this monograph is that patiency—not just agency—is a vital force in creating and sustaining immersion by 'scripting the interactor' in VR, which I prefer to think of in terms of 'guiding the participant'. The next two subsections cover some thesis-related formalities. Section 1.5 then provides a chapter-by-chapter overview of the monograph.

1.3 Research Question

The question that drove the present investigation was, '**how can the participant be guided in VR experiences?**' This is similar to what Murray and other IDN scholars (e.g. Koenitz et al. 2017) are interested in when they speak of 'scripting the interactor' in participatory media. My formulation and assumptions differ in three major ways.

First, 'scripting the interactor' is generally conceived as the process and/or set of conventions by which participants in digital artworks can be led to infer and do certain things. Murray sees this as best achieved by referencing familiar genre tropes or even well-worn clichés, suggesting that a scenario being 'formulaic' (Murray 2016a, p. 79) can be a desirable thing that may help the participant ascertain their role in the work. Henry Jenkins (2004, p. 123) similarly advocates an 'evocative' approach to spatial narrative design, whereby a work would 'draw upon our … [pre-]existing narrative competencies' by 'draw[ing] upon a broadly shared genre tradition … [such as] Disney's Haunted Mansion'.

Relying on a participant's genre knowledge in order to script or guide them is far too demographically contingent a method to qualify as anything like a generalisable or transferable approach to guiding the VR participant. Besides the fact that not all VR artworks are narrative, not everybody is intimately familiar with Westerns, sci-fi, or period dramas, and not everybody has a working knowledge of Disneyland. What we *can* appeal to in our quest to guide the VR participant is things that everybody *does* have: A body, sense organs, emotions; powers of attention, perception, and inference; and an instinct for self-preservation, all else being equal. My answer to the question, '**how can the participant be guided in VR experiences?**' aims to leverage embodied cognitive and affective universals that stack up to facilitate experiences of agency and patiency, as opposed to making recommendations about what to include or exclude at the level of content.

Second, Murray and many IDN scholars write as if design strategies are medium-agnostic. It seems to be assumed that since *narrative* is the thing under consideration—given that it's *narrative* that's traversed—the means of expression or delivery is a secondary consideration (see Rouse, Koenitz, and Haahr 2018; Cardona-Rivera, Sullivan, and Young 2019; Bosser, Millard, and Hargood 2020). Yet what works for one medium, interface, or display system will not transfer easily to another. My answer to the question, '**how can the participant be guided in VR experiences?**' responds to the specifics of VR as it is commercially available today, with an ability to bring the participant's bodily awareness into the virtual environment chief among the medium's fairly unique affordances. Entering VR is not like reading a book, and is hardly even comparable to consuming audio-visual media on a regular screen. An account of how to guide the participant in VR must foreground that we're dealing with a technology that affords a 'one-to-one' embodiment of the avatar—the participant's virtual–agential and diegetic proxy—and a lifelike perception of represented space and the objects and agents encountered therein.

Lastly, using the word 'guiding' helps reflect that this process (in VR, at least) is often not a cerebral activity on the participant's part. 'Scripting' is reminiscent of reading and remembering lines for a stage play, which implies cool, conscious, effortful thought. 'Scripting' and the idea of being scripted speaks of rational cognition; of putting together puzzle pieces in one's mind in order to figure out how to act next. I proceed on the basis that VR experiences are more often than not defined by 'hot', affect-laden, body-based cognition; by impulsive actions performed pre-reflectively, possibly motivated by subpersonal or subdoxastic states and processes that defy rationalisation. The present study is about guiding the VR participant—and thereby engendering immersion—by appealing to their embodied, perhaps pre-conscious powers of attention, affect, and action so to alternately afford agency and elicit patiency, which can be pleasurable in and of itself.

1.4 Theory and Method

This thesis draws from cognitive media theory (the expanded purview of cognitive film theory; see Nannicelli and Taberham 2014; Perron and Schröter 2016), ludological and phenomenological game studies, digital narratology, presence

research, media psychology, affective science and the philosophy of emotion, analytic philosophy's subfield of action theory, and, tangentially, linguistics.

As far as communication or representation are concerned, my ontology excludes personified figures like the implied author or implied narrator (this rationale is elaborated in Chapter 3, Section 3.4.1). In terms of consciousness and matter, I assume a philosophically naturalistic ontology, taking everything that happens in the mind–body as reducible in one way or another to empirically observable physical, chemical, and biological phenomena (explanatory gaps or 'black boxes' notwithstanding). I suppose a constructivist view of perception and emotion, rejecting direct or 'naïve' realism as concerns philosophy of perception and mind.[7]

Epistemically, I take a formalist–functionalist, cognitive–phenomenological approach (see, e.g., Gregersen 2014). Like many media theorists and contemporary philosophers, I see value in making claims and explanations compatible with or derived from scientific evidence, but try not to be overly deferential to positivism, since ultimately we're dealing with what it is like to *experience* VR artworks.

Methodologically, my approach varies by chapter. The present one has merely sketched the state of (theoretical) VR scholarship so to frame a problem. Chapter 2 appraises a taxonomy and a typology, supplementing and combining them to produce a revised typological tool that better reflects the empirical material. Chapter 3 mounts a re-reading of Ancient Greek poetics to justify the synthesis of structuralist and neoformalist frameworks for understanding representational processes in audiovisual media. Chapter 4 is a literature review that concludes with conceptual analyses and formal definitions. Chapter 5 employs introspection so to reframe the phenomenon and concept of attention, whose theorisation has been circumscribed by the 'reification-through-experimental-operationalisation' impulse of much lab-based science. Chapter 6 develops categories of player or participant experience in interactive media, proposing an alternative understanding of affect and emotion. Chapter 7 dips into action theory, concluding with a quasi-linguistic explication of the concept of patiency.

[7] I avoid relying too heavily on J. J. Gibson's brilliant ecological psychology, since although he doesn't declare himself a direct or 'naïve' realist (the preface to the Classic Edition of *The Ecological Approach to Visual Perception* (1979) makes this attribution on his behalf), he does clearly reject that perceptions are constructed from sense data. I take this apparent tension with constructivism to be unredressable in the current monograph, and so do not touch on the seemingly hazy topic of Gibson's ontology of mind.

Additional methodological considerations may not be immediately apparent to the reader. This investigation would be impoverished had I not spent the last few years consuming as much VR as possible. A partial list of what I've found noteworthy can be found in the thesis' **VRography** (approx. 160 works), which follows a standard bibliography. I do occasionally discuss VR games (e.g. *Half-Life: Alyx*; Valve 2020) despite having stated that they generally follow very different design patterns from VR experiences. My definition of VR experiences includes everything from scrappy student projects, via tech demos and experimental test scenes, to artworks by famous artists (e.g. Abramović 2018). I refer to one or two social VR worlds, but mostly focus on single-participant experiences. I do not much reference either 360° film or location-based experiences. The former is arguably not VR (see Qvortrup 2002; Slater and Sánchez-Vives 2016, §7.2) and the latter depart significantly from what's available to home consumers.

Finally, though it feels slightly out of place to mention this here, it would be odd *not* to note that I have myself created VR experiences. These are not discussed in-text and are not yet available online, but it is surely worth at least mentioning that I have hands-on experience crafting room-scale virtual environments.

1.5 Thesis Overview

This thesis is divided into two parts: **FORM** and **FUNCTION**. The first part, **FORM**, takes stock of what VR experiences *are*, what they aim to *do*, and what structures and processes they employ in doing it. Do they always situate participants *inside* a virtual world, affording influence over its events? Are participants meant to feel present in the capacity of their usual self, or some more or less well-defined character? Is it correct to assume that VR is 'nonnarrated' (Ryan 2015, Ch. 2, n.p.)? And, if so, is it necessary to maintain that mimesis is the medium's sole or essential representational mode? Chapters 2 and 3 address such questions in detail, proceeding as follows.

Chapter 2, **Participant Positioning**, identifies three theoretical dimensions that together describe a VR participant's relationship to a virtual world and its contents. These dimensions—Existence, Influence, and Identity—form a 'dynamic model' of participant positioning in VR, which furnishes us with foundational terms to talk about different approaches to VR experience design. The model is 'dynamic' insofar as it emphasises that participants update and modify their

understandings of VR works in and through time, as new information comes to light and as various formal–compositional devices and tendencies are emphasised or downplayed. For instance, in the interactive VR animation *Madrid Noir* (Castillo 2021), one moment you're positioned as a listener being told a story, the next you're *inside* that story, looking down the barrel of a gun: Participant positioning switches back and forth between internal and external; active and passive; 'self' and 'other' roles in a manner that isn't well captured by existing frameworks. Moreover, some VR artworks are deliberately vague about the nature of participants' relationship to the action. 'Who am I meant to be?'; 'Am I *meant to be here*?' Sometimes there's no way of telling. Chapter 2's model of participant positioning permits that this kind of intentional ambiguity or ambivalence is not treated as an aesthetic anomaly or oversight, but regarded as a common strategy for keeping the VR participant engaged.

Chapter 3, **Narrative and Narration**, starts with the observation that there are, broadly speaking, two types of VR experience: Those that behave like films, and those that don't. Works that embrace the former strategy divide their action into scenes, and may thereby effect complex, perhaps multi-threaded temporalities peppered with ellipses and changes of location. Instances of the latter category, meanwhile, generally take place 'in the here and now', and as such may abide by the classical unities. But it would be a mistake to think that just because a VR work exhibits something like unity of action, unity of time, and unity of place, it *must* be drama *must* be exemplary of the mimetic mode, which is often cast as incompatible with narrative works and theories. To assemble a toolkit that lets us probe both types of VR work, Chapter 3 takes us on a proto-narratological detour in a bid to get rid of an ontological elephant in the room. Revisiting Plato's *Republic* and Aristotle's *Poetics* through the lens of two recent re-readings (Halliwell 1987; Gaudreault 1987; 2009) shows that much contemporary narratology—couched as it is in the de facto authority of literary orthodoxy—is constricting in its assumption that a given theory must be *either* mimetic *or* diegetic.

To show how a theory of audiovisual representation can helpfully blend mimetic and diegetic elements, I combine David Bodwell's (1985) account of narration in the fiction film with André Gaudreault's (1987; 2009) treatment of 'monstration' (i.e., mimetic representation) in turn-of-the-century cinema, which long pre-dates the kind of formally complex screen story we're used to today. This lets us make a meaningful distinction between narrative and 'monstrative' activity by analogy to the film production process: If we imagine for a moment that VR is not

computer-generated, we can speak of everything that happens 'in front of the camera' in terms of *monstration* (virtual costuming, lighting, staging/blocking; mise-en-scène, etc.), and everything that happens on the figurative editing bench as indicative of *narration* (i.e., the manipulation of diegetic events so they're presented out of chronological order; flash-forwards and flashbacks, etc.). This hybrid perspective lets us acknowledge that while only some VR works choose to narrate, *all* VR works must monstrate objects, agents, or environments. Thus, even if a VR experience is bereft of the basic ingredients of *story* (agents and causally-linked occurrences unfolding in time) a virtual environment can still be said to immerse participants through monstrative activity; through things that simply seem to *be*.

So begins part two: **FUNCTION**. Chapters 4 through 7 explore the embodied cognitive and affective states that VR experiences seek to bring about. Like film and games, VR experiences are designed to elicit certain feelings and appraisals at certain points in time. These may be pleasurable in and of themselves, but also assist in the pickup of information and the performance of actions that are conducive to the participant's traversal of a designer's intended experiential arc. Chief among VR experiences' psychological functions are the creation and sustainment of presence and immersion, the direction and conditioning of sensory and mental attention, the causation and modulation of affective states or emotional episodes, and the engendering of a sense of agency and patiency.

Chapter 4, **Presence and Immersion**, delves into a debate that will already be familiar to some readers. In an attempt to bring both nuance and compromise to a topic fraught with the misapplication of terms and discussion at cross purposes, my original contribution is to put contrasting disciplinary perspectives on presence and immersion in dialogue. This is important because where VR—a preeminent presence-inducing technology—was once the preserve of scientists, technologists, engineers, and mathematicians belonging to uniformly positivist fields and disciplines, it is now a popular entertainment medium of interest to scholars of all stripes. I combine positivist perspectives on presence with humanist or interpretivist impressions of immersion to produce a meaningful distinction between the two concepts rooted in facts about the embodied mind. Spatial presence, I argue, can be specified as the subpersonal and pre-rational feeling of being physically located in a virtual environment that is rare in conventional film viewing or game playing, but practically guaranteed in headset-based VR. Where spatial presence is fast, automatic, and cannot be wished or willed away,

immersion is fragile, fleeting, and is never absolute. Immersion is not exclusive to simulated *spaces*, and can take hold when individuals become intensely absorbed in *tasks*, which may or may not constitute the emergent phenomenon of 'gameplay'. I suggest that immersion is not a discrete mental state, but rather epiphenomenal to a *lack* of attentional resources that might otherwise be directed towards critical evaluations of a virtual environment's perceived realism. Specifically, I posit that immersion is not typified by a categorical *absence* of media awareness (that is, the knowledge that 'this isn't really happening'; Hofer et al. 2020; Hartmann and Hofer 2021), but can emerge and persist when the VR participant is fully aware that their experience is 'artificial', yet appraises what they're perceiving and experiencing *in a favourable light*.

Chapter 5, **Attention and Attending**, refigures a thing we tend to think of as primarily perceptual to instead emphasise mentation and the influence of top-down cognition. The science of attention, realising the compartmentalising impulse of faculty psychology, construes our ability to attend to things as agnostic on matters of what the attended object *is*. I suggest that attention can be usefully articulated as shot through with diagnostic possibilities and processes (Seeley 2020), and that acts of attention—at least in and to media—means attending to things *in certain ways*. For instance, I can attend to a virtual human's face *as* a face or *as* an instance of real-time rendering. This kind of knowledge-suffused attending need not be relegated to the domains of perception or cognition. Attention or attending is, after all, prerequisite to almost all other aspects of our mental lives, and has been argued as the core of consciousness itself (Ganeri 2017; Watzl 2017). With reference to the work of early psychologists (Helmholtz 1867; 1875; James 1884; 1890; Wundt 1912), some 'peculiarly phenomenological' (Seligman 1976, p. 205) observations made by Wittgenstein (1953), and the properly phenomenological notion of pictorial intentionality (Husserl 2005; Zahavi 2018), I suggest that we don't just attend *to* things; we attend *to* things *as* certain things, with the influence of knowledge or insight being an utterly unignorable aspect of the thing we call attention. This allows me to argue in the following chapter that there are at least five discrete ways participants attend to VR experiences.

Chapter 6, **Affect and Emotion**, develops and extends scholarship on emotion in audiovisual media (Tan 1996; 2000; Perron 2005; 2013; Frome 2006b; 2006a; 2007). I refigure what researchers have dubbed media 'emotion categories' in terms of something more fundamental: Ways of attending, or 'frames of experience', which *may or may not* give rise to appraisals, affective reactions, and emotions

proper. I suggest that when participants attend to VR works in terms of the entities and events depicted, they attend in the **REPRESENTATION** frame. Participants can attend to exchanges of agency between themselves and some aspect of the VR environment (sometimes referred to as 'gameplay') which is indicative of attending in the **INTERACTION** frame. The **ARTEFACT** frame is defined by an awareness that the media presentation is indeed just that: A crafted artefact. The **SOCIAL** frame entails seeing through or past the medium to attend to a (human) social actor 'on the other side'. But the most important frame for VR—the **SELF** frame—captures what happens when participants momentarily yet overwhelmingly attend to a virtual entity or event *as if* it concerns or is addressing their actual, physical self. The **SELF** frame is active when, on some level and do some degree, we get nervous about virtual heights or other dangers; when we feel unsettled or excited by a virtual agent standing too close or shooting us a seductive glance; when objects or environments behave in uncanny, reality-defying ways. The **SELF** frame is indicative of presence and immersion insofar as it presupposes unconscious or subpersonal mistaken beliefs—'cognitive feeling[s]' (Schubert 2009)—about aspects of the virtual environment being *real*. The chapter concludes by proposing the conceptual act theory of emotion as an alternative ontology of emotion (cf. the general preference for appraisal theories; Frijda 1986 in Tan 1996; Perron 2005) that better accounts for the differences between the body-based affect one *feels* and the conceptual–linguistic emotion one *reports*, where the former may be subject to 'hedonic reversals' that recast negative feelings in light of positive gratifications in the context of media entertainment.

Chapter 7, **Agency and Patiency**, brings discussion full circle—back to the problems outlined in the present introductory chapter. I first describe three perspectives on agency in interactive media: Bodily agency, agency as game or simulation mechanics, and agency at the level of story or plot. I suggest that none is sufficient in isolation, and, furthermore, that two of the three perspectives are limited by the insistence that only 'meaningful' and 'satisfying' actions, or only actions that shape story's plot can qualify as agency (Murray 1997/2016a; Adams 2009). We cannot reserve 'agency' for actions that are deliberate or intended; that produce predictable outcomes; that have immediate, clear consequences which permit the participant to build a mental model of the underlying simulation (Mateas and Stern 2005; Wardrip-Fruin et al. 2009). This is untenable partly because it contravenes philosophy of action's standard conceptions of action or agency, and partly because this is not how agency functions in real life *or* the dramatic works cited by theorists like Laurel, Bates, Murray, Mateas, and Stern. More

important than the idea that agency must be considered inclusive of *accidental* actions, however, is that VR research has almost entirely ignored agency's inverse and conceptual counterpart: *Patiency*, or the feeling of being acted upon oneself. I exposit the concept of patiency and suggest in closing that the wealth of VR experiences available today demonstrates beyond doubt that one of the central pleasures of the medium—and, moreover, one of the most direct and elegant ways of scripting the participant in VR—is to make them feel subject to some psychic force that pushes and pulls them, as if on a tether, towards and away from virtual entities and (inter)actions.

In conclusion (Chapter 8), I reiterate that since it will surely be decades before VR experiences offer the kind of unconstrained agency envisioned by Murray's holodeck, the phenomenon of patiency may help economise VR environment design in the meantime. In the absence of infinitely procedurally generative virtual worlds, VR designers must guide the participant. Patiency, conceived as a force or a dynamic, is a tool with which to achieve this.

2 Participant Positioning

Break on through to the other side!

– The Doors (1967)

The aim of this thesis is to develop an account of how VR experiences guide participants to draw certain inferences and perform certain actions at certain points in time. This process of attention direction and affordance-signalling has been referred to as 'scripting the participant', and is ideally achieved without jeopardising the participant's sense of immersion[8] in and by events unfolding around them, or in and by the environment in which they find themself. An initial rule of thumb is to avoid including things that conspicuously betray the mediated nature of a VR experience.

For instance, it's thought that things like extradiegetic labels, floating windows or text boxes, icons, overlays, cursors, head-up displays (HUDs) and other traditional user interface elements should only be used to guide the participant as a last resort, since they signal artificiality (Murray 2016b).[9] In VR, the world *is* the interface (Bricken 1991; Stumbo and Wuetherick 2017), and while the participant may feel indomitably *present* in whatever virtual space they find themself, it's still generally preferable in narrative or otherwise artistic VR works not to constantly remind them that the environment in which they're located, the things they must attend to, and the actions they must perform have been purposefully pre-arranged.

[8] Immersion is formally defined in Chapter 5. For now, an intuitive or ordinary understanding of immersion suffices. If you consider yourself to ever have experienced immersion in audiovisual media, then you probably have a good enough grasp of what I'm talking about to follow along.

[9] Even if, say, a HUD is diegetically motivated by the fact that the participant embodies a cyborg super-spy who *does* have augmented vision, the case can still be made that visual clutter should be avoided in VR so to minimise perceptual–cognitive load.

Fig. 2.1: *Defector* (Twisted Pixel 2019), a spy-themed VR action–adventure game, offloads a few user interface (UI) elements onto the environment, but still clutters the player's visual field with a floating head-up display (HUD).

Put plainly, a sense of spatial self-location in a virtual environment is not synonymous with feeling immersed in and by the events unfolding there.

Participants positioned as part of a virtual world (who feel central rather than peripheral to the scenario) will have a different perceptual agenda and set of behavioural priorities from those who feel ignored by or external to a virtual world, perhaps relegated to the role of an invisible witness or incorporeal voyeur for whom the stakes are necessarily lower. We can therefore say that the question of guiding the participant hinges on how they are positioned by the artwork. Players or participants will need to be guided differently from viewers or spectators.

Developing an account of how VR experiences can variably position participants to produce a typological model consisting in three dimensions—**Existence**, **Influence**, and **Identity**—is the purpose of this chapter.

2.1 Basic Differences between Media

Even a cursory glance at the wealth and breadth of things called VR experiences (in short, the empirical material) reveals that possible participant relationships to

'the action' are as diverse as those afforded by film and games *combined*. By this I mean to evoke the truism that film spectators are seldom invited to imagine themselves as a part of the action via the visual perspective of a diegetic agent (for longer than the duration of a shot or scene, at least), and by definition cannot control the camera or affect on-screen events.

Digital games, meanwhile, often cast players in a lead role: The avatar controlled in distal screen-space from a third- or first-person perspective is usually a hero, protagonist, or other narrative agent whose primary purpose is to *act*. In these cases, the player is invited to identify agentially and motivationally—perhaps personally, even—with the on-screen figure (Vella 2015; Gregersen 2019). VR can be like either of these media or both, or like something else entirely.

While games are necessarily interactive (or, in Espen Aarseth's more precise terms, 'ergodic'; Aarseth 1997), they do not always give the player a diegetic locus of control. Many games endow the player with the role and powers of a near-omniscient agent, which is how we get the designation 'god games'. In these cases, players do not control just one on-screen figure, but rather delegate, distribute, and channel their virtual agency between, among, and through multiple diegetic entities. Yet despite their deific influence over aspects of it, players of god games may not feel much like a part of diegesis *themselves*. Hence where film stipulates that the spectator is 'not there' and cannot act, digital games can make the player feel 'there' (internal to diegesis) *or* 'not there' (an observer and possible manipulator of diegesis), and either way prescribe that they *must* act. While relatively rare, VR experiences can additionally offer participants the experience or role of being 'there', yet deliberately render them *unable* to act.

So, not only can VR position participants similarly to fiction films or the diverse class of media we call games, additional considerations arise from the medium's perceptual and experiential idiosyncrasies that will shape participants' perceived relationship to the action. The functional nature of these differences is detailed in Chapter 5 (**Presence and Immersion**), but an initial sketch is offered presently, as it bears on the topic of participant positioning. It goes without saying that VR systems produce phenomenal experiences that are markedly different from those afforded by conventional screen media: The question is, *how*? What's so different about perceptual–cognitive experience in VR, and how might this shape participant positioning and, by extension, strategies for guiding them?

By virtue of the stereoscopic virtual camera's binding to the precise position of the participant's eyes, wearers of 'room-scale' VR headsets are practically guaranteed to feel spatially present in virtual environments.[10] This seemingly inescapable fact of physiological optics and visuospatial cognition holds even when the participant actively doubts or disbelieves what's represented in and by a virtual environment. To put it in crude but illustrative terms, vision—which is easily deceived—trumps rationality.

VR reduplicates the sensorimotor basis of our everyday perceptual experience so convincingly that a sense of spatial presence (that is, an illusion similar to those caused by *trompe-l'œil* paintings, only infinitely more robust) driven by low-level spatial cues is, to all intents and purposes, insurmountable. It seems fair to say that sighted individuals experiencing spatial presence in VR *cannot help* but feel on some subpersonal, subdoxastic level of consciousness that they're physically present in the virtual scene—even in the face of an abundance of knowledge or beliefs to the contrary (Hartmann and Hofer 2021).

The 'feeling of being there' produced almost automatically by modern VR headsets is generally creatively advantageous: It provides a perceptual foundation upon which it *can* be easier (than in less sensorimotorically verisimilar or 'immersive' media) to scaffold a 'suspension of disbelief' or an 'active creation of belief' in the content of a narrative or non-narrative representation (Coleridge 1817 cf. Murray 2012b). However, the undesirable flipside of VR's ability to cause illusions of spatial presence by default is that participants who are *not* invited by an artwork's participant positioning to feel as if they are or should be 'there' in the capacity of a diegetic entity may experience dissonance. 'My sensorium is telling me that I'm *here*, but not a single character is acknowledging me, and I can't seem to touch stuff, either. What gives?' The issue of feeling alienated in and by the virtual environment in which one finds oneself is fairly unique to VR: It is not so salient in games, and even less so (if at all) in film. No moviegoer would complain of feeling personally ignored by a film's characters, or sidelined by its plot.

That VR piggybacks upon ordinary perceptual experience means it's easier for creators to intentionally *or unintentionally* position the participant as paradoxically 'there-but-not-there'. The 'there' refers to space; the 'not-there' refers to diegetic events or action. In some cases, this tension is totally consistent with

[10] This should be no more controversial than pointing out that playing back film at upwards of ~12 FPS causes us to perceive moving images as opposed to a series of static ones.

designers' intentions, and hence aesthetically desirable. Feeling like an invisible voyeur seems reasonable if the narrative scenario dictates that participants step into the shoes of a ghost who observes but cannot act. Feeling invisible and ignored is also fine if a VR experience's story involves revisiting a character's memories.[11]

Most of the time, however, having virtual characters ignore the VR participant feels like an oversight (Burdette 2015). It's permissible in the 'god games' mentioned previously because the joint specificities of medium and work do not make it feel as if one is 'internal' to the representation by default: Playing a PC or console game from a 'god's eye view' on a conventional screen display confers a sense of looking through a virtual window (Friedberg 2006). By contrast, VR systems produce the embodied sensation—the 'cognitive feeling' (Schubert 2009)—of having stepped through the screen, as if through a door, and into where the action is (Dourish 2001).

Fig. 2.2: Of the VR animation *Henry* (Lopez Dau 2016), Matt Burdette (2015), a former artist at Oculus Story Studio, notes that letting characters acknowledge the participant when they're not supposed to 'be' there and cannot virtually act may create an odd, paradoxical effect.

[11] In *Star Trek: The Next Generation*, the fictive holodeck features an 'objective mode' in which crew members can reconstruct and/or replay memories of past events without being noticed by the memory's inhabitants.

The way VR dovetails with perception can undergird a tension between the (sensori)motor agency presupposed by participants' embodiment of a roving viewpoint and the absence of any 'higher' forms of agency afforded by a work. That is to say, since VR environments are explored by naturalistically moving one's body and head, one tacitly expects to find that one's head can collide with virtual objects. If one discovers that one's head passes right through objects (and, moreover, that characters don't acknowledge your existence), an apparent contradiction emerges. The participant experiences agency over their own bodily movements, but this 'primitive' form of agency is non-redeemable in terms of affecting any aspect of the virtual environment: One finds that one has no agency above and beyond the kind used to survey a scene.[12] In some cases, this can feel highly distracting, drawing attention to the artificiality of the experience in a way that's antithetical to immersion.

With a sense of the problem in place, we can now ask: How to get a handle on all the different ways VR can position the participant? A typological tool will be beneficial, and thankfully we needn't fashion one from scratch. Theorists have made headway on the task, though mainly in relation to flat screen media ranging from text-based interactive fictions to 3D games. The following section outlines theoretical dimensions drawn from extant scholarship that require only minimal adaptation to get us two thirds of the way towards accounting for participant positioning in VR.

2.2 Dimensions One and Two: Existence and Influence

In *Avatars of Story* (Ryan 2006, Ch. 5; also *Narrative as Virtual Reality 2*; 2015, Ch. 7), narratologist Marie-Laure Ryan introduces some distinctions that serve as excellent points of departure. Her work, in turn, is inspired by the 'perspective' and 'user functions' properties of Espen Aarseth's 'general cybertext model' (Aarseth 1997, pp. 62–64), which charts differences between non-configurable (i.e.,

[12] The ability to move one's head freely in VR helps minimise discomfort or the risk of nausea, a.k.a. 'simulator sickness'. (See, e.g., Witmer and Singer 1998; Hill and Howarth 2000; Howarth and Hodder 2008; Jerald 2015; Buhler, Misztal, and Schild 2018.)

traditional or 'linear') and interactive or ergodic media.[13] Aarseth describes his model as typological and as capable of classifying works or texts, while Ryan calls hers taxonomic, and states that it lets us identify how different types of interactivity, so-called, interplay in a given digital narrative.

Ryan's 'taxonomy of interactive devices' may not sound like it taps the problem of participant positioning as outlined in the previous section, but it broadly does. It rests on two dichotomic distinctions—'internal versus external to the story-world, and ontological versus exploratory' (Ryan 2015, Ch. 7, n.p.)—which I momentarily propose to rename. She writes that the internal mode is typified by participants 'project[ing] themselves as members of the virtual world *by identifying with an avatar*' (Ryan 2006, p. 108 – my italics), while the external mode is evident when participants do not imagine themselves 'as a particular member of the story-world', or when they shape the events of the story world 'from a god-like perspective' (Ryan 2015, Ch. 7, n.p.). An orthogonal dimension comprises exploratory versus 'ontological' interactivity.

> 'In exploratory interactivity, the user looks at what exists in the story-world but has no creative power. Her involvement … has no lasting consequences. In the ontological variant, her actions … cause events that bring lasting changes. … These two dichotomies can be cross classified into four types of interactivity. … External–exploratory … External–ontological … Internal–ontological … [and] Internal–exploratory.'
>
> (Ryan 2015, Ch. 7, n.p.)

[13] 'Ergodic' is a term borrowed from mathematics, derived from the Greek words *ergon* and *hodos*, meaning 'work' and 'path'. For Aarseth, 'ergodic' describes any work or medium that demands 'extranoematic' or 'non-trivial effort' as a condition of its traversal (see Aarseth 1997, pp. 1, 94). Though Aarseth decries 'interactivity' (Aarseth 1997; 2021), I take his concept of ergodicity to do practically the same pragmatic work as the more colloquial term (see Frome 2019).

We can tabulate Ryan's account as a matrix to produce Tab. 2.1.

INTERACTIVITY		Exploratory	Ontological
INTERACTIVITY	External	External–Exploratory	External–Ontological
	Internal	Internal–Exploratory	Internal–Ontological

Tab. 2.1: Marie-Laure Ryan's bidimensional account of two different types of 'interactivity' (2006, Ch. 5; 2015, Ch. 7) tabulated as a matrix.

Ryan's model is suited to categorising digital games and hypertext fictions, but less so VR. Let's look at some examples. The perennially popular Sims series—described by its creator as like 'modern Montessori toys' (Wright quoted in Suellentrop 2007)—positions the player as if playing with dolls. On Ryan's view, *The Sims* (Maxis 2000) endows the player with an 'External–Ontological' positioning (Ryan 2006, p. 113–114): They are situated outside of the action similarly to 'god games' in that players are not *explicitly* invited to identify with—or assume the role of—a specific on-screen figure:[14] This fact is captured by the 'External' value. A player of *The Sims* can effect 'lasting changes' by building and decorating their Sims' homes, or even engineering situations that lead to the permanent loss of a Sim's virtual life. This is reflected in the designation 'Ontological'.

By contrast, Ryan's *Internal*–Ontological position is prescribed by games in which the player controls a (usually but not necessarily humanoid) figure whose job it is to enable the traversal and manipulation of an environment, with players negotiating puzzles, confrontations, and obstacles via their avatar's virtual agency.

[14] I am not suggesting that players of *The Sims* do not identify with a particular figure regardless.

Such games are often subsumable under the label 'adventure game', though Daniel Vella (2015) proposes 'figure game' as a more accurate designation that avoids making commitments as to genre. Either way, the vast majority of conventional screen-based digital games adopt an 'Internal–Ontological' approach to player positioning. From the many outings of Mario (Nintendo 1985–) and Zelda (Nintendo 1986–) to Grand Theft Auto titles (Rockstar 1997–) and instalments of the Metal Gear series (Konami 1987–), an 'Internal–Ontological' classification pertains when the player shapes aspects of the virtual world through action effected by means of a specific in-world proxy; a discernible, controllable avatar, who is usually also a character.

Ryan defines 'Internal–Exploratory' more loosely, leaving room for subjective assessment. She holds that this category is evident when players explore an environment and perhaps discover secrets, but do not perform actions that are integral to plot (Ryan 2006). She writes that players experience the story-world 'from the inside, … from [a] perspective that reflects the embodied point of view of one of its members', and may 'play tourist', perhaps inspecting objects but not leaving traces (Ryan 2015, Ch. 7, n.p.). A recent PC and console game that captures the essence of this category is *Return of the Obra Dinn* (Pope 2018): A murder mystery in which the player, in the role of a maritime investigator, uses a pocket watch-like device called the 'Memento Mortem' to replay the last living moments of the crew of an ill-fated trade ship, to deduce what fate befell those on-board. While Ryan notes that the 'Internal–Exploratory' mode is 'logically possible' despite being 'uncommon' in hypertext fiction and digital games, I momentarily show that an equivalent positioning is far from uncommon in VR, thus demanding disambiguation from the following, final category.

The 'External–Exploratory' mode, according to Ryan, is typical of 'the classical hypertext narratives of the 1990s, such as Michael Joyce's *afternoon*' (Ryan 2015, Ch. 7, n.p.). She writes that 'the user is external to both the time and space of the virtual world … and interactivity is limited to the freedom to chose [sic] routes through a textual space that has nothing to do with the physical space of a narrative setting' (Ryan 2006, pp. 106–107). It is true that works exemplary of an 'External–Exploratory' participant positioning often proceed independently of diegetic time, but precluding that they take place in the same space(s) as 'narrative setting' seems like an arbitrary ruling that creates more taxonomic problems than it solves.

For instance, the VR murder mystery *The Invisible Hours* (Tequila Works 2017) is almost identical in terms of participant positioning with the *Return of the Obra Dinn* as described two paragraphs previously. The works' major difference is that in *The Invisible Hours*, participants are given neither a diegetic *identity* nor a virtual–corporeal *existence*: They explore the same space that the characters inhabit, but remain unseen by the ensemble: The participant adopts neither the role of a diegetic 'ghost' nor that of a 'living' agent. One would therefore expect *The Invisible Hours* to be classifiable as 'External–Exploratory' per Ryan's scheme, since the participant is not internal diegesis and can only poke around. But her criteria seem to prevent this categorisation on the grounds that the participant is present in the same Victorian mansion in which the mystery unfolds.

Fig. 2.3: *The Invisible Hours* (Tequila Works 2017), a VR murder mystery, positions the participant as an extradiegetic witness or voyeur who can control time but not affect events.

Pace Ryan's excellent, forward-thinking analysis, her model's labels (its values and dimensions) can be simplified and clarified. The categories' lines can be redrawn to deal with some ambiguities and support the addition of a third theoretical dimension whose considerations are not covered by the first two. Ryan's axis of 'interactivity', housing the internal/external distinction, can be more lucidly labelled '**Existence**'. Her proposed orthogonal dimension (which, slightly confusingly, is also called 'interactivity') can instead be designated '**Influence**':

The values it houses—formerly 'exploratory' and 'ontological'—can be renamed 'passive' and 'active', respectively.[15]

The main reason 'interactivity' does not work well as a label for a theoretical dimension (let alone two) is that VR is in some sense *always* interactive. By definition, there is no such thing as a VR experience in which the participant cannot, in some rudimentary way, explore their immediate surroundings by moving their head. Hence in the context of VR, Ryan's 'exploratory interactivity' becomes hazy and explanatorily slight. 'Passive' and the corresponding value 'active' seem preferable insofar as they emphasise that participants in a VR experience like *The Invisible Hours* advance narration by manipulating (i.e., pausing, fast-forwarding, and rewinding) diegetic time *as well as* navigating virtual space to progress and apprehend the plot. *The Invisible Hours* can accordingly be described as 'active' in terms of advancing narration (but not altering the story), while VR works that do not invite any input whatsoever (but rather run uninterrupted, similarly to how films play back) are essentially 'passive'.

Another minor problem with Ryan's scheme is that where classification along one dimension—the one I call '**Influence**'—rests on facts about the work, classification along the other dimension—'**Existence**'—appeals *not* to facts about the work, but to players or participants' subjective perceptions or appraisals of the work. Whether a work is objectively interactive ('ergodic') or not is dependent upon its underlying computational processes and affordances (Bódi 2020). But on Ryan's view, the internal/external distinction is determined by whether a player or participant *imagines* themself to be a part of the virtual world; whether they identify with an avatar despite potentially not being invited to do so.

Therefore, where I previously suggested that Ryan's taxonomy can classify a game like *The Sims*, we might now wonder whether the determination can be quite so easily made. If some *Sims* players imagine themselves to be a specific

[15] A similar proposal has been made in a well-received blog post that advances a framework almost identical to Ryan's (Dolan and Parets 2015). The authors also propose an axis of '**Influence**' housing the values 'active' and 'passive', and likewise suggest a variable of '**Existence**'. However, they suggest that one's virtual '**Existence**' can be either 'observant' or 'participant'. For clarity's sake, I prefer to think of VR participants as being either 'internal' or 'external' to diegesis, as VR consumers can demonstrably *participate* in the unfolding of a story while naively assuming that they're mere *observers* of it (for instance when a simulation secretly gathers gaze data and uses it to trigger events unbeknownst to the participant—see Massie 2016; Pinkava and Oftedal 2018).

Sim, are we justified in saying that the game proffers an 'Internal' positioning? The answer is not particularly important. The point is rather that a model should appeal either to facts about an artwork *or* to subjective experiences of the work; not mix the two. This inconsistency means that Ryan's theoretical account does not fulfil the criteria of a taxonomy after all.[16]

A third issue—one that calls for the introduction of a third theoretical dimension pertaining to identity—is latent in Aarseth's general cybertext model. Ryan's idea that the dimension of **Influence** is determined by whether participants can make permanent changes to a virtual world appears to be—with due respect to both venerable authors—a literal mistake inherited from Aarseth. On page 63 of *Cybertext* (1997), where his model is first defined, Aarseth states that 'personal' and 'impersonal' are the values that define the variable of a user or reader's 'perspective' on the represented world of an ergodic text. But elsewhere (pp. 32, 65, 68–69, Table 3.1), the values 'permanent' and 'impermanent' appear constitutive of this property. This discrepancy, I've confirmed (personal communication, 17th June 2021), is in fact owed to the work of an over-zealous copy editor!

Ryan's emphasis on the dimension of **Existence** being determined by whether the player can effect 'lasting changes' suggests that she proceeds from the calculation that 'permanent' and 'impermanent'—not 'personal' and 'impersonal'—are the correct values for Aarseth's variable of 'perspective'. This is despite that his initial description stresses the necessity of stepping into the figurative shoes of an in-world entity (or not). 'If the text requires the user to play a … role as a character in the world described by the text', he writes, 'then the text's perspective is personal; if not, then it is impersonal' (Aarseth 1997, p. 63).

Regardless of what Aarseth meant prior to the offending miscorrection, we can observe that both his and Ryan's accounts threaten to fold the work of a prospective third dimension into the very same property that describes being positioned as internal or external to a virtual story-world. The dimension we cannot afford to lump in with others relates to one's virtual identity: We can designate it simply by capitalising the 'i'.

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[16] If we're being strict, taxonomies classify concrete empirical cases, using objectively observable features, into mutually exclusive categories. Typologies, meanwhile, employ theoretical constructs as or along their dimensions, and are purposefully more accommodating of classificatory overlap (see Doty and Glick 1994; K. B. Smith 2002).

A dimension of participant positioning called **Identity** can be argued as housing an indispensable self/other distinction.

2.3 Dimension Three: Identity

The first two dimensions of participant positioning, **Existence** and **Influence** (particularly the former), will be modulated by a participant's perceived **Identity** in VR. Ryan and Aarseth bundle **Identity** in with whether the player or participant is invited to feel that they *exist* in a represented world. But one's sense of **Identity** in VR is separable from the dimension of **Existence**, and is, in turn, itself shaped by two factors: First, an avatar's appearance (or lack thereof), and second, any personality traits that may or may not be authorially attached or inferentially attributed to an avatar–character.

The following subsections (2.3.1 through 2.3.4) go into some detail about how visible or invisible avatar bodies and more or less-well defined character traits can shape a participant's sense of **Identity** in VR.

2.3.1 Avatars as Tools, Possibilities

Rune Klevjer advances a functional view of avatars when he writes that '[a]n avatar is an instrument or mechanism that defines … [for] the participant a fictional body and mediates fictional agency; it is an embodied incarnation of the acting subject' (Klevjer 2006, p. 87). In a separate writing, he notes that 'we must make a distinction between "avatar" understood as a playable character (or persona), and "avatar" understood as a vehicle through which the player is given some kind of [virtually] embodied agency' (Klevjer 2012, p. 2). He follows up with the observation that, 'even if we do recognise … that avatars are primarily *tools*[,] …

this does not mean that *character* is unimportant' (Klevjer 2012, p. 4 – my italics), and proposes 'character'—not 'avatar'—to capture any personological aspects.[17]

I agree with Klevjer's view of avatars as tools, and second the utility of their conceptual separation from characters. Avatars in VR can be even more bereft of features than the 'blank slate' or 'empty vessel' figures that typify digital games' archetypal 'silent protagonist' types, and yet still serve their basic purpose as mediators of agency. That is to say, VR avatars can be not only silent, but also *invisible* and yet still afford participants a roving viewpoint and a means of acting. A voiceless, invisible 'entity' that does not perform actions independently of its pilot cannot, under most interpretations, be called a character (Blom 2020). But it can be argued as a lacuna into which a participant inserts or channels aspects of their will, and through which they may exercise virtual agency.

For our present purposes, then, a VR avatar can be defined as an egocentric locus of perception and/or control. This holds independently of how much or how little of an avatar's virtual body is visibly rendered, and indeed irrespective of how many of the user's body parts are motion-tracked by the system.

Klevjer's statement that the avatar figure 'defines for the participant a … body' (and not vice versa) holds in the context of conventional digital games, but not in VR. I suggest that it is instead the VR participant's subpersonal powers of proprioception or kinaesthesia—and those faculties' contribution to the maintenance of the body schema—that endows VR avatars (which, remember, are often invisible; Murphy 2017b) with a sense of illusory corporeality. A roving stereoscopic viewpoint almost 'automagically' instantiates a humanoid-shaped volume that participants do not so much *fill*, *control*, *occupy*, or *inhabit* as come to *constitute*

[17] An ontological aside: What Klevjer describes as 'fictional' (avatar bodies; avatar-mediated agency), I'd rather call 'virtual'. A virtual agent can *represent* a fictional character (e.g. Buffy the Vampire Slayer), but the virtual agent itself would not be fictional. Computationally simulated entities are both *real* and *actual*; just neither *physical* nor *material*, though they do of course have bases in physical processes. Moreover, objects of representation in VR—historical events and figures in particular—can be thoroughly *non*-fictional while also being represented virtually. (See Aarseth 2007b; Chalmers 2017; Silcox 2018; Juul 2019; Tavinor 2019 for contrasting perspectives on the ontological status of virtual and fictional entities and experiences.) The VR docudrama *The Book of Distance* (Okita 2020), for example, re-presents real events, depicting once-living humans who perished in Hiroshima's razing. The representation is virtual, but its objects (and, for that matter, its perceiving subject; *you*) are scarcely fictional. We can expediently call virtual representations of living or once-living humans 'characters', but certainly not 'fictional' ones.

through the unconscious operation of the body schema at the very moment the headset is donned. To explain this, it makes sense to take a brief detour into the similarities and differences between virtual embodiment in VR and in flat screen media.

2.3.1.1 Screen-Space Remappings of the Body Schema

Phenomenologist Shaun Gallagher (Gallagher 2005, p. 24) describes the body schema as 'a system of sensory–motor capacities that function without awareness or the necessity of perceptual monitoring'. It's how you know what position you're lying in just after you've woken up but before you open your eyes. Frédérique de Vignemont, Victor Pitron, and Adrian Alsmith note that the body schema 'is commonly defined as the [embodied cognitive] representation of a body *for action*', adding that its function 'is both descriptive and *coercive*': The body schema 'heavily constrains action planning, so that one normally cannot help but use it to guide one's bodily movements. In short, the body schema *makes you act in a certain way*' (de Vignemont, Pitron, and Alsmith 2021, pp. 3, 5–6 – my italics).

VR's egocentric perspective makes it easier than ever before to 'trick' the body schema into 'thinking' that an observed avatar body corresponds to one's actual, physical body. This phenomenon is by no means exclusive to VR, however, and can be achieved—as Klevjer suggests—to a lesser extent in conventional screen-based games. Cognitive media scholars Andreas Gregersen and Torben Grodal offer an account of how PC or console games re-map the player's body schema to an avatar capable of acting in the virtual world (Gregersen and Grodal 2008; also Gregersen 2008; 2019) even when viewed from a third-person perspective, which provides an explanatory link-point between screen-based media and VR. Their analysis hints at how VR represents the culmination of an 'immediate-immersion-through-[sensorimotor-]isomorphism strategy' in simulation or game design and 'interface aesthetics' (Gregersen and Grodal 2008, pp. 73, 78).

In a nutshell, Gregersen and Grodal explain how virtual embodiment is achieved by remapping or duplicating the player's body schema from their biological body (which may be tuned out of conscious awareness if one becomes involved or absorbed enough in play) and transposing it to a virtual body. In third-person games controlled via button-based gamepads, the isomorphism (that is, roughly,

the accuracy; the trueness-to-life) of mapping between players' efferent, 'primitive' bodily actions (P-actions; Davidson 1980) is abstract or arbitrary: Actuating one's thumb so to press a button or tilt a joystick bears little resemblance to physically swinging a tennis racket. In motion-controlled games like *Wii Sports* (Nintendo 2006), the motor coupling between P-actions and virtual actions is far tighter; more verisimilar. But the afferent or sensory side of the sensorimotor equation is still impoverished: In *Wii Sports*, I perceive my avatar's entire body in third-person; in distal screen-space (which I rarely do in real life), and have little control over the camera that dictates my visual experience.

First-person, flat screen games give control over the camera inasmuch as it *is* the avatar's eyes. If I can see my avatar's hands—and especially if the game developers have implemented 'head bob' that makes it appear as if I'm walking rather than gliding—I may find that I'm more quickly able to gain a sense of bodily presence in the game-world. But even though I'm seeing through my avatar's eyes in first-person games, my spatial reference frame is still said to be *allocentric*. That is, object-centred: I'm sitting across the room, and my avatar continues to be a tool in distal screen-space.

VR literally and figuratively closes this gap between perceiving subject and virtual world by offering an *egocentric* spatial reference frame and the first-person perspective it presupposes. Abstractions and translations like tilting a joystick to walk forward are no longer needed to change my visual viewpoint: I simply move my head as I would in real life. Hence even if I look down and see no visible avatar body, the fact that my sensorimotor experience is verisimilar—the coupling between my movements and my visual experience isomorphic—I can look away from the empty space where my torso should be and once again *feel* and *know* that my body is 'there' even though I can't see it: My body schema ensures that I do not lose track of it.

To round out this short digression, it is worth starting two things: A *visible* avatar body is not prerequisite to *feeling* embodied in VR, and—contrary to what some accounts suggest—looking down and *not* seeing a virtual body does not equate to, or result in, feelings of disembodiment (see, e.g., Balsamo 1996, pp. 124–125) or out-of-body experiences. We are highly ocularcentric creatures, but not to the extent that we take leave of our embodiment when not observing it.

2.3.2 Characters as Traits, Personalities

The felt quality of embodying an avatar in VR is different from screen-based games. The processes that underpin virtual embodiment in both contexts are similar if not identical, but medial differences shape the sensations produced by allo- and egocentric virtual embodiments. Medial differences are seemingly less relevant, however, in the context of character role-play: A more cerebral, conceptual activity than the cognitively low-level phenomenon of embodying an avatar.

As we turn our attention from the instantiation or inhabitation of 'bare-bones' avatar bodies to the fleshing-out of their personological characteristics, game phenomenologist Daniel Vella's concept of the ludic subject becomes useful in explaining how we bring a pared-down version of our 'selves' into the virtual world. I do not treat Vella's concept of ludic subjectivity with quite the same finesse with which he develops it, but take similar interest in 'the 'I' that exists as a subject in relation to the experiential world established by the [virtual environment]' (Vella 2015, p. 16 – sentence de-italicised).

Vella begins by distinguishing 'ludic subjectivity and ludic subject-positioning' from role-play per se (Vella 2015, p. 25). He notes that there are overlaps between the adoption of a specific character role and the creeping-in of ludic subjectivity 'insofar as the nature of ludic subjectivity is precisely that of the taking-on of a role' (Vella 2015, p. 25). But he stresses that unlike role-play proper, ludic subjectivity 'does not … require the *conscious* adoption of a[n] … attitude wherein the dramatic performance of a character takes precedence' (Vella 2015, p. 25 – my italics).

Like Vella, I am concerned with a much 'milder', less effortful kind of character adoption than role-play—particularly instances where players or participants have little-to-no say in whose shoes they're stepping into, with few or no options available for character customisation. To illustrate, let's outline some cursory classifications, offer a few examples, and provide an explanation as to how more or less explicit invitations are extended to VR participants to bring their own personality to an avatar-mediated encounter. *Or*, oppositely, to adopt and enact the traits of some pre-defined character.

2.3.2.1 Avatar–Character and Participant Identity

There are factors or features that will signal to a VR participant that their avatar possesses or *is* a separate identity from their real-world self. These include a name, a voice, an appearance, and a backstory (including trivia like age, gender, occupation, personality, etc.). Such sites of prospective similarity or difference produce fuzzy, overlapping approaches to avatar–character representation, in response to which participants' sense of **Identity**—their sense who they're meant to 'be'—will fluctuate in time and depending on the task or event at hand.

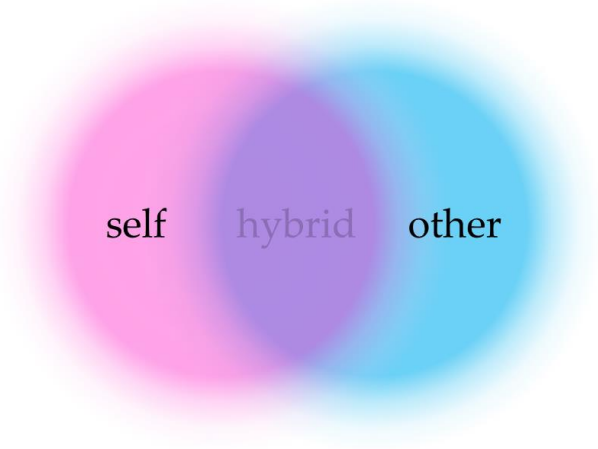

Fig. 2.4: A visual aid to illustrate VR participants' likely **Identity** categorisations. Not to be taken too literally.

An 'other' categorisation is likely when the figure as whom the participant is embodied has a specific name, voice, appearance, or backstory. Consider Alyx Vance from the landmark VR game, *Half-Life: Alyx* (Valve 2020). Obviously, Alyx has a name. She speaks in her own voice, which I hear inside my head while I play as her, enacting her pre-authored destiny. She has a countenance, although players who are not familiar with the series' previous instalments may not know what Alyx's face looks like until the very end of the game. Alyx is a human female with a rich backstory and set of personality traits (aged nineteen; born after an interdimensional war; member of the human Resistance movement; talented engineer; strong moral compass; selfless, empathic, etc.).

When I play *Half-Life: Alyx* embodied as Alyx, I may altogether 'forget' that I'm meant to *be* her while intensely absorbed in the game's numerous shoot-outs, scavenger hunts, or puzzles. But when the action subsides and the narrative demands that I act in the capacity of Alyx—say, when her father, Eli, hangs on for his life above a bottomless pit—I'm presented with an altogether more conscious decision as to whether I'll step up to the role (and reach out dramatically to grasp for Eli's hand) or act subversively, in the capacity of my 'offstage' persona, perhaps taking advantage of my VR system's finger tracking abilities to make a rude gesture at poor Eli instead of trying to save him. In such situations, the narrative dictates that *ideally,* I'll act in the capacity of Alyx Vance; a *specific* other **Identity**.

A 'hybrid' **Identity** is evident when some of the four factors (name, voice, appearance, backstory) are provided by an artwork's narrative context, but others are left blank. For example, in Baobab Studios' sci-fi comedy short, *Bonfire* (Darnell 2019), you become 'Colony Scout No. 817'. Colony Scout No. 817 is a non-specific (id)entity; an avatar–character that's left open to interpretation. They are ungendered, do not have an appearance, never speak out loud, and nothing is known about them other than that they have been sent to search for habitable extra-terrestrial worlds. Similarly, the Star Wars VR spin-off series *Vader Immortal* (Snow 2019a; 2019b; 2019c) casts participants in the role of an unnamed, ungendered space smuggler who likewise never audibly speaks. The smuggler, referred to only as 'Captain' or 'Corvax's descendent' has an ancestry that fits with the lore of the Star Wars universe, but is not burdened with the kind of precisely-specified backstory or personality traits that participants could reasonably object to having attributed to their avatar–character.

The final approach to avatar–character and participant **Identity** involves offering *no clues whatsoever* that might lead participants to infer that they're meant to be anyone *besides* their usual self. I tentatively call this a 'self' approach. Two VR examples are Christian Lemmerz' *La Apparizione* (2017) and Diana Schniedermeier and Maya Puig's choreographic spectacle, *Das Totale Tanz Theater* (2019). In the former, the participant does not so much enter a narrative world as step into an existential vacuum; a featureless void housing a lone figure: A towering, gilded Christ, floating as if fixed to an invisible cross, groaning and heaving unsettlingly. Who am I in relation to what I witness? I cannot be anyone but myself. I have no name, no voice, no hands—no virtual body at all. The situation offers nothing indicate that I am either John or any of the three Marys, or any other

Biblical figure. Who am I? I experience *La Apparizione* in the same mode of subjectivity I would inspect a sculpture in a museum or gallery: I am simply me.

Similarly, while *Das Totale Tanz Theater* features fantastically dressed dancers and a brutalist, silo-like environment that could, at a stretch, be taken as indicative of worldbuilding ambitions, the easiest inference to make is that the participant is not meant to 'be' anyone but their everyday self. Figuratively speaking, both *La Apparizione* and *Das Totale Tanz Theater* ask the participant, 'what if *you* were to witness *this*?', then proceed to answer the question.

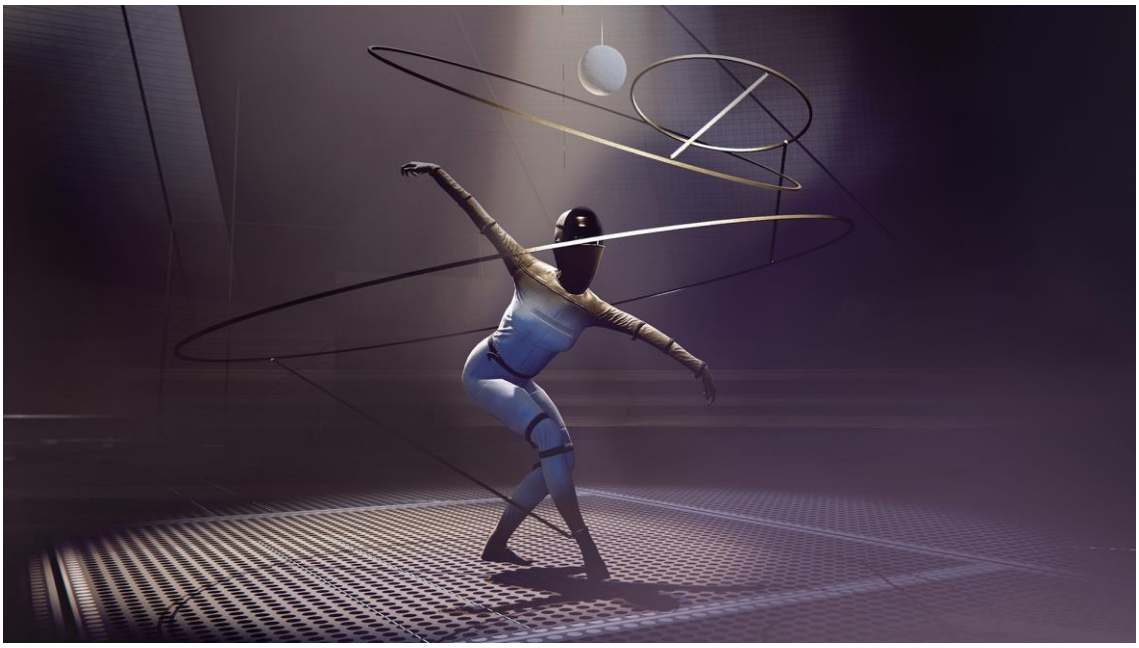

Fig. 2.5: The motion-captured dancers in *Das Totale Tanz Theater* (Schniedermeier and Puig 2019) showcase ornate, space-age costumes as participants watch the choreographic spectacle unfold.

2.3.3 The Proteus Effect

The Proteus effect captures that an individual's behaviour in a virtual world can be shaped by the perceived, projected, or inferred characteristics of their avatar–character (Yee 2007; Yee, Bailenson, and Ducheneaut 2009; also Fox, Bailenson, and Tricase 2013): It explains how and why we adopt or 'lean into' traits that we take to be indicative of a given avatar's character, and is highly applicable to the middling categorisation of the 'hybrid' approach to participant **Identity**, wherein a few stylised clues and cues are given, but specific details withheld. It explains, in other words, how *avatar modulates character*.

The Proteus effect captures that participants embodied as a cutesy avatar–character will likely be inclined to act more adorably than normal. Those embodying, say, an orc or an ogre may behave more brutishly than usual. The experimental design that led to the Proteus effect's coinage employed subtler variables than the preceding examples, however, finding that participants embodied as taller (human) avatars negotiated more aggressively in bargaining tasks both during and post-exposure. It's along these lines that the Proteus effect is hypothesised as having potentially pro-social, 'serious' applications. Is it possible that embodying privileged individuals as avatars representing minority groups might modify deep-seated attitudes, effecting lasting attitudinal and behavioural change? While it's too early to proclaim the Proteus effect as central to a paradigm for eliciting an authentic, empathic understanding of a less fortunate other's life,[18] a recent meta-analysis did find the Proteus effect to reliably exhibit small to medium effect sizes across almost fifty studies (Ratan et al. 2020).

The Proteus effect hinges on actual or presumptive knowledge about an avatar–character. Whether its underlying psychological mechanisms are explicable in terms of self-perception theory (Bem 1972; Aviles 2017) (which presupposes being able to *see* or *hear about* one's avatar–character, and extracting schematised inferences on that basis), or social priming[19] (which speaks to nonconscious, perhaps biased assumptions about stereotypes), the fact remains that the Proteus effect conditions the way we behave when embodying avatars as indicative of

[18] See, e.g., the contrasting findings of Groom, Bailenson, and Nass 2009; Aviles 2017 cf. Peck et al. 2013; Maister et al. 2015.

[19] E.g. Bargh, Chen, and Burrows 1996; Peña, Hancock, and Merola 2009; Yee and Bailenson 2009. Note replicability concerns regarding John Bargh's social priming studies; Schimmack 2019.

character(s). This holds for both conventional screen-based digital games and in VR, and applies especially when the embodied figure has accentuated or stylised features.

The best way VR designers can leverage the Proteus effect so to script the participant is to include a virtual mirror in which the participant may gaze at their new 'self', acclimatising to their virtual embodiment. This is standard fare in experimental procedures (e.g. Slater et al. 2019), and is employed to fairly engrossing effect in VR games or experiences like *Batman™: Arkham VR* (Rocksteady 2017) or *Wilson's Heart* (Twisted Pixel 2017). Of course, most people will already have a sense of what Batman is meant to be like. Perceiving oneself virtually embodying the caped crusader serves only to reinforce our disposition to role-play as him (or, failing that, to take paratelic pleasure in acting absurdly—say, by making Batman pick his nose).

Fig. 2.6: A player, embodied as the protagonist, looks in a virtual mirror in *Wilson's Heart* (Twisted Pixel 2017).

More interesting are cases where the avatar–character's traits are unknown to participants in advance, and suppositions as to how one 'should' act are formed on the basis of a feedback loop between initial inferences drawn according to the avatar–character's appearance and how it 'carries itself' (are its gestures graceful? does it walk awkwardly?), others' behaviours, and the likely-unconscious social mimicry or mirroring that follows (Dijksterhuis and Bargh 2001; Chartrand, Maddux, and Lakin 2005). It's fascinating, for instance, to enter a social VR world like

The Under Presents (Tender Claws 2019) and observe how its elegant 'time sprite' avatar design seems to encourage participants to act in accordance with the air of sophistication (and occasionally mischievousness!) so clearly befitting of the virtual–fictional world's delicate obsidian avatars.

2.3.4 Avatar–Character Plus Participant: A Hybrid (Id)entity

Vella notes that the prototypical avatar–character in digital games is 'both a manifestation of the player and also … a distinct individual, a character with its own attributes and characteristics' (Vella 2015, p. 238). I hope to have suggested as much, and echo Vella in underscoring how the observation that an avatar–character can be given 'the status of both 'self' and of 'other' is not new to this investigation' (that is, either his investigation or the present one; Vella 2015, p. 232). For Vella, we can roughly say that ludic subjectivity is the mode of phenomenal being-in-the-virtual-world that is equally enabled and constrained by the sum affordances and limitations of the game system and its represented world, beginning with the avatar–character's abilities and demeanour. On this view, 'the ludic subject must … be thought of as distinct from the player' (Vella 2015, p. 16). But by how much, or in what respects? Clearly, an avatar–character cannot traverse a virtual world without being embodied by a participant, and a participant cannot experience a virtual world without substantiating some minimal avatar.

Just as the VR participant breathes life into to the minimal avatar–characters indicative of the 'hybrid' or 'self' **Identity** categories, so too does an avatar–character's features colour the participant's behaviour in a reciprocal relationship of mutual co-constitution. The Proteus effect, as discussed, is empirical evidence of roughly how and to what extent this relation is bidirectional. Proteus, of course, is the Greek sea god from whose name we get the adjective 'protean', meaning mutable or fluid. Fluidity seems to be an inescapable feature of the dynamic played out between avatar–characters and their pilots: What Vella calls an 'in-between' quality of 'wavering between the two positions … "I" and "not-I" (Vella 2015, pp. 233–234) is captured by Kelly Boudreau as 'the concept of *hybrid-identity*[, which] does not reside in either the player or the avatar, but rather is a fluid, sometimes fleeting form of being that exists somewhere *between* the player and the avatar[–character]' (Boudreau 2012, pp. iii, 85–86 – italics original).

Vella concludes that the '*ludic subject* … is not myself … and not the playable figure in its own right, but, rather, me-as-the-figure' (Vella 2015, p. 234). I agree, and will concede that while my idealised poles of 'self' and 'other' seem to imply that remaining oneself or role-playing as another is an all-or-nothing affair, it is more realistic to admit that participant subjectivity is better conceived as somewhere in-between these two extremes at almost all times. The VR participant-as-avatar–character is a necessarily a hybrid (id)entity.

2.4 A Dynamic Model of Participant Positioning in VR

We have established three idealised spectra or continua—**Existence**, **Influence**, and **Identity**—that can be combined to form a typological model capable of describing how a participant feels positioned in relation to virtual–diegetic world and the action occurring therein at a given point in time. The qualifier 'dynamic' alludes to the fact that participants' inferences and appraisals as to how they are positioned will shift and evolve as an experience unfolds.

First, concerning **Existence**, we noted that VR participants can feel 'internal' to a represented world (in the sense of being a part of diegesis), paradoxically 'internal' yet 'external' (that is, somehow there-but-not-there), or decidedly 'external'. In the latter case, they *may* feel like an obtrusive presence; perhaps a voyeur, peeping in through a rip in the fabric of realities.

Regarding **Influence**, a participant may feel that they are steering events softly (e.g. modifying minor details), or determining them strongly (e.g. deciding a plot's climax). Separately, they may feel as if their actions—despite not affecting story per se—are what keeps narration moving along, as opposed to letting the simulation idle. When participants feel that their actions are *requisite* to a VR work's unfolding (no matter how cosmetically), we can say that their **Influence** is 'active'. When a VR work begins of its own accord and proceeds at a constant rate, participants will feel that their Influence is 'passive'; that their input is unnecessary. In some rare but theoretically interesting cases, participants may not be able to determine whether it's their input that's affecting events or driving narration at all, and so will not be able to commit to calling their **Influence** either active or passive. In such instances, the model permits that judgments waver or vacillate between active and passive; between participants feeling necessary and redundant in terms of the enaction or progression of the work.

Finally, participants can feel as if their **Existence** and **Influence** (or their lack of either) is had in the capacity of an **Identity** that is close to their actual 'self', or some more-or-less-well-specified 'other'.

Existence	**Influence**	**Identity**
(**Internal** | **External**)	(**Active** | **Passive**)	(**Self** | **Other**)

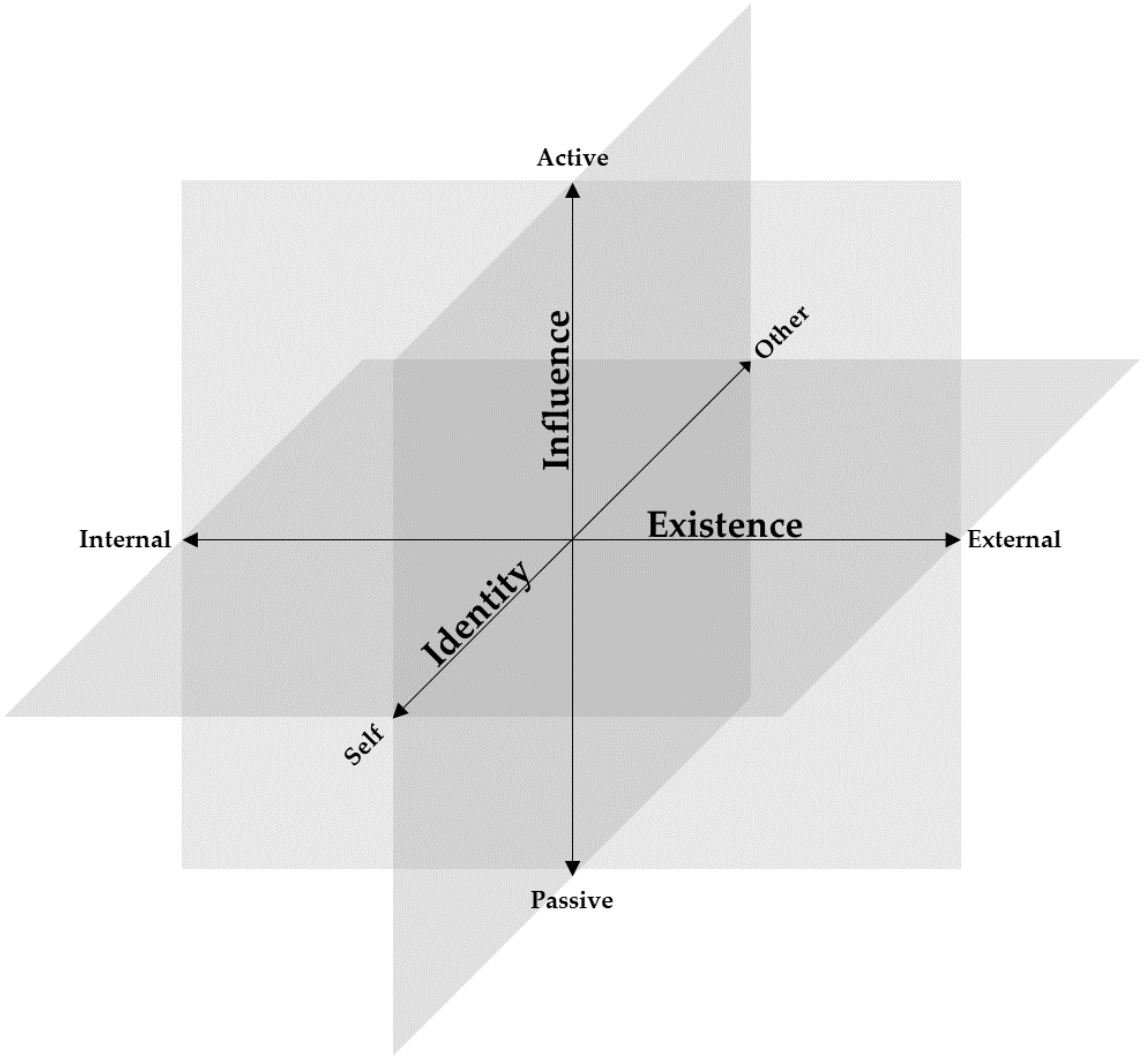

Fig. 2.7: A dynamic model of participant positioning in VR.

The model's three bipolar dimensions, intersecting at the centre of each axis, produce eight discrete quadrants.

- **External–Passive–Self**
- **Internal–Passive–Self**
- **External–Active–Self**
- **Internal–Active–Self**
- **External–Passive–Other**
- **Internal–Passive–Other**
- **External–Active–Other**
- **Internal–Active–Other**

This makes for the easy classification of VR experiences that are unambiguous about where participants are meant to *feel* (**Existence**), what they're able or meant to *do* (**Influence**), and who they're supposed to *be* (**Identity**) while engaging with the work. Classifications are not always clear-cut, but some straightforward examples follow.

Allumette (Chung 2016) can be considered an **External–Passive–Self** experience. The participant embodies a giant, invisible voyeur who witnesses a story unfold in a miniature town among the clouds. Participants are unlikely to feel that they themselves exist in the diegetic world: Their titanic scale serves to minimise the risk they'll imagine themselves living among the tiny characters, who appear unaware that they're being watched. Since *Allumette* is not an interactive work, participants will feel 'passive' in terms of **Influence**. If asked who they 'were' in the experience, most participants would be at a loss as to how to answer, since no character role is supplied, so would likely respond that they felt like their 'self'.

Fig. 2.8: *Allumette* (Chung 2016)—a voyeur's dream.

Gravidade (Rychter and Admoni 2020) invites the categorisation **External–Active–Self**. The work tells the story of two brothers who live unperturbed in a constant state of literal freefall. It is similar to *Allumette* along the dimensions of **Existence** and **Identity**, but features multiple endings wherein the participant must choose which of the brothers' fates they wish to see sealed. Since the participant must 'swim' through the air towards the brother whose narrative they want to witness being concluded, *Gravidade*'s narration demands deliberate, active input.

Fig. 2.9: Brothers Benedito and Osorio in *Gravidade* (or *Gravity*; Rychter and Admoni 2020).

As discussed, a VR artwork like *La Apparizione* is an **Internal–Passive–Self**-type of experience. It invites us into the realm of its (non-narrative) representation, demands little of the participant other than that they contemplate what is shown, and that they think and act *not* in the capacity of some other character, but rather their ordinary, unmediated self. *Das Totale Tanz Theater*, meanwhile, is **Internal–*Active*–Self** on the basis that there are one or two points at which the participant *must* navigate the space before the action will continue.

The Book of Distance (Okita 2020) likewise invites participants to engage in the capacity of their real-world selves, and is similarly an **Internal–Active–Self**-type experience. The VR docudrama's director, Randall Okita, appears as a narrator (a 'character' of sorts) who uses magical and mechanical scenography to stage a factual reminiscence of his grandfather's pre-WWII emigration from Japan to

Canada, and the terrible turmoil that followed. At several points, *The Book of Distance* will cease to proceed until the participant performs an action—say, handing over a passport at the Canadian border.

Fig. 2.10: Randall, director and narrator of the VR docudrama and biopic *The Book of Distance* (Okita 2020), hands the participant a passport.

Fig. 2.11: Randall (foreground, in shadow) sets up a camera with which the participant must snap a picture of Yonezo (Randall's grandfather; centre, blue *yukata*) and family.

Hyphen-Labs' *NeuroSpeculative AfroFeminism* (Baccus-Clark et al. 2017) projects a possible future in which memories are encoded and shared in high-tech salons at the edge of the universe. Visitors to Brooks' neurocosmetology lab sit facing a mirror, as if receiving beauty treatment, and see themselves virtually embodied as a young Black woman named Fatima. Fatima will rotate in her chair as the participant (who is also seated) moves their head. But since no participant input is required to advance narration in *NeuroSpeculative AfroFeminism*, the experience can be reasonably described as **Internal–Passive–Other**.

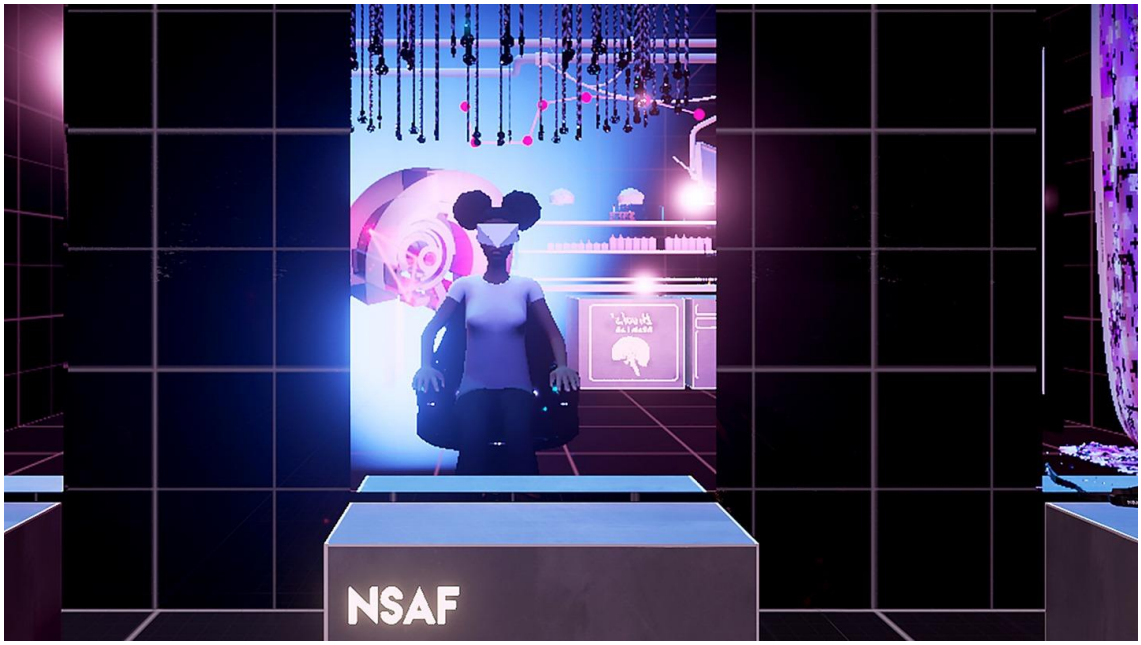

Fig. 2.12: The participant, embodied as Fatima, awaits a 'neurocosmetology' treatment in *NeuroSpeculative AfroFeminism* (Baccus-Clark et al. 2017). Image credit: Hyphen-Labs.

Internal–Active–Other works are perhaps the most common. As discussed, *Half-Life: Alyx*—though clearly an epic VR game as opposed to a short-but-sweet 'experience'—positions its player as a specific diegetic (id)entity who must act fast to survive the increasingly hostile environments in which she finds herself. Borderline examples of this classificatory category include the aforementioned *Bonfire* and *Vader Immortal*. Consider that where *Alyx* players would most likely report that 'I was Alyx', participants in *Bonfire* and *Vader Immortal* would be equally justified in saying, 'I was Scout 817'/'I was a space smuggler', or simply, 'I was *me*'. In this respect, works that that only minimally define their avatar–characters'

biographies and personalities (as informs participants' sense of **Identity**) straddle the line between being subjectively classifiable as **Self** and **Other**.

Fig. 2.13: Every *Star Wars* fan's dream? The participant, playing an unnamed space smuggler, crosses lightsabers with Darth Vader in *Vader Immortal – Episode III* (Snow 2019c).

Lastly, note that **External–Passive–Other** and **External–Active–Other** classifications are rare. It would be odd for a VR experience to designate the participant a *specific* identity (**Other**) only to forbid them from participating in the work. Still, there are borderline cases: *Minimum Mass* (Syed and Echevarria 2020) and *Mirror: The Signal* (Zandrowicz 2020) share a common conceit inasmuch as for the majority of both works' running times, participants will feel that the experience is **External–Passive–Self**: Neither scenario references the participant's possible diegetic existence until the very end.

(N.B.: The following paragraph contains major spoilers for both experiences.)

The big reveal made in the closing moments of both VR works is that 'you' were somehow *there* all along (i.e., internal to diegesis). In *Minimum Mass*, the participant is implied to be the protagonists' stillborn child, who witnesses the story of its parents' miscarriage from an omniscient, other-worldly viewpoint. In *Mirror:*

The Signal, the participant is revealed to be an invisible alien entity who has been observing a stranded astronaut all along. In both cases, participants will be struck by a sudden realisation as the narratives' other characters—who we previously assumed to exist on a different plane of reality or diegesis from us—suddenly establish eye contact, demanding that we reconsider whether we are or had been positioned as **Self** or **Other** (and indeed **Internal** or **External**).

The model of participant positioning presented in this chapter is a medium-specific typological tool that lets us talk clearly and succinctly about VR participants' relationship to the action. We'll know, moving forward, that VR experiences that offer their participants the sense of having an existence that is **Internal** to diegesis are more likely (but by no means guaranteed) to also afford an **Active** influence over events or narration. Similarly, we've learned that **Internal–Active** works do not necessarily have participants embody and role-play as some **Other** identity. Contrary to what is sometimes assumed in VR scholarship of the 1990s–2000s, VR is not synonymous with stepping into someone else's shoes. Delivering maximum narrative and emotional impact can in fact be contingent upon the participant becoming *personally* invested in the situation in which they find themself, which may be best achieved when they are *not* acting and engaging in the mindset of a fully or semi-fictional character, but rather their usual **Self**.

2.4.1 A Tantalising Caveat

One last thing to explain is why the model must be called 'dynamic'. The reason is the same as why it must be considered a typology and not a taxonomy; why it is only capable of categorising subjective assessments as to how participants *feel* positioned by a VR experience—*not* objective facts about the work itself.

There is a singularly innovative VR experience called *Piggy* (Pinkava and Oftedal 2018; Fig. 2.14) from Google's now-defunct production wing, Spotlight Stories. The first time I stepped into *Piggy*, I was ignorant as to what I was experiencing. I saw a porcine jogger trot around an almost empty white space, trying his best to resist the temptation to devour a chocolate cake. Piggy made eye contact with me, so I felt **Internal** to whatever minimalist world we both inhabited. I found that I had no visible body-parts from which I might infer my avatar's characteristics, and so would have said that I was observing Piggy in the capacity of my

usual **Self**, as opposed to having adopted a role. And I naïvely thought the experience was a **Passive** one. I assumed that since I had no virtual hands, and had not been given any kind of instruction or guidance, I must be watching a conventional, linear animation that proceeds per an inalterable timeline. I was wrong!

Piggy is, in fact, a finite state machine that surreptitiously captures participants' gaze data (as inferred from head position; Fig. 2.15), employing it to seamlessly trigger and transition between different animation clips (Fig. 2.16). *Piggy*, it transpires, is a very **Active** experience: The protagonist either will or will not do certain things depending on whether (or where) you're looking at certain key junctures. If you spy him trying to eat the cake, he'll pretend to polish its glass cover. If you notice his jogging slow to a halt, he'll guiltily start doing star jumps instead. What's pertinent about *Piggy* is not what he does or doesn't do, but how the participant can be led to incorrectly assume that they're *not* influencing his actions. You, too, could conceivably try *Piggy* and, like me, not realise you were 'doing' anything **Active** at all. This, I believe, is fairly unique.

Fig. 2.14: *Piggy* (Pinkava and Oftedal 2018). What the participant sees…

I am thinking of a highly likely near-future scenario in which VR headsets feature eye tracking technology as standard (which can detect spontaneous blink-rate—a marker of arousal—as well as saccades, fixation durations, and so on), and eventually all manner of other biometric data-capturing devices (e.g. heart-rate monitors, skin conductance sensors, electroencephalogram caps and other brain–

computer interfaces). Whether you're excited or repulsed by the prospect of companies having access to physiological data that in some sense betray your inner feelings, the fact is that when artists and storytellers employ such devices, it may no longer be possible to definitively say whether, how, or at what points a work is interactive or non-interactive; configurable or non-configurable; ergodic or non-ergodic. There may be instances of VR art and entertainment where, shy of data mining (that is, 'cracking open' the software and trawling its source code in search of secrets), we've no way of definitively knowing whether or when we're passive viewers or active participants, or if our actions are mechanically capable, 'under the hood', of effecting any outcomes.

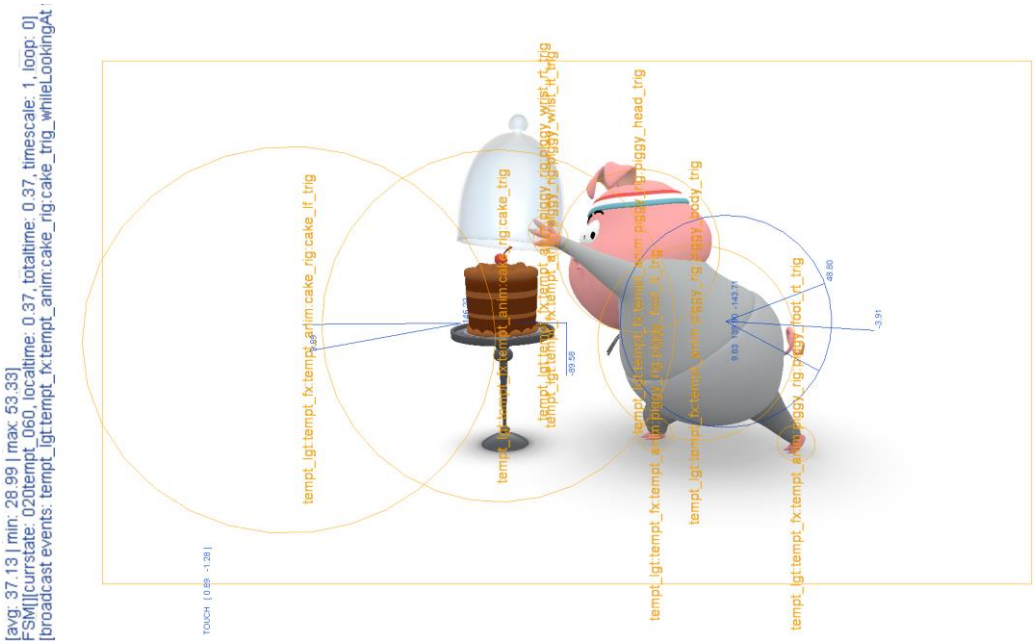

Fig. 2.15: …versus what the state machine or system 'sees'. 'It' knows where you're looking, but you might not know that you're affecting the action.

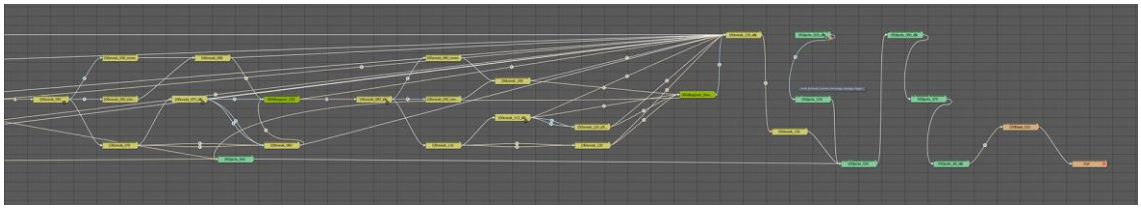

Fig. 2.16: A small portion of *Piggy*'s animation graph, or finite state machine architecture. Different clips are seamlessly spliced together based on where the participant looks.

Piggy speaks to a rare situation, but one that cannot be ignored in attempts at theory-building. The ambiguity its design epitomises is seen to a lesser extent in VR works' scenario-writing also, which often embrace postmodern aesthetics insofar as it's common to 'nest' diegeses *ad absurdum*. Where metalepses—transgressions of diegetic levels—were once a fairly peculiar device, they are now a frequent feature of mainstream narratives. One of the reasons the present chapter's model of participant positioning is typological and not taxonomic, categorising impressions or likelihoods as opposed to facts, is that it's sometimes hard to say 'where' in the stack of diegetic levels we *are* at a given moment, and therefore difficult if not impossible to say whether our existence is **Internal** or **External** to whichever level we take the story-world's 'base reality' to be. Other times, we're not in a virtual 'place' at all, but rather inside a character or unknown orator's thoughts, which can make it hard to say whether there's a 'diegesis' at all. Examples include virtual monologues, soliloquies, or apostrophes like *Dear Angelica* (Unseld 2017) and *2nd Monster* (Jungblut and Herrmann 2018).

The more conventionally narrative a VR work is, of course, the easier it is to say what kind of a participant positioning it is likely to produce. But many VR experiences are so ambiguous, ambivalent, or anarchic that a single taxonomic classification cannot possibly capture what the work or 'text' does (or is trying to do) for the duration. It's preferable, therefore, to stress that this is a *typological* tool—not a rigid taxonomy—designed to classify *perceptions* of a work (or discrete scenes or situations *within* a given work) synchronically.

The following chapter, as a continuation of this one, delves further into questions of narrative and non-narrative representation.

3 Narrative and Representation

> To say a thing that means something that isn't narrative… What is it? A holding pattern…?
>
> – Stephen Dillane in *Antigone* (2018)

Some VR experiences are expressly narrative, while others are narratively lean and equivocal. Some VR experiences reimagine mimetic devices (sculpture, diorama, tableau, soliloquy, vignette), while others effect representational strategies more closely resembling diegesis, perhaps casting the participant in the role of an **External** witness and expositing events to them through voiceover narration. Another way of summing up the variance is to say that it comes down to works whose temporality remains unbroken (the action unfolds without interruption) versus those that 'cut up' and rearrange events, truncating or stretching out their diegetic timelines; hopping between different locations, agents, and points of view, as postmodern novels or many contemporary movies do.

To continue to account for VR's formal aspects, the present chapter adapts a narrative model developed by film historian and theorist André Gaudreault (2009). Gaudreault notes how single-shot ('one-shot') *fin-de-siècle* films that resemble rudimentary stage plays or recorded vaudeville acts are a far cry from the classical and post-classical Hollywood movies of the sound era onwards, when film form increased in complexity thousandfold. In a nutshell, Gaudreault calls all that happens in front of the camera 'monstration', and everything storytelling-related that happens in post-production (i.e., assembly; editing) 'narration'. His distinction pertains to film, but adapting it to computer-generated media lets us better tap the different ways events can be represented in VR.

For thoroughness' sake (and to shine light on a lingering tension that's gone surprisingly under-addressed), Section 3.3 parallels Gaudreault in taking a historical detour through Ancient Greek proto-narratology in order to make mimesis (as

evidenced in his concept of monstration) and diegesis (as evidenced in audiovisual media by the work of formal system called 'narration') compatible again. Now; the reader might be thinking, 'but mimesis and diegesis were never *in*compatible! Both Plato and Aristotle expounded the 'mixed' mode to account for epic poetry, which blends the two!' And that would be partially correct.

Narratology does acknowledge that *works* can be 'mixed', and sometimes even that *media* can be 'mixed'. Mimesis and diegesis' younger cousins, 'showing' and 'telling' (Klauk and Köppe 2014), also get 'blended' in descriptions of individual works and media: Theorists and critics sometimes observe that instances of an inhomogeneous medium like digital games may alternately 'show' and 'tell'. But in terms of the ontologies that underpin various narratological theories, it seems we've forgotten, since either Diogenes Laërtius ([c. 11/12 A.D.] 1853) or Gérard Genette (1983; 1988), that an account of representation is not, in fact, obliged to fall neatly into either a mimetic or a diegetic classification. Here follow some comments that give a sense of how theorists appear unaware that mimesis and diegesis can be uncontroversially and indeed beneficially blended at the ontological (and not just the discursive) level.

Aarseth, who acknowledges the narratological authority of Genette (Aarseth 1997, pp. 94–95),[20] muses that '[p]erhaps we should recognize drama as a complex subtype of narrative' (Aarseth 1997, pp. 137–138). This recognition—as opposed to drama or mimesis being seen as somehow more 'pure' than narrative or diegesis—is precisely what our reconsideration of the Classics will yield. Reading Aristotle's treatment of representational modes in *Poetics* to be more in line with Plato's *Republic* means the mixed mode need not be seen as the 'impure', non-pedigree offspring of mimesis and diegesis. This will help us avoid making hasty 'either/or' classifications like those that Aarseth observes Brenda Laurel to make on the basis of interactive works' relative textuality or visuality.

Aarseth notes how Laurel determines the text-based adventure game *Zork* (Infocom 1980) to be 'narrated, not enacted' (Laurel 1986, p. 78) despite calling it an 'epic' and hinting that it 'incorporate[s] both narrat[ive] *and* dramatic devices' (Aarseth 1997, p. 137 – my italics). Oppositely, Laurel holds that the space combat game *Star Raiders* (Atari 1979) is solely or purely dramatic inasmuch as its first-person viewpoint means no narrational process can be present—it shows rather

[20] N.B.: Aarseth does not himself *follow* Genette.

than tells, apparently, since graphics are ostensibly only capable of *enacting*. Aarseth points out:

> 'Following [Laurel's] logic of interface dependency, a game of computer chess would be classified as dramatic if the user could position the pieces directly with a mouse or a joystick[,] and as epic if the user has to type commands such as "c2–c4." Of course, the difference between a visual and a textual representation or interface is aesthetically important, but it is not identical to the difference between drama and narrative.'
>
> (Aarseth 1997, p. 137)

Fig. 3.1: *Zork* (Infocom 1980) cf. *Star Raiders* (Atari 1979).

Film theorist David Bordwell similarly fails to acknowledge the 'mixed' mode as a valid point of theoretical departure. 'You can hold a mimetic theory of the novel if you believe the narrational methods of fiction to resemble those of drama, and you can hold a diegetic theory of painting if you posit visual spectacle to be analogous to linguistic transmission', he offers in terms of the possible false dichotomy (Bordwell 1985, p. 3). He puts Plato and Aristotle in dialogue, yet reifies the supposed incompatibility of the positions he takes them to stand for (Bordwell 1985, p. 16): Works exemplary of the 'mixed' mode are noted to exist, but hybrid mimetic–diegetic theories are nowhere to be seen.[21]

Rather than render mimesis and diegesis compatible, Bordwell's landmark book, *Narration in the Fiction Film* (1985), subjects the terminological minefield to a

[21] Save, perhaps, for a reference to Mikhail Bakhtin's ([1929] 1984) concept of 'polyphony', which I do not explore here, since it is ultimately an enunciative literary position.

controlled explosion by first setting up film as a fundamentally mimetic medium, then dealing with it exclusively using the language of diegesis (i.e., narrative/narration cf. action/enaction; plot/emplotment). Where conceptual purists would hold that it's technically a corruption to refer to 'the diegetic world' (Bordwell 1985, p. 89) of a film if one takes the medium to be fundamentally mimetic in that it 'take[s] as [its] model the act of vision' (Bordwell 1985, p. 4), Bordwell disregards orthodoxy by referring to everything a film can do to cue inferences or convey information as 'narration'.

Bordwell's cognitivist–structuralist approach to film narration is fine-grained and explanatorily powerful (see 'neoformalism'; Thompson 1988; also Bordwell, Thompson, and Smith 2016). Its downside is that even though (or perhaps *because*) it supports detailed observations about classical and post-classical film form, it is not as good at differentiating what happens *within* scenes from the relationships *between* scenes and segments. The terms he revives from Russian formalism, *fabula* and *syuzhet* (loosely corresponding to story and plot, or story and discourse; Forster 1927; Chatman 1978; Genette 1983), certainly let us make precise observations about how ellipses can be employed and information withheld or rationed out for maximum impact or intrigue. But Bordwell takes the type of unbroken 'dramatic' temporality that Gaudreault sees as ubiquitous in early cinema (or which I take to be commonplace in VR experiences) to be 'very rare' (Bordwell 1985, p. 81), and hence not worthy of its own vocabulary.

Therefore, we combine Bordwell's ideas about *narration* with Gaudreault's *monstration*. From Gaudreault, we keep the monstration/narration distinction but discard several personified theoretical entities. From Bordwell, we keep the neoformalist distinction between *fabula* and *syuzhet* (when talking about complex, perhaps multi-threaded temporalities) but ignore his insistence that it's 'narration' all the way down: We'll incorporate his ideas into Gaudreault's blended theory. The result will be a perspective befitting of VR experiences, which I argue as more often than not exemplary of the hitherto under-explored 'mixed' mode. This will be a 'narratology of expression' tailored towards the medium of VR specifically, which comes at the cost of being compatible with a universal or medium-agnostic 'narratology of content'.[22] For us, as for Gaudreault, '[*t*]*he principal concern … is the means of expression*' (Gaudreault 2009, p. 30 – my italics).

[22] The 'content/expression' distinction comes from Danish linguist Louis Hjelmslev (1953).

The chapter segues into the participant-psychological side of things (Chapter 4 onwards) by considering the 'minimal conditions' of narrative and how humans cognise narratively even when no plot or story structures are intended in a work.

3.1 Mimetic Monstration

Gaudreault observes that over the last twelve decades, film form has tended towards intricacy in ways that aren't well reflected in audiovisual media's narratological study. He premises that the kind of localised, unbroken temporality produced by single-shot or -scene films like the Lumière brothers' turn-of-the-century *actualités* or Georges Méliès' early shorts is practically incomparable with the kind of non-linear, multithreaded narratives we get from hopping between different places, times, and plot lines, as is now common in film and TV. He argues that prior to the expansion of the cinematic 'grammar' foretold by the introduction of even the most rudimentary editing techniques (i.e., cuts and dissolves used as transitions rather than for 'trick' photography), early film exemplified a narrative 'species' (Ricœur in Gaudreault 2009, p. xv) that is closer to '*staged* (or theatrical) narrative' than the more explicitly narrated 'textual narrative' of novels (Gaudreault 2009, p. 6 – italics original). Each shot, he notes, was once 'autonomous and *self-sufficient* (Gaudreault 2009, p. 12 – italics original). Nowadays, 'cinema as we know it', he tells us, is 'the result of a combination of two different "language systems"' working in concert.

Gaudreault develops the argument that modern narrative films (and potentially instances of other moving image media, too) are, by virtue of their construction, essentially *blended*. That is, *both mimetic and diegetic*, depending on the level of abstraction or analysis, and on the specific artistic device under consideration. For Gaudreault, modern films are the product of a complex and layered linking of diegetic narration with an earlier, more primitive kind of representation; mimetic monstration—the performance and recording of raw action. Monstration and narration are thus attributed to or emergent from different parts of the filmmaking process: Where narration comes later, in the *ordering* the material, monstration literally precedes narration, and is evident in the staging of a scene and the capturing of events on camera (and, after the introduction of synchronised sound, by microphone also).

He outlines how many pre-nickelodeon-era movies were indeed largely if not fully mimetic. Besides perhaps having a title card, early, short films like *The Arrival of a Train at La Ciotat Station* (Lumière and Lumière 1896), *The Man with the Rubber Head* (Méliès 1901), or the surviving version of *The Fairy of the Cabbages* (Guy-Blaché 1900) do not narrate—they *only* 'show', or monstrate. The difference between Gaudreault's mixed mode and the staunchly 'either/or' logic he looks to supplant, then, is that he is able to pinpoint and elaborate the relevance of technical, formal–compositional, and stylistic innovations that historically transformed movies from stage-like mimetic works into hybrid mimetic–diegetic media objects.

As with mimesis applied to staged drama, cinematic monstration is said to be limited to events occurring in 'the present'.[23] Narration comes later, with the *sequencing* of material. Monstrative 'rushes' of footage are trimmed and ordered; edited, arranged, and embellished. Soundtrack can be added or enhanced; sub- or intertitles or other captions can be inserted, and so on. The mechanisms and techniques constitutive of post-production—chief among them editing (taken as an umbrella term)—are what allow a film's monstrative material to be set out, structured, and sutured, with higher-order narrational meaning then becoming emergent from the *relation*s between shots, scenes, and acts as representative of diegetic time and events. The film overall embodies a 'superimposition'; a 'lamination' of micro-level mimetic monstration and macro-level diegetic narration (Stam, Burgoyne, and Flitterman-Lewis 1992, p. 117).

Before elaborating narration by introducing Bordwell's account of the interplay between *fabula* and *syuzhet*, and marrying his view of film form to Gaudreault's monstration, it makes sense to revisit the texts where mimesis, diegesis, and the mixed mode first appear. This move is also made by Gaudreault in *From Plato to Lumière: Narration and Monstration in Literature and Cinema* ([1988] 2009). The book—a translation and update of his doctoral thesis (orig. *Du littéraire au filmique: Système du récit*)—offers an illuminating re-reading of the relevant parts of *Republic* and *Poetics*. His main contestation (and indeed revelation) is that narrative is *not*, as Genette insists, 'the antithesis' of mimesis: Narrative is not to be 'contrasted with *imitation*' (Gaudreault 2009, p. 42 – italics original). Correcting

[23] As Tom Gunning notes (in Gaudreault 2009, p. xxiv), it is a mistake to suppose, however, that theatre cannot create different 'temporal levels' just because the dramas of antiquity tended not to. '[T]hink of the flashbacks in *Death of a Salesman*', he advises.

the mistake of mimesis and diegesis having been put in mutually exclusive opposition opens up the mixed or blended mode to theoretical tilling, vindicating Gaudreault's (and, separately, my) potentially tendentious call to treat a medium or craft as at once mimetic and diegetic.[24]

3.2 The Mixed Mode Reloaded

In contemporary narratology, 'showing' is more or less equated with mimesis, or drama, and 'telling' with diegesis, or narrative (e.g. Bordwell 1985, p. 3; Toolan 2001, p. 134, paraphrased in Klauk and Köppe 2014, ¶15). Many modern scholars take the terms to be polar opposites as far as representation is concerned, believing them to have been set up in opposition by Aristotle in *Poetics* (circa 335 B.C.) or even beforehand, by his teacher, Plato, in *Republic* (see, e.g., Rimmon-Kenan 1983/2002, Ch. 8). Even when the modes are not treated as antithetical, it's often neglected that they can function in synthesis. Few scholars acknowledge a less severe but equally plausible reading of *Poetics* per which the 'mixed' mode is not considered a less 'pure' type of diegesis, subordinate to narrative works like lyric poetry, but rather put on par with mimesis and diegesis from their very first recorded applications to the arts. According the three modes equal status and dispelling the apparent taboo of mixing and matching among them is what we're looking to achieve.

The Greek words mimesis and diegesis are first brought together by Plato in *Republic* Book 3 and later, briefly, Book 10, to outline different ways of presenting stories—particularly poetry. Classicist Stephen Halliwell tells us that contrary to 'standard modern usage', diegesis there denotes a superordinate category of 'narrative in the … generic sense of discourse': That is, the communication of any information 'keyed to a temporal framework (events "past, present, or future")'

[24] Where Gaudreault originally conducted his historiography using the Loeb Classical Library translations of *Republic* and *Poetics* (Plato 1930 trans. Paul Shorey; Aristotle 1927 trans. W. Hamilton Fyfe), I refer to Stephen Halliwell's (1987) more recent translation of and commentary on the latter, as well as an article in which the classicist puts the two texts' ideas about mimesis and diegesis in dialogue (Halliwell 2013). My decision to use different sources is in part informed by the logistics of accessing the texts, and in part by the idea that mine and Gaudreault's argument is stronger if corroborated by numerous and recent translations.

(Halliwell 2013, ¶1). This Platonic version of diegesis-as-umbrella concept is split at the level of style or presentation into a tripartite scheme comprising two distinct modes plus a third, hybrid kind, which are all put on equal footing. (Fig. 3.2 illustrates the following bullet points.)

- Narrative in the voice of the poet: 'Plain' or 'unmixed' diegesis (*haple diegesis*) (Halliwell 2013, ¶1), sometimes translated as 'simple' or 'pure' diegesis (e.g. Bordwell 1985, p. 16).
- Narrative 'by means of mimesis' (*diegesis dia mimeseos*): Presenting story via the voices and actions of characters, as in drama.
- Compound narrative (*diegesis di' amphoteron*): A hybrid form that blends the previous two types, as in epic poetry.

Fig. 3.2: A visual aid to show how Plato sets up representational modes in *Republic*.

Halliwell encourages us to note that the contrast drawn by Plato can be interpreted not so much as one between 'showing' and 'telling' (as in the commonplace 'if problematic' modern distinction; cf. Bordwell 1985; Laurel 1991/2013; Ryan 2001/2015; Klauk and Köppe 2014) as between two different types of 'telling': That is, 'telling in the voice of an authorial narrator *versus* telling in the voices of the agents' (Halliwell 2013, ¶5 – italics original). Indeed, 'telling', he remarks, is not a bad translation of diegesis.

Crucially, according to Plato, diegesis is manifest both when the poet (or, presumably, any other storyteller, artist, creator, orator, or performer) delivers

speech through or *as* a character *as well as* during sections between dialogue and/or action. This underscores the fundamental point that for Plato, 'mimesis is not opposed to, but is one type of, diegesis' (Halliwell 2013, ¶5)—a claim corroborated by Gaudreault's interpretation (2009, pp. 43–43).

We can go back even further in time to note diegesis' etymology prior to its introduction alongside mimesis in Plato's *Republic*. Diegesis is derived from the Greek verb *diegeisthai*, which, Halliwell explains, literally means 'to lead', or to 'guide through' (2013, ¶7). Others have drawn analogies between guided tours and stories of all types. Bordwell (2007, p. 98) comments on 'the experiential logic of understanding a film's narrative' as 'equivalent … [to a] tourist's guided path through a building'. And separately, drawing parallels between David Herman's (2002, p. 281) remarks about a passage of novelistic narration and 'VR systems', Ryan (2001, p. 73) states that '[Hemingway's second-person] tour [through Paris] offers a dynamic experience of space that contrasts with the static representation of the map [offered by third-person or 'god's-eye' narration]'.[25] By this rationale, one could argue that the **Internal** positioning afforded in and by certain VR works is indicative of *diegeisthai*, or a self-guided tour, which would call into question the assumption that VR is in no sense narrated (Ryan 2001, pp. 64–65), even if it does appear to represent primarily through mimesis or 'showing'.

Even art-forms conceived as mimetic in the strict Aristotelean sense arguably feature figurative tour guides. Regarding the role of choruses in Greek drama, for instance, Aristotle makes the passing claim that in the fifth century BC, Aeschylus introduced a second actor to the stage, then Sophocles a third (Aristotle trans. Sachs 2006, 1449a16–19; see also Aristotle trans. Kitto 1939, p. 22). Whether or not the expansion of dramas was quite as swift and clear-cut as Aristotle documents, we can be sure that the addition of more *dramatis personae* heralded a shift in the role or function of the chorus. Prior to Aeschylus, it was considered more a performer of song and dance in support of a separate, solitary actor (Aristotle trans. Kitto 1939, p. 27): Originally, the chorus was neither a character nor a narrator; more a spectacular element. Only later did it begin to make remarks about what's witnessed on-stage, occasionally partaking in the action itself.

[25] Herman's *Story Logic* is on record as having first been published in 2002, though Ryan's book, itself originally from 2001, references Herman's as having been released earlier that same year.

But whether we take choruses to represent in-world agencies (like the vengeful Furies playing prosecutor in *Eumenides*) or simply a vehicle for providing cantillated commentary on events, it is clear that even in mimetic drama; even when the play is made up of bodily and vocal acts of ostension, **someone or something must serve the purpose of a *guide*** reminiscent of the Greek verb *diegeisthai*. The point is that whether a work or medium be cast as 'purely' mimetic or 'purely' diegetic, there is a high degree of functional equivalence between characters and their actions guiding attention and shaping inferences (as in drama) on the one hand, and the formal and stylistic choices suggestive of narration-as-system serving the very same purpose (as in film narration) on the other. Ignoring the classificatory vicissitudes of mimesis and diegesis, we can say that the idea of *guidance* through stories or non-story-like representations is an inescapable one: Perhaps the putative boundary between mimesis and diegesis has always been thin and linguistically contingent, and maybe a strict 'showing'/'telling' distinction serves only to limit the conversation…

Moving from *Republic* to *Poetics*, we see Aristotle expound his own notion of mimesis, promoting it to the master concept of representational forms—a move that is consistent with the term's pre-existing Platonic usage as denoting representation, depiction, or expression across media (Halliwell 2013, ¶9–10).[26] Like Plato, Aristotle posits a distinction between 'third-person "narrative"' in the voice of the poet and a supposedly purer, action-based dramatic approach. However, Halliwell stresses that the qualifying criteria of the different modes falling under Aristotle's 'mimesis-as-hypernym' scheme is obfuscated by complex syntax and some corruption of the original text. One possible reading makes Aristotle's view basically the same as the foregoing Platonic scheme, albeit with mimesis—here denoting representation *in general*—serving as genus to three species; 'unbroken third-person', 'fully dramatic', and 'the mixed Homeric' modes (see Fig. 3.3).

[26] Following classical philologist Gerald Else, Bordwell points out that before *Poetics* and prior even to Plato's time, 'the original sphere of *mimêsis*—or rather of *mîmos* and *mimeisthai*—was the imitation of animate beings, animal and human, by the body and the voice (not necessarily the singing voice), rather than by artefacts such as statues or pictures' (Else 1958, p. 78 noted in Bordwell 1985, p. 4). Else describes Aristotle's mimesis as denoting 'more than a mere copying of nature' (Else 1958, p. 73).

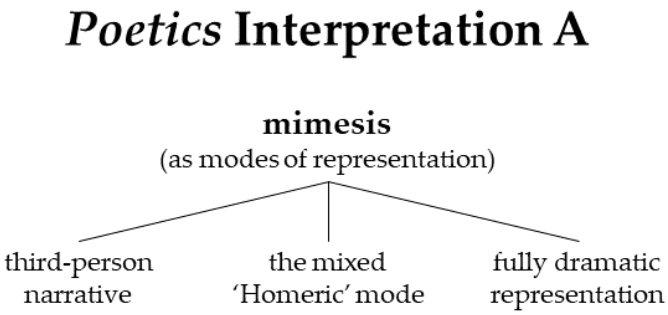

Fig. 3.3: One interpretation of how Aristotle sets up representational modes in *Poetics*. Note the strong similarities to Plato's view.

Alternatively, a two-tiered reading that further bifurcates 'narrative' at the second level is possible (see Fig. 3.4). Per this prevailing but likely mistaken reading (which we see as latent or explicit in the work of more contemporary scholars), 'fully dramatic representation' is, as usual, contrasted with 'third person narrative'. But the narrative level houses both continuous third person narrative *and* the mixed 'Homeric' mode: The hybrid mode involving both the voice of the poet *and* dramatic enactment is not placed on the same level as drama, but instead nestled *below* its correlate. This is likely what (mis)leads latter-day narratologists to treat the narrative and dramatic modes as mutually exclusive (Halliwell 2013, ¶11) and to treat the mixed mode as unworthy of attention. Genette, for instance, writes off tensions between narrative and dramatic representation are 'truly insurmountable' (Genette 1983, *passim*; 1988, p. 41). Gaudreault (2009, pp. 25, 172 n[28]) notes how Tzvetan Todorov asserts that 'the theatrical story is not *reported*, it unfolds before our eyes … ; there is no *narration*, the *narrative* is contained within the characters' lines' (Todorov 1966, p. 144 – Gaudreault's translation and emphases).

Halliwell tells us that it is quite far into *Poetics* before Aristotle even uses the word diegesis, tending instead to rely on the verb *apangellein*, which translates as 'to relate' or 'to report' (3.1448a19–24; Halliwell 2013, ¶11): It is not until Chapter 23 that he introduces diegesis, which confuses matters muchly. The Homeric epic—previously 'reported'—is suddenly cast as diegesis, and is thrice designated '*diegematic mimesis*' (Halliwell 2013, ¶12). Of Aristotle suddenly referring to third-person narrative as *non*-mimetic (contrary to earlier comments in Chapter 3 of *Poetics*), Halliwell notes that '[i]t is as though Aristotle were momentarily slipping back into the terminology of Plato' (Halliwell 2013, ¶12). It is thus possible

if not likely that Aristotle intended only to relabel—not to restructure—the non-hierarchical Platonic representational scheme (Fig. 3.2 cf. Fig. 3.3).

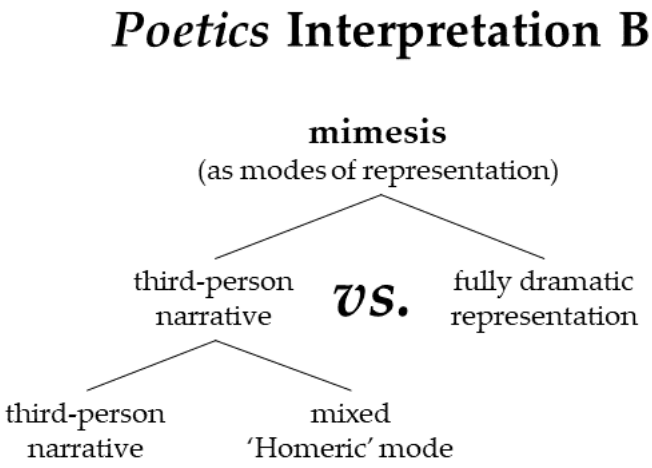

Fig. 3.4: The dominant—but quite possibly mistaken—interpretation of how Aristotle sets up representational modes in *Poetics*.

Concluding his indispensable reconsideration of the source material, Halliwell remarks that it is the difficulty of deciphering *Poetics* as consistent with Plato that makes it more attractive for entire lineages of Western scholars to accept the commonly-held belief that what Aristotle was in fact doing was 'decrying the tendency of epic poets other than Homer to include … self-referential remarks … [in] their poetry'. This interpretation, he observes, 'would leave intact the status of all epic narrative as, in Aristotle's terms, mimetic' (Halliwell 2013, ¶12), thus preserving the widely accepted (though unnuanced, unaccommodating, and probably incorrect) bipartite distinction between mimetic modes: Mimesis 'versus' diegesis; showing 'versus' telling. Never the twain shall meet, we've been led to believe. From Diogenes Laërtius ([c. 11/12 A.D.] 1853, pp. 113, 131) through to Genette, Todorov, and Shlomith Rimmon-Kenan (Rimmon-Kenan 1983/2002, Ch. 8), the mixed mode has been theoretically neglected: Frequently noted, but just as often glossed over—rarely given the attention it warrants *especially* in light of contemporary audiovisual media.

3.3 Narration as Diegetic Access, Patterning

Whether one subscribes to a non-hierarchical or a two-tiered interpretation of mimesis, diegesis, and the mixed mode, everyone agrees that a story's structure is not the same as the process(es) of its representation. Narrative is not narration, plot is not emplotment, the map is not the territory. Since VR experiences are not static representations like paintings (they necessarily unfold in real-world time, even if represented time stands still or loops infinitely), I see it fit to prioritise *process* over structure.[27] Before unpacking Bordwell's (1985) account of narration in film (and splicing it with Gaudreault's monstration), we can loosely follow him in characterising narration in audiovisual media as the attempted transmission of narratively-relevant information. Narration, like any approach to representation, is not a direct, guaranteed act of communion, but a 'noisy' process of signal pickup in which the viewer or participant can only be *prompted* to draw certain intended inferences. (Most of the time, of course, this is successful.)

3.3.1 Pro-, Ana-, and Metalepses

In unicursal, temporally inelastic media like film, a common means of mixing up narration so to generate intrigue is to employ *ellipses*. Ellipses come in three main flavours: *Prolepses* are omissions of in-world time, no matter how minor. Many cuts between shots (and most transitions between scenes) harbour miniature prolepses or flash-forwards. Prolepses can be used to elide the superfluous seconds of unremarkable action that occur when someone walks from one room to another, or, more significantly, can signal massive flash-forwards that may elide years, decades, or millennia of diegetic time.[28]

[27] Ryan notes that Meir Sternberg (e.g. 1990; 1992) is similarly 'unlike most scholars' in that he too 'conceives narrative in terms of the telling rather than in terms of the told' (Ryan 2015, Ch 4., n.p.).

[28] Note that I've reverted to using 'diegetic' in its slightly less technical sense, to indicate that which belongs to the fictional/depicted world versus that which comes from outside of it (e.g. the sound of *diegetic* birdsong versus *extradiegetic* sound effects like canned laughter).

Analepses are prolepses' opposite: They are flashbacks, and are hence fairly self-explanatory.[29] Analepses take us back in time, usually to before a narrative's primary plotline, and may first feature in the ancient Sanskrit epics *Rāmāyana* and *Mahābhārata*, which likely predate the Greeks by several centuries.

Metalepses, meanwhile, have not to do with time, but rather the transgression of boundaries between real and diegetic worlds, the latter of which can be nested, as in the 'dream within a dream' or 'false awakening' tropes (Genette 1983; Pier 2016a; 2016b). Fourth wall breaks are exemplary of metalepses, as are revelations that a VR participant is supposed to have been 'inside the story' all along, when they'd assumed they were **External** witnesses or non-participating observers. Some VR experiences feature metalepses whereby it's implied that you're *outside* the story yet *inside* your computer, having somehow 'broken' the simulation, suddenly able to see its inner workings.

Pro-, ana-, and metalepses are at once artistic and narrational devices in and of themselves. They also afford assembly into higher-order narrational tactics that can also be considered devices, like how we sometimes join a movie or TV show's plot *in medias res*.[30] This, of course, is when we start with a scene from the diegetic 'present day' (which by no means excludes '*in the not-too-distant future…*' or '*a long time ago, in a galaxy far, far away…*') then skip backwards and possibly forwards again in time to resolve an unanswered question or follow the cascading consequences of an earlier event.

To gain a sense of quite how commonplace ellipses are, consider *Citizen Kane* (Welles 1941). We start in 1941: An ailing Charles Foster Kane is holed up at his palatial estate, Xanadu. His dying word is 'Rosebud'. We then get an analepsis-esque montage of snippets from his life—a newsreel obituary, vocally narrated—that takes us through a cross-section of dates, mainly from the 1930s. Then, again in 1941, journalist Jerry Thompson is tasked with uncovering the meaning of Kane's final utterance. He pursues his initial leads, and narration soon takes us all the way back to 1871—the moment a young Charlie Kane, happily playing outside with his red sled, has his guardianship transferred to a wealthy banker.

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[29] The more colloquial term, 'flashback', can be read as tying an analeptic sequence to a specific character's memory. Flashbacks are frequently recollections, while analepses are not necessarily intended to connote remembrance.

[30] Obviously, I'm not claiming *in medias res*—or ellipses, for that matter—as exclusive to audio-visual media. The term features in Horace's *Ars Poetica*, circa 20–10 B.C. (see Brink 2011).

Whether you take *Citizen Kane*'s opening to quite qualify as *in medias res* storytelling or not, the film's first thirty minutes, hopping back and forth in time so to raise and partially answer questions, are exemplary of cinema's more-often-than-not complex temporality.

3.3.2 *Syuzhet* and *Fabula*

The concept(s) of ellipses capture the traversal or omission of diegetic time, but they have little to say about the nature of the relation between what we see on-screen and the wider story. To better get at the nature of film-like narration, we'll want at least two more terms in our toolkit. The Russian formalists furnish us with sufficiently fine-grained concepts—adopted by Bordwell and neoformalist Kristin Thompson (Thompson 1981; 1988)—with which to get at precisely what narration is doing in situations such as our *Citizen Kane* example.

Of the formalists' terms *syuzhet* and *fabula*—usually translated as roughly corresponding to plot and story, respectively—Thompson writes:

> '[T]he *syuzhet* is the structured set of all causal events as we see and hear them presented in the film … [S]ome events will be presented directly and others only mentioned … Our understanding of these syuzhet events often involves rearranging them mentally into chronological order. … This mental [re]construction of … causally linked material is the *fabula*. … For most films, we are able to construct the fabula without great difficulty.'
>
> (Thompson 1988: 38–39)

Similarly, in Bordwell's succinct phrasing, *syuzhet* is 'the patterning of the story as a blow-by-blow recounting of … [how the] film … render[s] it': The *fabula* is '[t]he imaginary construct we create, progressively and retroactively' from all that is shown and heard (Bordwell 1985, p. 49; see also 2007, p. 98).

To apply these terms to our simple example, each scene we see in the first thirty or so minutes of *Citizen Kane* can be thought of as a 'chunk' of *syuzhet* narration. Without exerting any effort, we sort them into chronological order and flesh out causal and temporal connections between them. By the end of the film, we've built up a mental model of everything significant that can be said to have happened in the semi-fictive world of Charlie Kane between 1871 (or before,

depending on the individual viewer's powers of extrapolation and inference) and 1941 or later. The fabula is the represented world's timeline 'as it happened'; the *syuzhet* is how its events are relayed to us in screen time and—importantly—as modulated by a third factor, *style*. Style can be loosely defined as filmic flourishes of cinematography, editing, mise-en-scène, and sound that subserve narration's quest for maximum narrative impact, intrigue, inferential specificity, or—sometimes oppositely—to produce aesthetic 'excess' (Bordwell 1985; 2007).

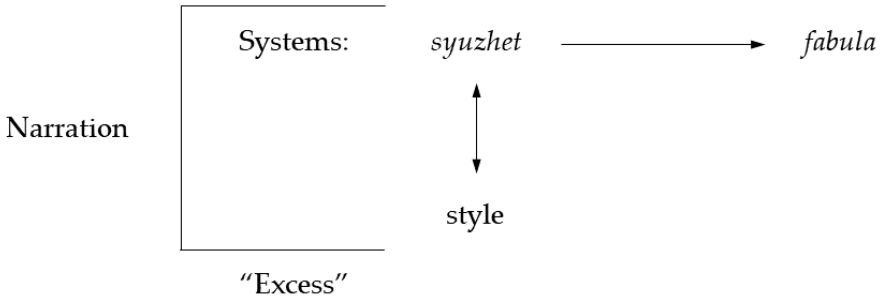

Fig. 3.5: Bordwell's film narration as *system(s)*-sans-personified-narrator. *Syuzhet* interacts with style, which, unfolding in time and space, jointly prompt *fabula* reconstruction in the mind of the spectator. (Reproduced from Bordwell 1985, p. 50.)

If *fabula* and *syuzhet* are sometimes considered synonymous with story and plot, why not use the more familiar terms? One reason is that story and plot's status as 'folk' narratological concepts (their usage in everyday language) makes it more likely that their meanings or connotations will mutate, accumulate, or fall by the wayside over time. Any differences in pragmatics may deepen as trends in popular narrative media ebb and evolve. 'Story', for instance, can contemporarily be argued as keeping viewers fairly focused on a character-centric thread. *Fabula*, meanwhile, can be read as additionally encompassing all fictional-historic background information like lore—an increasingly popular storytelling strategy in (esp. transmedial) intellectual properties that spread out 'horizontally', by means of worldbuilding, as opposed to predominantly proceeding 'forward' through diegetic time. 'Plot' typically stresses the motivational significance of events, as per E. M. Forster's famous assertion; '"[t]he king died and then the queen died," is a story. "The king died, and then the queen died *of grief*" is a plot' (Forster 1927/2002, p. 61 – my italics). By comparison, *syuzhet* can be interpreted as agnostic to the subjective force behind, or the emotional fallout of, diegetic happenings.

Alternately, why not adopt and distinguish between *histoire* (story) and *discours* (discourse), as do Gérard Genette (1969; 1983), Seymour Chatman (1978), and others writing around the time of structuralist narratology's 'classical' heyday of the 1960s–1980s (Meister 2014)? Bordwell's response is that discourse—developed and applied mainly in literary contexts—risks rolling the work of his cinema-specific *syuzhet*/style distinction into one. He points to analepses or flashbacks. 'Here', he writes (temporarily adopting the terms to be tested), '*story* events that occur early in the chain of events are … shown or told about later': It's thus that 'the discourse rearranges the story'. 'But', he continues, '*discourse* also implies … the texture of a spoken or written language, or perhaps, in film, a shot's composition or the nature of a cut'. Therefore, he concludes, '[the literary narratological concept of *d*]*iscourse* … bundles my concepts of syuzhet and style together' (Bordwell 2007, p. 98 – italics original).

Unlike many of his precursors and peers, Bordwell doesn't consign the work of film narration to the camera alone—or even primarily. 'In the fiction film', he writes, 'not only the camera position but the mise-en-scène, as it unfolds in time and space, is addressed to the spectator' (Bordwell 1985, p. 11), and picks up on others' mistake of 'privileging … camera work (and at a pinch, editing) over other film techniques' (Bordwell 1985, p. 20). For Bordwell, '*all* materials of cinema function *narrationally*—not only the camera but speech, gesture, written language, music, color, optical processes, lighting, costume, even offscreen space and offscreen sound' (1985, p. 20 – my italics). All four pillars of film style—mise-en-scène, cinematography, editing, and sound—are equally important to the content and composition of the shots, scenes, sequences, and acts that together produce *syuzhet* and ultimately scaffold *fabula*, which are together indicative of *form*: '[T]he overall patterning of a film, the ways its parts work together to create specific effects' (Bordwell et al. 2016, p. 3).

3.4 Monstration and Narration in VR

With due respect to Bordwell, we get more purchase on what VR is doing when it represents objects, agents, actions, events, and environments *directly* if we insist that not everything need be called 'narration'. Many VR artworks have identical *fabula* and *syuzhet* timelines, after all. The task of the next few paragraphs is to dislocate both Gaudreault's monstration and Bordwell's formal patterning or

higher-order narration from specific aspects of the material filmmaking process in order to translate the terms to VR and offer examples.

First, we can say that the virtual *equivalents* of acting (motion capture and voice performances; 3D character animation, etc.), staging (a.k.a. blocking), costuming, lighting, and scenography (set design)—mise-en-scène in general—all fall under the remit of monstration. Sound that is intended to be taken as diegetic (i.e., originating from within the represented world) is likewise monstrative.

Second, we can stipulate that anything indicative of a VR experience's *syuzhet* not being identical with its implied or intended *fabula* points towards some system and process of narration. When temporal ellipses are employed (i.e., pro- or analepses), scene changes or something resembling 'edits' almost necessarily accompany them. Instantaneous (cf. gradual or iterative) scene changes as well as any kind of forced participant motion meant to resemble cinematic camera movements must also be taken as indicative of narrative or narrational activity. Audio that is intended to be taken as non- or extradiegetic (e.g. background music) is also indicative of narration rather than monstration insofar as it's designed to *embellish* a scene or an action, perhaps massaging how the participant apprehends the events occurring at that moment by modifying the tone or feel of the scene.

It's thus conceivable that a VR experience represents through monstration but without much (or any) narration, but impossible that a VR experience is recounted through narration without ever employing any monstration. Some brief examples will help clarify.

La Apparizione can be argued as purely monstrative. You don the headset and immediately find yourself in the presence of a giant, gilded Christ, floating almost motionless in a crucifix pose. He does little other than heave and groan. It is, in essence, a virtual sculpture. The figure neither enters nor exits the scene: It simply *is*. The work is of no fixed duration (it loops endlessly), takes place amid a featureless black plane, and contains no voiceover narration or expository text. Since *La Apparizione* is a room-scale experience, there are thankfully no attempts at imitating the kind of cinematic camerawork that so many VR creators with a background in filmmaking assume to has a place in headset-based media. That the work contains nothing resembling 'editing' means no narration is present.

Fig. 3.6: *La Apparizione* (Lemmerz 2017). Courtesy of the artist and Khora Contemporary.

Havfolket Kalder Mørknet Vand (a.k.a. *Hush*; Bryld 2020) is similar to *La Apparizione*, save for the fact that participant's virtual location changes at a pre-set moment in the work's twelve-minute running time, which is indicative of a pinch of narration in among the monstration. You begin on a beach at night-time: That you're the only one 'there' means it does indeed feel as if you're meant to *be* there, positioned as **Internal**. Boathouses in the middle distance are suggestive of northern Denmark. Livestock mill around on the dunes. Gulls fly past. No other agents or characters are seen. All is calm, tranquil. The scene fades to black. When our vision returns, we're underwater, flanked by tendrils of kelp. Who put us there? Not some personified agency like literary narratology's 'implied narrator', but rather the VR director herself. Here, narration-as-formal-system is evident in the termination of one virtual scene and the instantiation of another. There are shadows among the seaweed. Are they *people*? Everything that's literally perceptible in *Hush* comes courtesy of monstration; that the participant's location is changed on cue and without their permission is evidence of narration. Narration controls our spatiotemporal access to *Hush*'s darkly fantastical world, while monstration dictates how it appears to us immediately and sensorially.

Gravidade or *Gravity* tells its story of two brothers primarily through narration. Neither brother has his own voice, so a baritone 'voice of God' describes what's happening for the participant. Here, the normal order of things is reversed: The

monstrative visual element may well be the main attraction, but it does not speak for itself. An extradiegetic orator must recount events for us, and while we also visually witness whatever's being described—starting with snapshots from the brothers' shared past—narration nevertheless presides. Key *syuzhet* events are told about and shown with continuous extradiegetic music (ranging from upbeat to ominous) complimenting the narrator's intonation to hint at how we're meant to apprehend the monstrative content. Further, *Gravity* contains a rare instance of narrative (as opposed to monstrative) agency or 'interactivity'. Just prior to the start of the last act, the participant is prompted to choose which of the two brothers' fates they'd like to witness. They must float towards either Osorio or Benedito, and since the participant's decision does not affect the events diegetic world but rather *only their access to it*, we must consider this navigational act an instance of narrative—not monstrative—agency.

Madrid Noir (Castillo 2021) mixes monstration and narration in explicit and playful—yet also traditional—ways. We begin in 'the present day' (in fact the 1940s): The participant is visiting their acquaintance, Lola, who is cleaning out the now-vacant apartment of her missing uncle, Manolo—an enigmatic figure. Lola first monologues about the past, then transports us there, to 1935, while her diegetic voiceover continues to exposit how she first arrived in Madrid as a child. The analeptic action plays out amid magically transforming partial sets reminiscent of stage plays: When the walls and furniture suggestive of an interior environment suddenly fold up, slide off, or appear to be winched up towards the rafters to make way for an outdoor scene, we can say that narration is at play. Not only is Lola's retrospectively expository voiceover evidence of narration, then; the designer and director's decision to dislocate *fabula* from *syuzhet* and to have participants reassemble the story-world's events gradually and inferentially—the strategy of classical film form—is what qualifies the work as tending towards diegetic representation. *Madrid Noir* is obviously not, however, without monstration. Sometimes the participant must even act out monstrative moments themself. The work occasionally repositions the participant not spatially but diegetically, without warning, from their comfortable semi-**External** position as witnesses to Lola's story to an **Internal** agent in her verbally narrated flashbacks.

Fig. 3.7: A substantial flashback sequence from *Madrid Noir* (Castillo 2021), which ebulliently employs stage play-like scenographic elements and 'live' set transitions.

It is tempting to try to identify each and every formal–compositional element evident across the range of things called VR experiences, and to sort them all into buckets labelled monstration and narration. But this would be a mistake (not to mention an endless task), raising more questions than it answers. Tom Gunning notes the problems created by Gaudreault's insistence that monstration falls under the purview of cinematic optics and that narration is the remit of editing, since 'camera movement can indeed create the sort of relations … ascribe[d] to editing' (Gunning in Gaudreault 2009, p. xxiv; see also Seeley and Carroll 2014). It may be better to remain slightly agnostic on what qualifies a given expressive device as either monstrative or narrational, since we've no way of knowing (A) how VR experiences' form and style will evolve in the coming years and decades, and (B) if VR's production processes will even remain comparable to what they are today. Our judgments as to whether a given device is indicative of monstration or narration *or both* must be made on a case-by-case basis and, crucially, without reference to the material processes underlying virtual objects' instantiation and rendering to displays.

Overall, while it would be wrong to say that narration *is* the telling and monstration *is* the told (monstration is a *means* of representation; not the represented), it seems reasonable and even helpfully reductive to say that monstration has *higher*

bandwidth connection to 'the told' than does narration. Narration generally colours events *as* it relates them: Monstration strives to show things 'objectively'. Narration functions at the macro- and meso-levels, giving works their form in terms of superordinate structures like temporal ordering, or middling ones like the emphasis brought to bear on certain actions or utterances by devices like windowed 'close-ups' or overlaid illustrations and text. Monstration, meanwhile, conveys mainly events, functioning mostly at the micro-level, and making only inevitable incursions into the territory of style.

3.4.1 Resolving Theoretical Tensions

The last thing to address before we move on to considering narrative cognition is tangential to practical matters, but is a tension that will concern the theoretically-minded. Bordwell's view of narration is not compatible 'out of the box' with Gaudreault's view of monstration and narration. To make them gel, we'll need to dispense with some personified theoretical entities.

A key part of Bordwell's argument that I have not yet unpacked is ontological: He is committed to killing the implied cinematic narrator—a theoretical agent supposed by 'invisible witness' accounts of film narration to mediate between flesh-and-blood filmmakers and an *implied* spectator before a real audience member is reached (see Curran 2019). Bordwell explicitly rejects such accounts, as they are premised on literary narratology's 'communication model of classical narrative' (Aarseth 1997, p. 93) per which the transmission of meaning from creator to recipient is a drawn-out one mediated by all manner of arguably superfluous figures.

Traditionally, the literary exchange minimally posits an author, a narrator, a narratee, and a reader, totalling four entities: Two actual, two imaginary. A more tortured version of this view—one that Ryan (2006, p. 97) cites Aarseth as outlining (1997, p. 93; although he only identifies four)—supposes *six* figures are involved: An actual author, an implied author, a narrator, a narratee, an implied reader, and a real reader. Now we have a veritable *ensemble* of imaginary figures doing all kinds of communicative work for us, and only two real ones! Ought not we dispense with the phantoms? Bordwell thinks so. After all, as Ryan notes (alluding to a mutually exclusive view of diegesis and mimesis); '[t]he

communicative model of classical narratology [assumed by Genette, Gaudreault, and others] does not work for the mimetic mode of film and theater, and one should not expect it to describe narrative modes even more removed from the standard case than dramatic enactment' (Ryan 2006, pp. 97, 237 n[1]).

It's on similar bases that Bordwell pursues his account of film narration unencumbered by the conceptual baggage of literary narratology's enunciative theories, which laboriously liken audiovisual representations to illocutionary acts. He proclaims in *Poetics of Cinema* that '[c]ommunicative logic can go hang; all that narration cares about is cueing us to make the right inferences' (Bordwell 2007, p. 99).[31] With this sentiment, he rejects the notion of *the* or *a* narrator in the capacity of a theoretical entity, holding that even when voiceover narration is heard in film, the voice—even if we designate it *a* narrator—is only ever indicative of narration-as-*system*, which is deployed by an *actual* filmmaker to help *actual* spectators reconstitute the meaning of the work. I believe this is how VR creators should see their craft. The relationship between experience designer and participant needn't be mediated by imaginary literary constructs. You can include an omniscient voice without raising questions as to how an implied narrator differs or departs from the flesh-and-blood VR designer's authorial identity. You can include a 3D model resembling yourself (as Randall Okita does in *The Book of Distance*) without inviting speculation and debate as to whether it's the 'real' you.

Where Bordwell applies the scholastic interpretation of Occam's razor (which states that '[theoretical e]ntities should not be multiplied without necessity'; see Barry 2014) to film narratives' underlying ontology, Gaudreault goes in the opposite direction, inviting yet more theoretical entities to the already-crowded party. Where Bordwell argues that narration is a system, Gaudreault personifies both narration *and* monstration, but also subdivides them both, while also personifying their children. In a move that drew criticism from Gunning, Gaudreault arrives at the conclusion that owing to the technical intricacies of film production, the profilmic and the filmographic are each in need *their own* personified monstrator. These two personified monstrators are then supervised by a 'film megamonstrator' working alongside a 'filmographic narrator'. *These* two imaginary

[31] Interestingly, an online edition of the book (parts of which are available via Bordwell's website (http://www.davidbordwell.net/books/poetics.php – accessed 19/10/2021) rephrases this brilliantly blithe provocation to instead read, '[l]iterary logic can go hang …' (Bordwell 2007, Ch. 3, p. 16 – online edition only).

entities then answer to a 'film mega-narrator' who, homaging Albert Laffay, Gaudreault dubs 'the great [or grand] image-maker' (Gaudreault 2009, p. 5; pp. 92–94, esp. Fig. 9.2).

So, where Bordwell's account reduces the number of imaginary and/or personified figures from either six or four to zero (or, at a push, *one*, if we insist on counting the 'hypothetical' spectator, which could be you, me, or anyone; see Bordwell 1985, p. 30), Gaudreault's account multiples the number of theoretical agents from no fewer than four to no fewer than six, with a maximum of eight possible entities. As Gunning notes:

> 'I am less sure about the value of breaking the three levels of film discourse … into three separate narrative agents, then linking them together by a synthetic mega-narrator. *I fear this multiplying of narrative agents complicates matters unduly, creating an intricate Ptolemaic system in which sub-narrators are hypostasized in ways that actually obscure the synthetic aspect of filmic narration.*'
>
> (Gunning in Gaudreault 2009, p. xxiv – my italics)

So, to recap: Bordwell's narration-as-system—a mimetic account that borrows only the words 'narrative' and 'narration'; not their historical pragmatics—is *processual*: The film spectator's experience of narrative form is the product of inferences cued in and through time. By contrast, Gaudreault's monstration is *punctiliar*. He does not fall in to Genette's trap of answering, '*qui parler*?' ('who speaks?'), but instead the more elaborate punji pit of, '[w]ho, of the various narrative agents, is speaking at this precise moment of the narrative?' (Gaudreault 2009, p. 64). For reasons outlined above, I borrow the concept of monstration but none of Gaudreault's personified monstrators, narrators, or grand image-maker. I agree with his separation of narration from monstration, but decline to join him in incarnating representational processes.

Combining the strengths of Bordwell and Gaudreault to produce an account of monstration and narration in VR in which representation can be mimetic, diegetic, or (more often than not) *both* has advantages. Chief among them is the ability to distinguish formally complex VR works (those that behave like movies, and typically tell stories about other people) from those that effect simpler, unbroken temporalities (i.e., those that are better suited to being all about *you*).

Finally, we can consider how narrative *or* non-narrative representations' *cohering* may be a process that happens primarily inside the mind of the participant.

3.5 Minimal Conditions of Narrative

When is a sequence of events *not* a story? According to Bordwell (2007), *when it's a chronicle or a report*. For Bordwell, the conditions of a minimal narrative are two-fold. First, there must be an agent or character with some continuity of identity. On this view, the following two lines of text do not qualify as a minimal narrative given their apparent lack of continuity of agent.

The tall, slim, well-presented dentist entered the train station and sat down on a bench. A few minutes later, the short, portly, slovenly florist stood up and boarded a train.

Rendered verbally, this report is not a story proper. But it does make us wonder how and why the tooth doctor turned into a florist. Since there is no immediately satisfying explanation, we're bound to assume that narration has simply withheld something from us to pique interest or keep us on our toes. This sensitises us to Bordwell's second condition of a minimal narrative; the causal linkage of events.

The tall, slim, well-presented dentist entered the train station and sat down on a bench. The deranged inventor, watching from afar, aimed the Change-O-Ray at their target. A few minutes later, the short, portly, slovenly florist stood up and boarded a train.

We now have both continuity of agent and a sense of causality, albeit absurd. Narration isn't *too* explicit about what happens, how, or why, but the newly inserted line serves to link the dentist with the florist, so satisfying Bordwell's conditions of a minimal narrative: '[S]ome continuity of agent and some causal connection [between events]' (Bordwell 2007, p. 89).

He goes on to detail three dimensions of prototypical film narratives, though note that he's not stipulating these conditions across all media.[32] He states (2007, p. 90) that the dimensions of film narrative are (1) a story world, comprising 'agents, circumstances, and surroundings'; (2) a plot structure, entailing cause-and-effect relationships between actions or occurrences; and (3) audiovisual narration, which is how we're given access to a film's fictive universe at all.

This is, of course, reasonable in relation to film, which became a dominant cultural form of the twentieth century by being coherent or cogent, and thus having

[32] Chatman (1978), Gerald Prince (1982), and others have had similar ideas. I stick to Bordwell only because Bordwell sticks to audiovisual media.

mainstream appeal. But if we cease to privilege story-like representations that are designed to be readily intelligible to everyone, we can ask; which of Bordwell's conditions of minimal narrative are inessential in VR? The medium will surely be different from film insofar as it's capable of casting the participant as **Internal** to diegesis, and may have them feeling like their usual **Self** as far as 'character' is concerned. Depending on how you define 'narration', the answer could be that minimal narratives can still emerge in VR even in the absence of characters, plots, *and* narration. What remains, then? Only a mind—yours—having thoughts.

3.5.1 Alterbiography (Emergent Narrative)

Scholars of games and virtual environments use terms like 'emergent narrative' (Aylett 1999; LeBlanc 1999; Salen and Zimmerman 2003), 'ludonarrative' (Hocking 2007; Aarseth 2012; Arjoranta 2015), or 'experiential narrative' (Pearce 2012) to capture the narrativity (Abbott 2014; Neitzel 2014) of simulation mechanics-in-motion. A classic example is checkmating in chess. Chess pieces need not be garbed in a magisterial representational layer for the game to function as it does, but the fact that kings are called kings and bishops are called bishops means any possible permutation of play can produce a fairly unique 'story' or 'plot' *if* one chooses to read it as such. Whatever else happens, chess' narrative is concluded when a male monarch is captured.[33]

Alternately, recall *The Sims* (discussed in Section 2.2). Celia Pearce (2004) uses the perennially popular life management game to show how even in the absence of an authorially intended story, players have their Sims perform actions that may stack up in such a way that it can be hard *not* to perceive a narrative among the events. A Sim goes to work, comes home, takes a dip in the pool… It's such that emergent narratives, ludonarratives, or experiential narratives are often conceived in contrast with the sturdier, more visible structures of authorially intended plots, which are termed 'embedded' (Jenkins 2004) or 'scripted' stories (Calleja 2011).

Both chess and *The Sims* are 'god games' of sorts: Their 'positioning' places the player as **External** to where the action unfolds, so the story *cannot be* about the player or participant. Do we still perceive stories by default when we're 'in there'

[33] Ignoring stalemates, forfeiture, resignations, etc.

ourselves, and when no other entities besides oneself is present? Perhaps even more so. But perhaps, also, *only in hindsight*. Considering the VR artworks *Touching a Cactus* (Rothberg 2018) and *Switchstance Bay* (Parker 2016) helps illustrate this. Both works position the participant as **Internal** and **Self**.

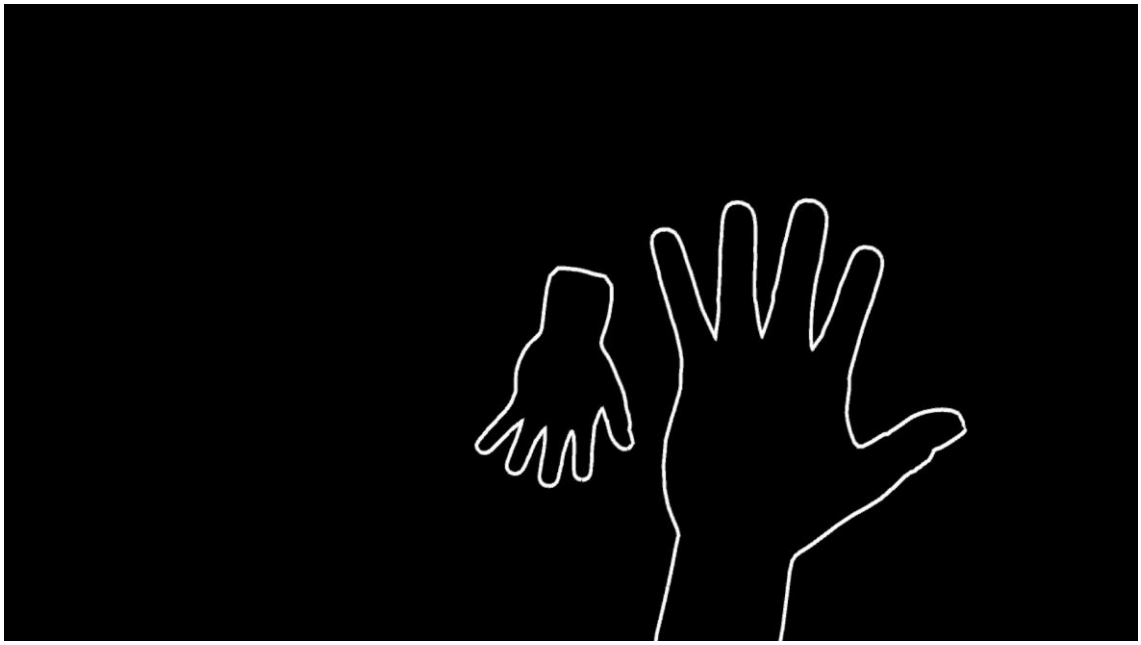

Fig. 3.8: A hand and its double. One of the less pastel-coloured—and less cacti-centric—scenes from Sarah Rothberg's permutative VR poem, *Touching a Cactus* (2017).

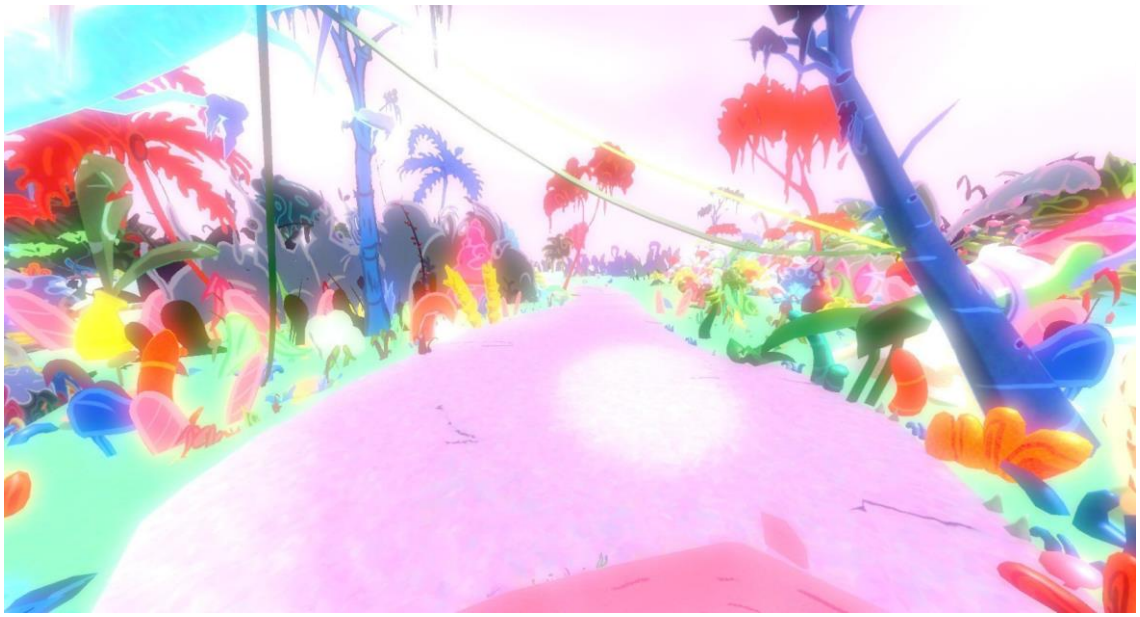

Fig. 3.9: Erik Parker's *Switchstance Bay* (2016). Simply an environment. Courtesy of the artist and Khora Contemporary.

One could just about argue that participants experience an 'embedded narrative' or a 'scripted story' in Sarah Rothberg's *Touching a Cactus*, but not while visiting Erik Parker's *Switchstance Bay*. Things do certainly *happen* in *Touching a Cactus*—a 'recombinatory poem' in VR—but causal connections between the events that we witness are so obscure that it's hard to say what the 'story' might be, exactly. There is no hint as to who 'you' are, who the owner of the purring, slurring voice you hear is, or where the pastel dreamscape in which you suddenly find yourself is meant to be. Yet, at a stretch, one could write a synopsis of *Touching a Cactus* that makes it sound like a story of sorts.[34]

Switchstance Bay, however, cannot be said to contain a scripted story or embedded narrative because, without saying anything of the work's quality, *nothing happens*! Dub music is heard, and the participant finds themselves in a fantastical, exotic environment. That's about it. Monstration presents us with a location, but no events occur within it besides one's own exploratory behaviours. *Switchstance Bay* simply *exists*. Yet when the headset is removed and participants are prompted to reflect on their experience, a narrative may emerge, seemingly out of the ether. 'First, I saw this. Then, I thought that. I heard music, and figured maybe it's because of reasons. I felt such-and-such.' Non-narrative experience is transmogrified in retrospect into something that inevitably resembles a story. Game mechanics are not even needed to produce events that appear narrative in aggregate, like in chess or *The Sims*. It's owing to the inherently subjective, almost autobiographical quality of this kind of narrative experience that I follow Gordon Calleja (2009; 2011) in referring to retrospective 'storification' as *alterbiography*.

Alterbiography is underpinned by narrative cognition (Zacks and Tversky 2001; T. S. Anderson 2015) or narrative 'intelligence' (Mateas and Sengers 1999; 2003). We humans make sense of quotidian reality by assimilating perceptions of our external world and internal experience(s) into narrative structures. It's such that any old sequence of events—even causally unrelated occurrences that do not involve agents—can lead us to grope for causal connections or meaningful relations between them. We cannot help but press our inferences and impressions into narrative schemas. It's for this reason that Aarseth notes how 'stories can be told

[34] *Touching a Cactus* arguably resembles the 'dream logic' of surrealist films like *Un Chien Andalou* (Buñuel 1929), wherein 'anything goes', narratively speaking. So maybe Rothberg's VR poem is indicative of embedded narrative after all, albeit a peculiar, 'trippy' one that positively revels in denying the participant a sense of causal continuity or closure.

about things other than stories' (Aarseth 1997, p. 94), and for the very same reason that I must pick up on Ryan's incomplete judgment that 'when players recount their adventures and their exploits[,] … their discourse invariably takes the form of a story. *This suggests that their experience of the game world was a narrative one*' (Ryan 2015, Ch. 7, n.p. – my italics).

It's important to highlight the difference between narrative-in-the-moment and narrative-in-hindsight. Ryan's premise is correct, but the way her conclusion is phrased produces a fallacy:[35] Just because experiences of virtual worlds can be *recalled* narratively does not mean that they were or are perceived, processed, and experienced narratively *at the time*. In fact, quite the opposite can be true. We can get so caught up mentally processing events that occur in virtual worlds that we may not be dedicating any thought whatsoever to the significance of, or the connections between, actions and events until long after the fact. The counterpoint to Ryan's claim, which she herself notes elsewhere in her book, is precisely that being an active agent in the midst of a tense scenario can lead us *not* to apprehend events in the same story-like terms as would external observers, who have the time and the critical distance to reflect upon the narrativity of what they witness.

An imaginative study from 1993 aimed to explore the effects of 'dramatic presence' by enacting a series of live-action role-plays to mimic the researchers' idea of what 'Interactive Drama should be like' (Kelso, Weyhrauch, and Bates 1993, p. 1). The semi-improvised 'virtual' experiences each featured one participant (or 'interactor', for whom the scenario was contrived), three stock characters played by trained actors, a director issuing commands to the actors by earpiece, and an audience of **External** observers. It's important to note that the observers were not intended to enjoy the drama in the capacity of normal spectators: They were invited to inform on how *their* experience differed from that of the actual (intended) audience-of-one: The interactor, who was positioned as **Internal** to the action.

> 'During the experience, the interactors were caught up in the story, did not notice … inconsistencies[,] … and liked the surprises. In contrast, the observers … often lost interest when action seemed to lag. … [T]he reason for this acceptance [of narrative inconsistencies] may be the strong sense of immersion that the experiments produced in interactors. The passive observers had time and inclination to analyze the

[35] An informal ('linguistic') fallacy of the *non causa pro causa* or the *post hoc ergo propter hoc* variety. Similar to saying, 'I can tell a story about how I prepared breakfast this morning. Therefore, my having prepared breakfast was a narrative'.

> story, and found it lacking … [Oppositely,] the interactor was focused on … achieving a [series of] personal goal[s], *and neither had time to analyze nor cared about the story …*'
>
> (Kelso, Weyhrauch, and Bates 1993, pp. 9–11 – my italics)

When we are simply spectators, a lack of 'story-ness' or narrativity produced by a sequence of events may be fatal to comprehension or enjoyment. But when we are participants, we become more willing or able to narrativise and appreciate disjointed sequences of events in recollection, even (or perhaps *especially*) if we did not pay attention to the (non-)narrativity of those events as they unfolded.

Put idiomatically, *the heat of the moment can make us fail to see the wood for the trees*.

Participants in high-stakes VR situations may not pay attention to overall 'story-ness' or narrativity, as they're too busy processing and responding to the individual events that may later be taken to have been constitutive of 'plot'. In these cases, just as the 'virtual' drama researchers hypothesised in 1993, a sequence of events' ambiguities or inconsistencies can be easily overlooked or smoothed over by those at their epicentre.

The takeaway is that from a functionalist standpoint, the difference between a narrative and a non-narrative representation—that is, a story and a 'non-story'—is only ever a difference in degree; never a difference in kind. Representations that feature clear causal connections between and among events unfolding in time (crudely, stories that 'make sense') put less of a burden on cognition. But as we have seen, even events that bear scant relation to one another ('I touched a cactus, then the lights went out') are liable to be seen narratively after the fact. This becomes relevant again in Chapter 6, which addresses different ways of attending to and experiencing VR artworks.

Much more could be said about how perceptions of representations coalesce into narrative or non-narrative experiences, but it's apt to 'go with the flow' and move on from VR's formal considerations to begin discussing its psychologically functional aspects.

PART TWO: FUNCTION

4 Presence and Immersion

> Ask not what's inside your head, but what your head's inside of.
>
> – William M. Mace on J. J. Gibson (1977)

Writing about VR without mentioning presence and immersion would be like writing about food without bringing up flavour. Each dish tastes different, sure, but *all* dishes cause gustation. Experiencing spatial presence in VR is as inescapable as having a taste sensation when putting food in your mouth. Whether or not you're *captivated* by the experience is a separate question.

Spatial presence—the cognitively low-level phenomenon first sketched in Section 2.1—is guaranteed in VR (Hartmann and Hofer 2021). It is 'the subjective experience of being in one place or environment … when one is physically situated in another' (Witmer and Singer 1998, p. 226). The perceptual illusion of spatial presence can provide a phenomenal baseline from which the more global state of immersion *may*—if supported by subjectively well-received design decisions—be easier to reach. Spatial presence cannot, like immersion, be easily broken or undermined. Any sighted individual who dons a VR headset will experience a robust illusion of 'being there' independently of judgments as to perceptual realism, social plausibility, entertainment value, general level of interest, and so on. These latter factors are the domain of the more fragile, more cognitively penetrable state of immersion, which is less straightforward to scaffold, is transient rather than robust, and is never guaranteed.

This chapter develops a definition of immersion in VR. I aim not to claim anything truly 'new', but rather synthesise what I take to be plausible from extant and current debates. The mental state called immersion (which I see as overlapping considerably with other highly focussed states like flow (Csíkszentmihályi 1990), engagement (Schoenau-Fog 2011), involvement (Vorderer 1993; Klimmt and Vorderer 2003), engrossment (Wilcox-Netepczuk 2013), or even enjoyment (Vorderer and Hartmann 2009) simply follows from a lack of attentional resources and appraisals directed toward *doubting* or *disliking* aspects of a VR experience. Immersion is best conceptualised not as a discrete thing that is actively

worked towards (cf. Murray 2012; 2016a, p. 107), but as a state whose apparent opposite, media awareness (Hofer et al. 2020; Hartmann and Hofer 2021), subtly, gradually, and passively fades from consciousness. I argue that media awareness can re-emerge without damaging immersion as long as appraisals of the media experience remain broadly positive: Participants can notice things that betray a virtual environment's artificiality and remain immersed as long as they like what's on offer.

I provide an overview of the literature in three parts. First, I briefly note how presence in media has been approached in terms of presence of mind in material reality. Some theorists premise that presence and consciousness are deeply enmeshed if not selfsame, and seek to explain mediated presence experiences in terms of the same mechanisms that ground us in the physical and social world. This view speaks to the epistemic authority of perception, but reveals little about the role of virtual environment design. Second, I discuss what presence and immersion mean in the technical, positivist scholarship typical of (tele)presence research per se. Third, I contrast this group's definitions with those of theorists working in humanistic, interpretivist traditions like game studies and digital narratology, who prefer to concentrate on immersion.

In Sections 5.2 and 5.3, I pin down working definitions of spatial presence and psychological immersion by combining insights from two of the positions reviewed (i.e., the positivist camp and the interpretivist camp, roughly speaking). My view of immersion in VR premises that all manner of 'involved' experiences (flow, engagement, etc.) are epiphenomenal to simply attending and reacting to the content of VR works in positive ways (Jennett 2010; Grimshaw, Charlton, and Jagger 2011). This claim segues us into the following chapter, **Attention and Attending**, where my case is further developed.

4.1 Conceptual and Disciplinary Context

There are a *lot* of different definitions of presence and immersion. Sometimes immersion is treated as simply a more profound version of presence, used to describe an all-consuming 'feeling of being there' (*psychological* immersion), while other times it is kept well separate. Often, immersion is used *not* to refer to a mental state at all, but to a variable or property of media technologies (that is,

system or *sensory* immersion—being perceptually enshrouded by hardware devices and their 'image spaces'; Grau 2003, *passim*). This difference is vital to note, and is broadly (though not absolutely) reflected in the disciplinary contrast mentioned above and elaborated below.

One reason there are so many definitions of presence and immersion—often overlapping, occasionally conflicting—is that different fields and disciplines with contrasting assumptions, objects or phenomena of interest, and research goals have worked on the problem separately. The following narrative literature review suggests three broad trends or approaches to presence and immersion research that are often not in dialogue, with the latter two perspectives (drawn along artificially tidy disciplinary lines) being the ones of most immediate interest. I fence them off not to create a sense of disagreement, but to underscore how we're probably all groping at the same basic phenomena from different angles and simply failing to abide by a lingua franca.

4.1.1 (Tele)presence and/as Consciousness

Frank Biocca reminds us that '[w]hile the design of virtual reality technology has brought the theoretical issue of presence to the fore, few theorists argue that the experience of presence suddenly emerged with the arrival of virtual reality' (Biocca 1997/2006: §5.2.1.1).[36] Indeed—the concept of presence is by no means exclusive to media. In its widest sense, the word implies attentiveness: Presence *of mind*. Presence evokes perceptual, mental, and agential availability (Goffman 1966; Bazin 1967). It speaks of *placeness*, but also of the very essence of *being*. Hence many agree that presence in VR and presence in unmediated physical and social reality (that is, 'in real life'; hereafter IRL) have a lot in common. Some scholars do not discriminate between virtual, remote, and physical environments at all, figuring presence IRL and (tele)presence in remote or virtual environments as functionally identical, and as having a common neurobiological basis.

[36] This phrasing is from an updated online edition of the article. The print version states: 'It can be argued that advanced forms of virtual reality only differ from previous media in quantity and quality of presence, but the experience of presence certainly does not suddenly emerge with the arrival of virtual reality' (Biocca 1997/2006, p. 19).

While the idea of presence IRL has an almost ancient history, *tele*presence—a term coined just over forty years ago in relation to robotic teleoperations (Minsky 1980)—stresses sensorimotor fidelity, which is of course still conducive to creating a stable sense of spatial presence in VR. Operators of remote robotic equipment must not only be able to perceive precisely what their surrogate body parts are doing, they must also enjoy fine-grained motor control over their distal tools' movements for a feeling of ownership and agency over their mediated actions to mentally transport them to the remote site. Logically, then, the kind of presence produced in and by robotic teleoperations can't be dissimilar at the neural and cognitive-architectural levels from the kind of embodied consciousness that lets us integrate aspects of our environment such as physical tools (like cutlery or a blind person's cane) into our field of awareness and action.

Giuseppe Riva, John Waterworth, and Eva Waterworth (and colleagues) stress presence's evolutionary teleology when they write that '[it is] a neuropsychological phenomenon … whose goal is the control of agency and social interaction through the unconscious separation of both "internal" and "external", and "self" and "other"' (Riva et al. 2015, p. 76; see also J. M. Loomis 1992). Framed this way, presence is a kind of selection mechanism or monitoring system; a 'sixth sense' (Slater 2002) that continually provides feedback about an organism's internal state and external environment relative to its intentions, actions, and goals (J. J. Gibson 1979; Biocca 2015). This theoretical approach aims to remain agnostic as to the virtuality or physicality of an agent's surroundings by instead emphasising how (tele)presence coheres in service of not just being- but *doing*-in-the-world, irrespective of whether that world is *tangible* (Zahorik and Jenison 1998 following Heidegger 1927; 1954; Gibson 1979). According to this general position, presence is a 'global percept' resulting from 'engagement and action of the sensorimotor system' (Biocca 2015, p. 3) that emerges from and dovetails with the various strata of consciousness, some of which are interrogable, others of which are impenetrable (Mantovani and Riva 1999; Riva 2009; Riva and Waterworth 2014; J. Waterworth and Riva 2014; Riva et al. 2015; J. Waterworth et al. 2015 following Damasio 1994; Damasio 1999).

This line of philosophising—part biocultural, part phenomenological—is plausible and does not preclude any of the presence or immersion definitions that follow. However, an explanation of presence as identical in VR and IRL risks losing sight of how virtual environments *differ* from reality; how they are by definition *artificial* affairs. VR environments are often highly stylised and specially

orchestrated for entertainment purposes, designed to elicit aesthetic effects—they need not emulate the real world, and are arguably at their best when they're *more* reactive; *more* animate than naturally-occurring or environments (Heeter 1992). VR does likely come to us courtesy of the same perceptual–cognitive mechanisms and processes that anchor us IRL, but its fundamentally contrived nature points towards a unique dynamic between agent and environment that demands theorising as a distinct thing from presence in quotidian reality (Davide and Walker 2003; Gamberini and Spagnolli 2015).

A key reason for focusing on the media context and mental content of presence experiences (as opposed to their adaptive survival function or neural-level implementation) is that no matter how intense a feeling of presence or immersion we may momentarily attain, we enter VR with the lingering knowledge that it is an activity voluntarily pursued that can be just as easily ended—a statement that obviously does not pertain IRL. The constant possibility or looming 'threat' of media awareness is reflected in a broad but perennially relevant definition of presence from the International Society for Presence Research (ISPR).

> 'Presence (a shortened version of the term "telepresence") is a psychological state or subjective perception in which even though part or all of an individual's current experience is generated by and/or filtered through … technology, part or all of the individual's perception fails to accurately acknowledge the role of the technology in the experience. Except in the most extreme cases, the individual can indicate correctly that s/he is using the technology, but at *some level* and to *some degree*, her/his perceptions overlook that knowledge[,] and objects, events, entities, and environments are perceived as if the technology was not involved in the experience.'
>
> (ISPR 2000, §1 – asterisks original)

The most relevant parts are asterisked. To acknowledge that presence (or a comparable state like immersion) is never absolute is to accommodate, as Tilo Hartmann and Matthias Hofer do, that 'the VR experience is inherently dualistic—it is defined both by presence *and by media awareness*' (2021, §2.2 – my italics). The definitions of presence and immersion I advance in Sections 5.2 and 5.3 emphasise that where the phenomenon designated by the former concept (*spatial* presence specifically) cannot be undermined by thoughts like 'this is not real' (Hofer et al. 2020; Hartmann and Hofer 2021, *passim*), the latter psychological state,

immersion, can easily be broken or dispelled by searching for or focussing on it. Trying to 'catch' yourself feeling immersed is like trying to see what you look like with your eyes closed in the mirror: You'll only ever get a partial glimpse at best. No amount of technology or illusionism guarantees immersion since it's something that emerges organically when you're not actively searching for it (cf. Murray 2012). Once established, however, immersion can survive brief moments of media awareness, as long as the participant attends to whatever's reminded them of the media experience's artificiality *in a positive or approving light*. Indeed, if and when one attends negatively to aspects of a VR experience or gets too distracted, one's immersion can be diminished to the point that the VR exposure ceases to be interesting, with it becoming increasingly difficult to return to a mindset conducive to the experience designer's intentions (Marsh 2003).

A meaningful split can thus be made between low-level spatial presence and a 'higher' state like immersion along the lines of fast, automatic, affect-laden cognition on the one hand, and slower, more conscious, fragile mental states on the other (Wirth et al. 2007; Hartmann et al. 2015; Hofer et al. 2020; Hartmann and Hofer 2021). The nature of this split is elaborated in the following subsection, which focuses on the concept of presence—not immersion.

4.1.2 Positivist Perspectives on Presence

Presence is an 'unusually rich' and heterogeneous theoretical construct (Lombard and Jones 2015, p. 30) that has been acknowledged as markedly multidimensional since it became more widely employed the technical lexicon in the early 1990s. (See, e.g., Heeter 1992; Held and Durlach 1992; Sheridan 1992; Zeltzer 1992; coinciding with engineers Tom Sheridan and Tom Furness' founding of the MIT Press journal *Presence: Teleoperators and Virtual Environments*.) Experimental and participant-observational research into presence is perhaps best summarised as the empirical quest to identify, operationalise, and theoretically isolate presence's constituent or minimal dimension(s): What is its *essence*? Early definitions in this tradition were purposefully broad, privileging presence experiences' felt quality over their cognitive bases, and are still sometimes considered the most lucid given the then-necessity of putting illustrativeness before precision.

Carrie Heeter (1992) calls presence 'the feeling of being there'—a general defnintion with Heideggerian undertones that finds echoes in the titles of books on topics ranging from cognitive science (*Being There*; Clark 1996/2001) to filmmaking (*The Feeling of Being There*; Leacock 2011). Heeter's pithy description can be combined with a definition from Matthew Lombard and Theresa Ditton (1997), who reviewed six construals of presence across media contexts, and even in relation to software 'toys' like digital companions. They conclude that all different flavours of presence in and across media share a common denominator of being a 'perceptual illusion of nonmediation'. This definition's enduring visibility is testament to its wide applicability.

But a purely descriptive account of presence as 'the feeling of being there'—even specifying '[via a] perceptual illusion of nonmediation'—does little to designate an intentional object or formal eliciting factors of the phenomenon. Indeed, these definitions of presence are as broad and as media-agnostic as philosophical aesthetics' 'paradox of fiction' (K. Walton 1978; Carroll 1990; M. Smith 1995; Turvey 1997), which asks, for example, how we can be moved by the fate of Anna Karenina while knowing her never to have existed (Radford and Weston 1975; Eco 2011).[37] Of presence induced in and by specific media, the question is inevitably raised, 'feeling *where*, and on account of *what*, exactly?'

By circa the late '90s, it became standard practice in presence research to specify which dimension or subtype of presence one was referring to or investigating. *Spatial* presence and *social* presence have arguably received the most attention, and are among the easiest types to differentiate between. It perhaps goes without saying that spatial presence is the feeling of being in simulated space (which presupposes feeling somehow embodied, even if no visible avatar body is rendered) while social presence can be loosely defined as 'the degree to which users feel that others are there as well' (Scarborough and Bailenson 2014, p. 136 – italics removed).[38]

[37] Note how the previously-quoted ISPR definition of presence makes the phenomenon overlap considerably if not absolutely with the paradox of fiction. See also Tavinor 2009, Ch. 7; 2021; van de Mosselaer 2018.

[38] Some social presence researchers discriminate between encounters with avatar-mediated humans and AI-controlled virtual agents, while others do not.

By 2015, the proliferation of presence concepts, subtypes, or dimensions seemed to be getting so out of hand that Lombard saw it fit to politely call for an end to the coinage of new terms (Lombard and Jones 2015). A page on his website (matthewlombard.com/presence-definitions – accessed 15/07/2021) collates no fewer than fifty-five conceptualisations of presence, each ostensibly describing a different relationship or dynamic between user, environment, and—where applicable—media and co-users. Just a few of the presence sub-types proposed over the years are 'spatial, social, mediated, virtual, immersive, perceived, objective, subjective, physical, environmental, inverse, backward, forward, physical, self[,] and corporeal presence' (Lombard and Jones 2015, p. 16). Perhaps needless to say, not all of them are explanatorily powerful.

Presence's endless conceptual subdivision and differentiation can be framed as a by-product of the introduction of sometimes redundant terms (Lombard and Jones 2015), people speaking about essentially different phenomena (Slater 2003), or, more charitably, as an inevitable outcome of the concept's maturation (Hartmann et al. 2015). Whatever the cause of the presence 'boom' of the '90s and '00s, it's clear that positing a new (sub)type of presence—or, outside of telepresence research, *immersion*—for each and every aesthetic trait (e.g. 'dramatic presence'; Kelso et al. 1993) or design trend (e.g. 'challenge-based immersion'; Ermi and Mäyrä 2005) is unsustainable, serving to turn the cross-disciplinary conversation into a cacophony of non-generalisable concepts.

Some positivist researchers even ceased to use the word 'presence' altogether, so to start afresh, as it were, and concentrate on only the phenomenon's most fundamental and widely-accepted aspects: Spatial and social presence. Unfortunately, social presence is beyond the scope of this monograph (see, e.g., Biocca, Harms, and Burgoon 2003; IJsselsteijn, Baren, and Lanen 2003; IJsselsteijn and Riva 2003; Scarborough and Bailenson 2014). We instead zoom in on spatial presence, which seems to be the easiest type to experimentally and theoretically isolate on account of its automaticity and perceptual–cognitive hermeticism. According to Werner Wirth and colleagues (2007), who advance a detailed model of the formation of spatial presence experiences in terms of confirmed, unconscious 'perceptual hypothesis tests', the illusion of spatial presence—automatic when successful and subpersonal by nature—is a thresholdy, gestalt-like (Slater 2002), binary state: You're either 'there' or you're not.

4.1.2.1 Place Illusion and Plausibility Illusion

To avoid confusion stemming from the myriad posited variants or subtypes of presence, Mel Slater (from 2009 onwards) introduces different terms. He refers to the low-level illusion that's comparable to if not identical with spatial presence as *place illusion*, and calls its slightly more conscious correlate *plausibility illusion*. Like Wirth et al.'s spatial presence, Slater's place illusion makes no commitments as to whether participants feel in any way interested in or convinced by the content of a representation. For Slater, cognitively higher-order judgments concerning virtual environments' contents are partially covered by the plausibility illusion, which speaks to more rational, cerebral assessments as to whether what is being perceived and experienced 'is really happening' (Slater 2009, p. 3553). When both place illusion and plausibility illusion are active, he argues, 'participants will respond realistically to the virtual reality' (Slater 2009, p. 3549).

Slater defines place illusion as 'the strong illusion of being in a place in spite of the sure knowledge that you are not there' (Slater 2009, p. 3551 – sentence de-italicised), suggesting that it is 'constrained by the sensorimotor contingencies afforded by the virtual reality system' (Slater 2009, p. 3549). Sensorimotor contingencies are couplings or regularities between sensory stimulation and the exploratory motor behaviour of an organism (O'Regan and Noë 2001): If our view of something is obscured IRL, we reposition ourselves to see around the occluding object. This kind of sensorimotor contingency—the dependable correspondence between repositioning oneself and being able to see the target object—is supported IRL and by 6DoF ('room-scale')[39] VR systems, but not in photographs or video recordings. It is necessary to speak of sensorimotor contingencies because, as James J. Gibson was at pains to point out, perception is inherently ambulatory; it is seldom stationary, as in film viewing (where viewpoint is predetermined) or many lab studies of visual experience, which constrain participants in some kind of head brace, preventing normal perceptual behaviour (Gibson 1979). In the context of VR, sensorimotor contingencies basically refer to tracked body parts, with head tracking (visual viewpoint) being absolutely paramount to spatial presence, or place illusion. As Biocca points out: 'The interactivity resulting from the sensorimotor coordination of the moving head with visual displays created a sensation not found with non-head[-]coupled media like film and television. ***Users***

[39] See footnote n[2].

became aware of their bodies; their head movements altered what they saw' (Biocca 1997, p. 19 – emphases original).

Slater makes the distinction that where place illusion pertains to '*how* the world is perceived', plausibility illusion is 'about *what* is perceived' (Slater 2009, p. 3553 – my italics). Crucially, he observes that '[b]ased on evidence over many experiments, it appears that a key component of [plausibility illusion] is that events in the virtual environment over which you have no direct control *refer directly to you*' (Slater 2009, p. 3553 – my italics). He outlines an example wherein a 'forward' (that is, a confident and/or flirtatious) virtual human makes eye contact with the participant and says hello, which elicits a natural response despite the participant knowing 'for sure' that the experience is driven by synthetic stimuli (Slater 2009, p. 3553). 'Since you are as real as can be', he writes, 'and [since] this external[ly-]sensed world appears to be addressing you, the reality of that external [virtual] world is itself enhanced' (Slater 2009, p. 3553). This is, of course, consistent with my throughgoing claim that VR works with a participant positioning of **Internal–Active–Self** are generally more arresting and compelling than those that position the participant as an external observer.

Having said that, plenty of VR experiments or instances of 'immersive journalism' confront participants with situations that do not address or concern them *directly*, yet which still create a plausibility illusion by implicating them *indirectly*, for instance by placing virtual humans in situations that nobody in their right mind would want to witness happening to a real person. Nonny de la Peña's *Hunger in Los Angeles* (de la Peña 2012) sees a man have a diabetic seizure while waiting in line at a food bank, while Jia Xue and colleagues (Xue et al. 2021) discuss eleven virtual and augmented reality studies that examine bystander behaviour in simulated violent incidents including school bullying, dating violence, and conflict among strangers. Many of these situations do not address the participant *directly* but are nevertheless deemed plausible enough, given their apparent gravity, to cue lifelike intervention behaviours. Such behaviours, Slater would hold—like the simple act of saying hello to a flirtatious virtual agent—are evidence that both place illusion and plausibility illusion are active; that participants

are feeling on '*some level* and to *some degree*' (ISPR 2000, §1) that the virtual events are plausible enough to 'really [be] happening' (Slater 2009).[40]

Matthias Hofer and colleagues (2020) investigated whether plausibility violations can detract from place illusion, or spatial presence. Adapting a distinction proposed by Rick Skarbez (Skarbez 2016), they differentiate between internal plausibility, which 'refers to the extent to which the environment is consistent within itself or with respect to the expectations raised by its genre' (Hofer et al. 2020, p. 2), and external plausibility, defined as 'the extent to which a media portrayal is … "true to life" in that it reflects events that do or could occur in the non-mediated world' (Hofer et al. 2020, pp. 2–3). Their between-groups experiment had VR participants visit two houses—one whose furniture and fittings were all as they should be, and another in which objects were inexplicably mounted on the walls, fixed to the ceiling, found rotating, levitating, and doing other weird things.

Their findings are consistent with the widely accepted idea that certain technological features (stereoscopy, 6DoF tracking, viewing distance—pretty much everything constitutive of the difference between VR HMDs and regular screens) are the major determining factors of place illusion or spatial presence. More pertinently, neither an increased cognitive load nor the virtual house's plausibility violations were found to undermine the illusion, which strongly supports the idea that feeling self-located in virtual space occurs at a level of consciousness that is categorically off-limits to influence from higher, more rational beliefs or judgments.

Before moving on, it is important to note that the definition of *immersion* (cf. presence) held by Slater and other scientists and engineers is incompatible with the understanding of immersion held by the interpretivist scholars cited in the next section. For Slater and many others, immersion only ever describes properties of

[40] Slater states that '[i]t is important to realize that [plausibility illusion] does not require physical [i.e., perceptual] realism' (Slater 2009, p. 3553). Yet on the very next page, he notes that a more realistic real-time rendering of participants' avatars' shadows produced more pronounced physiological responses to a virtual pit demo (vertiginous 'plank experience'), with arousal in this case being indicative of stress or anxiety. He does not comment on this apparent contradiction, but we can surmise that where perceptual realism is not *requisite* to either place illusion and plausibility illusion, it may enhance, deepen, or strengthen the latter.

media-technolgical systems. For positivist VR researchers (generally speaking), the word 'immersion' does *not* refer to a psychological state or a subjective experience at all. Slater suggests that technologies' immersion can be quantified and rank ordered based on whether one technology can faithfully emulate another. On this view, a VR system is more immersive than film and digital games because the former can mimic the latter two, but not vice versa. (I can go to the cinema or play an arcade game in VR, but I cannot convincingly experience VR via a conventional screen display.) For James Cummings and Jeremy Bailenson (2015), 'immersion', 'immersive quality', or 'immersiveness' are likewise only ever properties of media technologies, albeit defined slightly differently.

Cummings and Bailenson's meta-analytic study (2015) asks of various display systems, 'How Immersive Is Enough?', and reports (unsurprisingly, in retrospect) that technological features like 'increased levels of user-tracking, the use of stereoscopic visuals, and wider fields of view' had the greatest impact in producing spatial presence. (See Steuer 1992; 1995 for a speculative account that makes similar claims.) High-resolution screen displays with wide fields of view are described as 'more immersive' than low-resolution, narrower ones; gestural input is 'more immersive' than keyboard-based input, and so on. It is broadly and indeed demonstrably true that 'more immersive' media systems like 6DoF VR HMDs create spatial presence more dependably than 'less immersive' media like games played on a 32" TV. But the temptation to generalise about how technology may go *beyond* the automatic and low-level phenomenon of spatial presence to produce more cerebral forms transportation or involvement has led to accusations of technological determinism, so-called, about how media manipulates mind (or not) from some members of the second camp.

4.1.3 Interpretivist Impressions of Immersion

We now pivot to treating immersion as a psychological state.

Humanist and interpretivist scholars are generally more concerned with the messy consumption of commercially available media than with studying responses to virtual stimuli in a 'sterile' laboratory setting. Where positivist presence researchers strive to control, manipulate, and theoretically isolate variables in VR—for instance by attempting to strip a VR stimulus environment of any and

all emotion-eliciting content—game studies researchers and IDN scholars prefer to study virtual environments and online worlds as they are experienced by actual players and participants.

While there are fewer concepts or hypothesised sub-types of immersion in circulation in game studies, digital narratology, and adjacent fields and disciplines, this loose-knit group's semantics of immersion are almost as varied as positivists' conceptions of presence (see Therrien 2014). Sometimes definitions of immersion-as-psychological state harbour innaccurate assumptions (like that spatial presence is inherently enrapturing, that photorealism is prerequisite to the feeling of 'being there', or that immersion means we cannot recognise that an experience is mediated), while other times they fail to respond the specificities of the medium or media. The most prominent error, however, is simply not distinguishing between 'the feeling of being there' in simulated space on the one hand, and feeling *involved in*, *engaged* or *rapt by*, or even just *enjoying* what one is experiencing on the other.

For this group, the words immersion and immersiveness *do not* describe the properties of a technology (with some exceptions; see Nilsson, Nordahl, and Serafin 2016, pp. 113–116; Brown and Cairns 2004), but rather capture the mental state produced by compelling characterisation, suspenseful plots, challenging gameplay, and other formal factors, artistic approaches, or design decisions. The term '[spatial] presence' has less currency in this camp, and is often treated as something that is presupposed by immersion in 3D virtual environments, and can thus be bundled in with it. That immersion here describes a psychological state (and not a measure of a system's ability to induce spatial presence) does not mean the following scholars think technology has no bearing on perception, cognition, or phenomenal states: They're sometimes just hesitant to specify *how* media mould our moment-to-moment experience, exactly. Murray (1997/2016a), for instance, writes:

> 'The experience of being transported to an elaborately simulated place is pleasurable in itself, regardless of the fantasy content. We refer to this experience as immersion. *Immersion* is a metaphorical term derived from the physical experience of being submerged in water. We seek the same feeling from a psychologically immersive experience that we do from a plunge in the ocean or swimming pool: the sensation of being surrounded by a completely other reality, as different as water is

> from air, that takes over all of our attention, our whole perceptual apparatus.'
>
> (Murray 2016a, p. 99) [41]

Though it has undeniably been influential, there are two problems with treating Murray's description as 'the most accepted definition' of immersion (McMahan 2003, p. 68). First, the passage implicitly conflates media technologies with the psychological states they can help produce. The sensation of being surrounded; of having one's entire 'perceptual apparatus' enveloped by a VR HMD or a six-sided CAVE is not the same as feeling transported to a rich and detailed 'fantasy' land (moreover, attention is not limited to perception—see Chapter 6). Second, this description obfuscates that neither feeling present in simulated space *nor* deeming the virtual–fictional world plausible or internally consistent is the same as actually *liking* being there, which is surely prerequisite to feeling immersed.

Murray acknowledges throughout her landmark book that technologies like VR 'helmets' may make immersion easier to attain by limiting perceptual access to the outside world, embodying the participant as someone else, and ensuring that they're focused on the 'dreamscape' into which they step (Murray 2016a, pp. 60, 80, 110). Yet on the page prior to her description of immersion, she states that '[a] stirring narrative in *any* medium can be experienced as a virtual reality because our brains are programmed to tune into stories with an intensity that can obliterate the world around us' (Murray 2016a, p. 98 – my italics), thus calling into question the role of interactive and audiovisual technologies in producing immersive experiences.

Murray's account generally fails to distinguish between presence in space on the one hand, and immersion in a scenario or its represented events on the other. Overall, Murray's description makes it sound as if donning a headset magically produces immersion, yet (almost paradoxically) seems to deny that technologies'

[41] The diving metaphor is taken from Meredith Bricken (1991), who writes: 'Using a stereoscopic HMD is like wearing scuba gear and diving into the ocean. By immersing ourselves in the environment, moving among the reefs, listening to the whalesong, picking up shells to examine, and conversing with other divers, we invoke our fullest comprehension of the scope of the undersea world. We're There' (Bricken 1991, ¶11).

perceptual and agential affordances and idiosyncrasies play a part in producing different kinds of experience.[42]

The second issue stems partly from the historical situatedness of Murray's claims, and partly from the generality of her rhetorical style.[43] Contrary to what she supposes, we can now say with the benefit of several years' hindsight that the experience of being transported to an elaborately simulated place is *by no means* inherently pleasurable 'in itself'. In fact, some VR experiences are downright *boring* on account of their over-cautious pacing, thematic or mechanical derivativeness, lacklustre interaction design, or tepid and well-worn subject matter. Even when a virtual environment is lavishly simulated, the action quite interesting, and the participant in the 'right mood' to appreciate it, the tendency towards immersion experienced so strongly by newcomers to VR diminishes with accumulated experience. That is, with habituation.[44] To further Murray's underwater analogy: A veteran scuba instructor taking their ten thousandth dip in the ocean will not be as enamoured with the experience (*not as immersed*) as their students, no matter how dazzling the corals are that day. An account of immersion—or of VR experiences in general—must therefore be prepared to comment on *what's interesting*, and how subjective appraisals may enhance, modulate, or undercut immersion, even if individuals' preferences cannot be predicted. We can, however, take from Murray two key ideas: That immersion is something *more than* simply feeling self-located in simulated space (immersion is richer, more all-enveloping, and more mentally complex than spatial presence), and that both presence and immersion are enhanced by affording the VR participant exercises of *agency*.

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[42] That book-reading can also produce spatial presence and immersion is not a theoretical problem. Biocca shows that since spatial presence (or, as Murray would have it, spatial *immersion*) can, for some individuals, happen in book-reading or daydreaming almost as vividly as it can in VR, we can deduce that spatial presence is mediated by mental imagery. See Biocca 2002; 2003; Schubert and Crusius 2002; also Wirth et al. 2007.

[43] See, e.g., Murray 2005, in which it's normatively argued that melodrama's ability to make audiences cry is the ultimate yardstick by which to measure the aesthetic success of digital games.

[44] A point not lost on Oliver Grau, who notes that 'time and again in the history of European art since the end of the Middle Ages', the same process has played out: 'Habituation chips away at the [novel medium's] illusion, and soon it no longer has the power to captivate. It becomes stale, and the audience are hardened to its attempts' (Grau 2003, p. 152).

Murray is correct in her contention that designing for 'interactivity' is a dependable way of increasing the believability and immersive potential of an 'electronic environment' (Murray 1997/2016, Ch. 5, *passim*). It's long been noted that even mundane exercises of agency like flicking a ceiling fan on and off can be experienced as compelling and novel in VR (Heeter 1992), serving to undergird immersion via all manner of psychological states that speak equally of *interest*. But the limitations of Murray's view of agency, which I elaborate in Chapter 8—**Agency and Patiency**—are threefold: She restricts what qualifies as agency to *only* actions with deliberate, 'meaningful', and 'satisfying' outcomes; she dislocates agency from embodiment or other, perhaps abstracted means of mediated enaction (i.e., the role of *interfaces* in shaping experiences of agency); and she downplays that interaction is a two-way process. Indeed, this last point is not specific to Murray. Game studies and IDN's general view of player or participant agency stresses the ability to *act*, *act*, *act*, and often says nothing of how it feels to be virtually acted upon, or that this is even much of a consideration. Over the remaining chapters, I work toward the conclusion that *patiency*—agency's conceptual counterpart and opposite number—is just as important as agency in scaffolding immersion.

Penned a few years after Murray's account, Ryan's (2001/2015) understanding of presence and immersion can be read to follow the same perceptual-and-low-level versus cognitive-and-high-level split premised in the previous section's review of the positivist literature. Ryan sees presence as fundamentally *spatial* and having to do with sensorimotor contingencies, while immersion (or a rose by any other name) comes from appealing, engaging, probably narrative situations. She acknowledges that (spatial) presence refers foremost to an embodied feeling of 'being there'—'a condition easily satisfied in [and by] a VR system' (Ryan 2001, p. 20). And immersion is correspondingly outlined, as with Murray, as something deeper and potentially more profound that is supported or enhanced (though not

outright caused) by interactivity, or a system's ability to support certain lifelike actions.[45]

Ryan describes three types of immersion: '[S]patial immersion, the response to setting; temporal immersion, the response to plot; and emotional immersion, the response to character' (Ryan 2001, p. 121). The latter two types can be seen to overlap considerably, and appear to almost be reducible to Hitchcockian *suspense* (Ryan 2015, Ch. 4). Temporal immersion is defined as 'play with expectations'; as the re-evaluation of past narrative events in light of new information (Ryan 2001, p. 141; 2015, Ch. 4). Emotional immersion is defined as 'requir[ing] a sense of the inexorable character of fate' (Ryan 2001, p. 263), thus having to do with finality or with high-stakes situations. A situation that I think speaks of both temporal and emotional immersion, but which she states is squarely applicable to temporal immersion, is as follows.

> 'Take the example of the heroine tied to the railroad tracks: you are playing cowboy Bill, and you want to free her, but you see the train approaching. You experience suspense because you are working in a time frame whose limitations create an obstacle to your goal. There cannot therefore be a more literally temporal kind of immersion.'
>
> (Ryan 2015, Ch. 10)

What this underscores, I believe, is that high-affect situations can open the flood-gates of immersion. As with my counterpoint to Slater's claim that plausibility is enhanced when a simulation addresses the participant directly, Ryan's scenario

[45] Ryan also makes comments that appear to conflict with this interpretation. On the first reading, 'interactivity' is a strong if not requisite reinforcer of the sense of being and doing in a world; of spatial presence *as well as* of immersion. Yet she also writes that some virtual environments 'reject world aesthetics in favor of game aesthetics, thereby ostentatiously preventing immersion' (Ryan 2015, Introduction, n.p.). Since she believes that '[a] theory of presence must … incorporate a theory of interactivity' (Ryan 2001, p. 67; 2016, Ch. 2, n.p.), a tension becomes apparent: For Ryan, interactivity is prerequisite to presence and indispensable to immersion. But interaction must not take the form of game mechanics lest this 'ostentatiously' preclude immersion. It seems that at times, Ryan's view tends a little too far towards the literary insofar as immersion is construed as something that can *only* be created in relation to environments—not activities. In later writings, however, she permits that 'ludic immersion' (that is, immersion in gameplay) exists, and argues for its utility (e.g. Ryan 2008).

suggests that embroiling the participant *indirectly* by making them personally responsible for a virtual–fictional character's wellbeing is a royal road to the induction of immersion via heated emotion.

The only major error in Ryan's treatment of presence and immersion is the assumption, also made by Jay David Bolter and Richard Grusin in *Remediation: Understanding New Media* (Bolter and Grusin 1999, p. 22), that '[p]resence requires a photorealistic display, with detailed effects of texture and shading' (Ryan 2001, p. 67). We now know that this is broadly not the case. Lab studies show that the self-reported *believability* of a VR scene can be enhanced by higher polygon counts, better real-time rendering of shadows, and more detailed texture emulation (e.g. Hvass et al. 2017). But if we take the key indicator of spatial presence to be realistic responses like ducking or flinching when a virtual ball is thrown at one's head, then all that spatial presence requires in modern-day VR systems is a surface to act as a floor and some gradation of luminance to differentiate it from other planes like walls or ceilings. It doesn't much matter how low-fidelity the graphics are; how little detail there is. Visuospatial realism—the ability to naturalistically explore spaces given the sensorimotor contingencies of 6DoF VR systems—is orders of magnitude more important to spatial presence than perceptual realism (fidelity) is to presence *or* immersion (Biocca 1997; Qvortrup 2002).

Art historian Oliver Grau (2003) states that immersion 'is characterized by diminishing critical distance to what is shown and increasing emotional involvement in what is happening' (p. 13). This is plausible, though it is important to specify a direction of causality. It does not seem to be the case that when we don the VR headset, our critical defences immediately crumble. Rather, it is the quiet creeping-in of involvement or enjoyment as *epiphenomenally* productive of immersion that diminishes 'critical distance'; that makes us less media-aware, apparently owing to a lack of cognitive resources being dedicated towards doubting or scrutinising the media in the capacity of a human-made artefact. Recall Hartmann and Hofer's observation that experience in VR is inherently dualistic, comprising both presence (or immersion) and *media awareness*. Bolter and Grusin likewise claim (albeit in the absence of much evidence) that '[t]he user of virtual reality is constantly aware of the discrepancies between the virtual scene and the real world, and that awareness is an important part of her experience' (Bolter and Grusin 1999, p. 253). The point is that we are *never* totally, absolutely lost in our immersive experiences—a point further corroborated by Slater (2009) and the forecited ISPR definition (ISPR 2000).

Despite knowing this, Grau seems not to take it much into account, and arguably betrays the dystopian anxiety that VR will render us unable to differentiate illusion from reality.

> 'When actually immersed in a high-resolution, 360° illusion space, it is only with great difficulty that an observer can maintain any distance from the work or objectify it. It is well-nigh impossible to perceive it as an autonomous aesthetic object. If media competence results from the faculty or learned ability to objectify a given medium, then this mechanism is diminished in virtual installations.'
>
> (Grau 2003, p. 202) [46]

As I suggested in response to Murray's intimation that presence is inherently pleasurable, we *habituate* to VR: Its ability to dazzle and enchant the participant into an uncritical stupor is something that only ever happens to absolute newcomers, if at all. It is *inevitable* that given frequent and repeat exposures, VR users will acclimatise to the initially-seductive power of the medium's manipulable environments. Indeed, some enthusiasts have complained online that their first experience of VR was by far their best and strongest, with some users likening the elusiveness of their initial 'hit' of immersion in VR to 'chasing the dragon': A phrase used in relation to heroin and other drugs to capture the impossibility of recreating a powerful first-time high.

Becoming partially desensitised to VR—that is, maintaining a critical distance or media awareness *whether you want to or not*—is both a blessing and a curse. Grau acknowledges that habituation is inevitable (Grau 2003, p. 152), so it's strange that his concerns should at times take on such a fatalistic tone. History proves that not only realism but also what's considered *good* or *engaging* by audiences are constantly moving targets that artists are fated to perpetually pursue. Murray, Grau, and other scholars writing prior to VR's post-2015 renaissance often make the mistake—mostly implicitly, to be fair—of supposing that the medium will never fail to impress; that VR technology alone can sustain engagement, as if by virtue of 'magical' properties (Gell 1988). Grau also makes the commonplace mistake of confusing perceptual realism with visuospatial verisimilitude when he claims that '[t]he quality of … being present in the images is achieved through

[46] Noted in Khandaker-Kokoris 2015, p. 17.

maximization of realism' (Grau 2003, p. 14; also Ryan 2001, p. 67; Bolter and Grusin 1999, p. 22 cf. p. 55; McMahan 2003, p. 75).

Overall, Grau's view of immersion is plausible, sober, and reflects the empirical evidence. He sees immersion as a deep, global, or holistic psychological state that is best built upon the illusionistic foundation of apparently existing within an image. This illusion of presence in space has been pursued by humans since at least 60 B.C. when lifelike Pompeiani murals attempt to reproduce reality, via the late-Georgian/early-Victorian era stereoscope, to the VR systems we have today. Grau's account supports the distinction between spatial presence as foremost a function of the visual system, and immersion as an outcome of attentional resources being bound up in inferential and agential activities independently of sensation and perception.

The most fine-grained account of immersion-adjacent phenomena in non-STEM fields and disciplines is advanced by game studies theorist and designer Gordon Calleja. He suggests that instead of figuring immersion as 'a unidirectional dive of human subjectivity into a containing vessel'; as 'a split between the physical "here" and the virtual "there" that is overcome … when the phenomenon is experienced' (Calleja 2014, p. 222), we should rather conceive of game-worlds and their activities' structures and processes as suffusing the player's embodied mind in a process of *incorporation* (Calleja 2011; 2014).

Calleja's 'player involvement model' has six overarching categories: Kinaesthetic, spatial, shared, narrative, affective, and ludic involvement, each of which can be experienced at the micro-level (i.e., in-game, or during 'moment-to-moment' play) or at the macro-level (i.e., 'off-line'—say, when strategising in one's head, or thinking about a character's fictional biography) and may also be active in tandem (Calleja 2011). The most gripping and intense experiences of immersion, involvement, or incorporation presumably occur when all six types are active at the micro level (i.e., during play). The macro-level component serves to qualify Calleja's incorporation as *more than* an account of what others would call immersion: It also aims to say how players *remember* or *reflect upon* and *look forward to* their gaming experiences.

The flaw in Calleja's account lies not with what he advances, but with what he flatly rejects. Criticising what he sees as 'technological determinism' in presence research (e.g. Slater 2003), Calleja states that:

> 'Slater problematically implies that a technology can determine the experience of the users interacting with it. … Slater is claiming that the quality of the technology, in and of itself, can induce a particular experience whatever the content being transmitted. Aside from being problematically deterministic in its underpinnings, the claim is particularly challenging to sustain when such a complex experiential phenomenon as the sense of inhabiting a virtual environment is concerned.'
>
> (Calleja 2014, p. 224–225)

While it seems simplistic and even unfair to suggest that Calleja has misunderstood the scope and nature of Slater's claims, this appears to be the only explanation for his criticism. Slater is correct: Stereoscopic 6DoF HMDs' sensorimotor contingencies *cause* illusions of spatial presence in practically the same way looking at a spoon placed in a glass of water *causes* the spoon to appear bisected. It is analogous to how spectacles *cause* an improvement in the wearer's vision, or how viewing a stereogram with the correct optical vergence and accommodation (i.e., holding it the right distance from your eyes) *causes* a three-dimensional image to come into focus. Hofer et al. point out that illusions like the Müller-Lyer illusion are not only brute causal but cognitively *impenetrable* (Hofer et al. 2020, p. 5; Dawson 2017), citing neuroscientist Warren Tryon's assertion that '[n]o amount of insight derived from education or experience can free us from optical illusions … Insight cannot set us free from … neural network limitations' (Tryon 2014, p. 144).

While present-day VR technologies can and do cause certain phenomenal experiences, we've established that it would be downright wrong to suggest that the subdoxastic illusion of spatial presence can in turn determine higher-order experiences like absorption, involvement, or that nebulous, sought-after thing called immersion. As I've suggested, VR experiences *may* on occasion be typified by the participant feeling insurmountably 'there' yet still *bored*, which strongly suggests that the participant is not in a mental or affective state that anyone could reasonably call 'immersion'. Academic accounts seldom state the obvious in acknowledging that we do not refer to things as 'immersive' if we're not impressed by them. This, I believe, *must* be taken into account by our theoretical frameworks or theories, even if it is a mundane and highly subjective judgment.

4.2 Spatial Presence in VR

On the basis of the foregoing literature review, I offer the following working definition of spatial presence in VR specifically.

Spatial presence is a cognitively impenetrable feeling—a pre-rational belief that can persist in spite of knowledge to the contrary—produced by a robust perceptual illusion (which is supported by sensorimotor contingencies) that one is located in seemingly navigable virtual space.

Here, 'cognitively impenetrable' refers to the fact that one cannot modify, dispel, or lessen a feeling of spatial presence in VR through the application of conscious thoughts like 'this isn't real'. 'Seemingly navigable' refers to the fact that spatial presence is at its fullest when one moves one's body and/or head, and one's perspective on the virtual environment changes accordingly, in line with lifelike sensorimotor contingencies (Biocca 1997; Slater 2009 cf. Wirth et al. 2007). Room-scale (i.e., 6DoF) VR systems almost always confer 'seemingly navigable' spaces in that taking a physical step forward produces a corresponding outcome in the computer-generated scene. I do not take 3DoF media like 360° video viewed via 6DoF systems to be 'seemingly navigable', since despite that the hardware is capable of room-scale motion tracking, the software side of the system—that is, the panoramic video playback—cannot reflect translational movements *along* axes, like crouching, jumping, or physically walking around. The spaces captured in 360° videos do not seem navigable the same way 6DoF virtual environments do.

The practically-guaranteed nature of spatial presence in VR allows scholars like Lars Qvortrup to convincingly argue that VR—as a medium in general, not specific instances of it—does not so much represent space as the *spatial experience* of humans. VR, he writes, 'represent[s] the way in which we *perceive* space (by observing space with our two eyes and ears); the way in which we *are* in space (by moving our body in space); and the way in which we *practice* space (by interacting with objects in space). … Virtual reality belongs to the same category as drawings … and photos, that is[,] as something which looks like and thus represents reality … [H]owever, [it is] not [a representation] of space per se, but of spa[tial] *experience*' (Qvortrup 2002, pp. 6–7 – italics original).

4.3 Psychological Immersion in VR

I will first define, then further elaborate what I take immersion to be (and why).

Immersion is a comparatively fragile and often ephemeral mental state; an epiphenomenal experience both resulting from and characterised by the dedication of few to no cognitive resources towards attending negatively to aspects of a VR experience. Media awareness can co-occur with immersion, potentially even strengthening it as long as the artificiality of the experience isn't critically dwelt upon for too long.

This definition demands an elaboration of media awareness. Recall Hartmann and Hofer's contention that 'a comprehensive conceptualization of the VR experience must emphasize both users' … [sense of] presence *and* their media awareness, and recognize how *both* jointly shape users' overall experience' (Hartmann and Hofer 2021, p. 2 – my italics). They follow Torben Grodal (2002) in suggesting that an increased knowledge of what goes on behind the camera during the filmmaking process can complement and enhance enjoyment, rather than detracting from or dispelling the illusion of a coherent and realistic diegetic world. '[T]he more salient users' media awareness, the more it "is added to, and enriches, the phenomenal experience"' (Grodal 2002, p. 72 quoted in Hartmann and Hofer 2021, p. 5).

Of course, this claim only holds as long as the participant *likes* what they're experiencing. If my media awareness consists in thoughts like, 'the director is a fool for using that piece of footage', or, 'the core gameplay loop in this game is unvaried and trite', then my media awareness is obviously not going to enhance my experience of the work—it will work *against* immersion *however* one chooses to define it. This is why I argue that despite what psychologists might aim for, immersion and enjoyment cannot be properly disentangled, and why I specify that immersion emerges when few to no cognitive resources are dedicated towards attending *negatively* to, or reflecting *critically* on, aspects of the VR experience.

Some acts of media attendance and concomitant 'negative' appraisals do not damage but rather enhance immersion, as they can be subject to hedonic reversals, and are ultimately desirable. We watch slasher films and play survival horror games to obtain the 'negative' experience of being scared (Carroll 1990; Perron 2012). Because the 'negative' emotion is safely contained within the bounds

of the media experience, however, it can be easily cashed out in terms of the sought-after, higher-order experience of *entertainment*. Media psychologist Anne Bartsch (2012) notes that there are at least six theories that can account for how affective (emotional) arousal may be experienced as pleasurable even when 'negative'. The most relevant for our present purposes are Dolf Zillman's (1996; 2008) excitation transfer theory, which supposes that arousal stemming from situations like media-cued distress can be reframed in terms of positive thoughts after a suspenseful episode is concluded, and Marvin Zuckerman's (2014) more widely applicable account of 'sensation seeking'.

Zuckerman's 'sensation seeking' holds that experiences of novel, ambivalent, or simply *intense* stimuli can be enjoyable in their own right, beyond an 'optimal' level of arousal and independently of positive or negative valence (Bartsch 2012). Insofar as sensation seeking renders the idea of 'optimal' arousal oxymoronic, it can be contrasted with Mihaly Csíkszentmihályi's widely-applied 'flow' theory. Flow holds that being over-burdened[47] produces experiences of stress. Adherents of flow theory (e.g. Schell 2014) maintain that when 'challenge' is high and 'skill' is low, the experience is stressful; *sub*-optimal; unpleasant. This is often true, but needn't be taken as absolute. In their thoughtful reading of *The Legend of Zelda: Breath of the Wild* (Nintendo 2017), for instance, Kaelan Doyle-Myerscough persuasively argues that the game's aesthetic pleasures lie in 'being overwhelmed and contending with overwhelmedness' (Doyle-Myerscough 2019, p. 1).

To circle back on the caveats attached to 'negative' in my definition of immersion, we can say that traditionally 'negative' emotions (e.g. *sadness* because a character has died; *anger* because a character was wronged; *fear* because a character is in peril, etc.) may all enhance immersion as opposed to damaging it when they occur within and relative to a 'protected' diegetic frame of reference or experience. However, negative appraisals or acts of attendance made at or because of the level of the artefact are less likely to be subject to hedonic reversals, and so generally harm immersion. If I notice a glaring plot-hole in a movie, or a terrible glitch in a game I'm playing, those things speak to the design and construction of the work itself, and less to the representation; the world projected by the work. True enough, egregiously bad media—say, films with risible premises and terrible acting, or games riddled with bugs and poorly-timed sound effects—*can* be

[47] For instance, by a task that requires constant perceptual monitoring and exact timing, like the VR rhythm game *Beat Saber* (Beat Games 2018).

so bad they're still somehow entertaining. But in general, our media diets tend not to be solely made up of stuff that's 'so bad it's good'.

Positive appraisals made at the level of the artefact do not harm immersion (as I define it) even though the participant is made momentarily aware of the work's artifice. For example, if I'm immersed in the VR experience *Accounting* (Crows Crows Crows 2016) and suddenly notice that the non-diegetic music has been cleverly programmed to 'evolve' in sync with the actions I'm performing, I become momentarily aware of the artificiality of the media experience insofar as I attend to an aspect of its design. Yet my *appreciation* of the non-diegetic music doubling as confirmation (feedback) that I'm doing the 'right' thing *does not harm my immersion*. I can note the thing I'm positively appraising (clever audio design) and promptly return to the task or 'gameplay' in which I'm immersed.

To summarise, media awareness 'can recede to the back of mind or stay … [at the forefront] of mind' (Hartmann and Hofer 2021, p. 8). I suggest that media awareness receding to the black of the mind—when the knowledge that a VR experience is artificial fades temporarily out of consciousness—is epiphenomenally productive of what we call immersion. Immersion does not mean that we are rendered critically mute and numb, unable to discern what is real from what is not. It simply means we're engaged or engrossed *by*, or involved and absorbed *in* whatever the VR environment throws at us. Media awareness returning for a split second to the forefront of the mind does not *necessarily* shatter the spell of immersion; of feeling rapt or captivated by whatever one is experiencing in VR. Only when the aspect that we attend to in light of media awareness *displeases* us is it correct to say that our immersion is compromised or broken.

This way of setting things up—to suppose that media awareness is not damaging to immersion when positive or ambivalent, but that awareness *is* antithetical to immersion *when negative*—will surely be treated with suspicion by scholars who strive to empirically isolate or disentangle phenomena as seemingly different as involvement or flow. I am mindful of such skepticism, and so dedicate the next few chapters to bolstering my claims about immersion-as-interest by elaborating the role of attention, affect (comprising valence and arousal), and emotion (affect's conceptual–linguistic labelling) in the wider VR experience. As we will see, immersion is bound up in attentive acts not only because attention is such a woefully finite cognitive resource, but because there are a limited number of *ways*

that participants can attend to a VR work. That is to say, there are only a handful of 'frames' we can attend to aspects of a given VR work *in* or *as*.

5 Attention and Attending

> The filmmaker says, "Look, I'll show you."
> The spacemaker says, "Here, I'll help you discover."
>
> – Randal Walser, *Elements of a Cyberspace Playhouse* (1990)

> Pay no attention to that man behind the curtain!
>
> – The Wizard of Oz, *The Wizard of Oz* (1939)

5.1 Attention, Not Immersion

Game designer and educator Richard Lemarchand argues that *Attention, Not Immersion* is what drives and defines our experiences of virtual environments. He believes that capturing and sustaining player attention is just as good as—if not identical with—creating and maintaining immersion. 'Videogames entrance us by getting our attention, and … holding our attention' (Lemarchand 2012, p. 24), he observes, noting that 'attention is *the basic currency* in which videogames trade, and in which nearly every other cultural form trades, too' (Lemarchand 2012, p. 74 – italics original).

The idea is seductive in its simplicity. To engender and preserve immersion or involvement (or any other mental state that speaks of being utterly *rapt* in and by multisensory representations), 'all' a VR designer has to do is ensure that each successive feature or detail hands off the participant's attention to the next, like a baton in a relay race. If every object of attention and its means of delivery keeps us engaged just long enough to draw the intended inferences before a novel situation or stimulus appears, then our mental and simulated physical activity shouldn't stray far from the designer's intended experiential arc.

Lemarchand knowingly paints an idealised picture, but not an unrealistic one. His rationale raises interesting questions about what attention *is*, or at least how we conceive of it. We frequently privilege perceptual attention and its contemporary scientific study over older, less world-directed (and hence less readily falsifiable) theses on the nature and remit of attention. Despite how we reify it, attention is not a unitary faculty (B. Anderson 2011; Watzl 2017), and is more complex than the quantifiable kinds and categorisations of attention that game design handbooks may itemise. Commonly cited kinds of attention include automatic capture (orienting reflexes) versus volitional attention allocation (executive attention); the attentional bottleneck, and when and *when not* to tax it; vigilance and vigilance fatigue, and how to replenish vigilance via 'relaxing' interludes. Such construals of attention are applicable to game design, where structural challenge as productive of subjective difficulty must be *balanced*, and overloading players' attention to inadvertently induce stress is considered fatal to performance and (by extension) enjoyment.

Though less concerned with balancing challenges, VR experience designers—storytellers in particular—can also leverage the types of attention cursorily listed above. I will not elaborate them all in this chapter (vigilance is less relevant to narrative works), but I do touch upon how attention is directed in and by fiction films, how game development's level design practices both hinge on and interrogate folk assumptions about image composition, and how eye tacking is used in attempts to understand 'bottom-up' or stimulus-driven attention in 3D environments. I discuss capacity limitation theories of attention, the metaphors we obtain from tying attention to perception, and how two kinds of 'blindness' mean attention can be manipulated and diverted—its limitations exploited—to create uncanny and compelling situations in VR.

I then do something unusual. I argue that attention needn't be considered a purely preperceptive phenomenon that remains agnostic as to an attended object's qualities or *aspects*. We can expand the purview of attention so that it shines on questions of *how* we apprehend and think about things *as* we notice, perceive, and process them (for instance, whether we attend to a virtual human *as* a person or *as* a rigged, skinned mesh).[48] Attention is usually figured as concerning the

[48] A 'mesh' refers to 3D geometry; a wire frame model of a virtual object or agent. 'Skinning' is the process of texturing such a model, and 'rigging' describes the process of giving it a virtual skeleton that lets it be manipulated and animated like a marionette.

uncoloured spatial 'what' of sensory perception. I suggest that a conception more closely aligned with the pre-Popperian inductivist science of the late-nineteenth century helps us make sense of VR experiences. Science today often avoids treating attention as a mode of idea-handling, since to reify it as such is not only to defy the compartmentalising impulse of faculty psychology; it practically makes attention tantamount to 'apprehending things in certain ways'. While unproblematic for our present purposes, this arguably renders attention operationally intractable, making it spill over into expansive topics like the language of thought (e.g. Fodor 1987) or structure of mind (Ganeri 2017; Watzl 2017).

Since our purview is limited to ways of attending in and to VR art and entertainment, however, I hold that we can helpfully shift the conversation from 'attending *to*' to 'attending *as*' without rupturing science's pared-down concept of attention, or inviting insoluble questions as to where attention ends and perception or mentation begins.

5.1.1 Visual Attention in and to Film

Tim Smith and colleagues (T. J. Smith and Henderson 2008b; 2008a; T. J. Smith 2012; Loschky et al. 2015) investigate visual attention in dynamic scene viewing, or simply film. One of Smith's most widely publicised studies (T. J. Smith 2011)[49] uses eye tracking and the visualisations producible thereby to reveal how attentional synchrony (T. J. Smith and Henderson 2008a) (or gaze clustering) between and among viewers is significantly predicted not only by motion (Mital et al. 2010), but by actors' hands, faces, and gaze direction. His analysis of a scene from *There Will Be Blood* (P. T. Anderson 2007 – 'the "map" sequence') shows that even in the absence of camera movements, close-ups, or the stylised application of 'lighting, colour, and focal depth', filmmakers can shepherd viewers' gaze within the frame 'by co-opting natural biases in our attention: our sensitivity to faces, hands, and movement' (T. Smith 2011, §2). This kind of agent-centric attentional bias is especially relevant to media in which the director has no immediate control over the spectator or participant's field of view and must direct attention foremost through monstrative means.

[49] See also the 'Dynamic Images and Eye Movements' Project: https://thediemproject.wordpress.com/ – last accessed 07/09/2021.

Smith's research finds that attentional synchrony occurs when images move. In static scenes like paintings, viewers' gaze patterns—the traces 'left' by eye movements like fixations, saccades, and smooth pursuits—often do not match up. People attend to more or less the same regions, again privileging human figures and their features, but fixate on things like faces and clothes in varying, unpredictable orders. A series of famous studies by Alfred L. Yarbus (1967) presented viewers with Ilya Repin's painting *The Unexpected Visitor* (1884–1888), finding that one way to bring order to a viewer's otherwise stochastic gaze patterns is to impose *tasks* on their viewing operations. Asking subjects to draw inferences or retain information like, 'surmise what the family had been doing before the arrival of the "unexpected visitor"', or, 'remember the clothes worn by the people' (Yarbus 1967, p. 174) produced seemingly more directed gaze patterns than did 'free examination' conditions.

Filmmakers, of course, are always implicitly setting us tasks. They need us to arrive at the intended interpretation of the content of their shots, sequences, and scenes, and accordingly litter the moving image with carefully placed, captured, and ordered cues and clues that behove us to connect the figurative dots. Bill Seeley takes these clues and cues to be constitutive of 'diagnostic features' (Seeley 2020), and, along with Noël Carroll (Seeley and Carroll 2014), makes a convincing case for how Hitchcock's masterful mise-en-scène and camerawork in the introductory sequence of *Rear Window* (1954) stack up to constitute an 'attentional engine'.

At a fundamental level, that *Rear Window* presents a new shot on average every 8.62 seconds 'constantly rejuvenates the viewer's attention to the screen' (Seeley and Carroll 2014, p. 237). Beyond that, Hitchcock (and almost every other filmmaker) employs *variable framing* to have the camera's viewpoint serve as an ostensive tool, directly pointing at and indicating things. The authors write:

> '[T]he most common and paradigmatic role of variable framing is to develop and articulate movie narratives by guiding attention to critical story information, highlighting the salience of this information via indexing [pointing], scaling [increasing the screen-space size of the object of attention], and bracketing [framing; either *isolating* or *excluding*], and presenting it in a sequence that facilitates our construction of a coherent, intelligible … story.'
>
> (Seeley and Carroll 2014, p. 240)

They point out how Hitchcock 'deftly and economically' (Seeley and Carroll 2014, p. 238) explains the following in little over thirty seconds, almost without words. Our protagonist, (A) whose name is L. B. 'Jeff' Jeffries, (B) has broken a leg: (C) He is a photographer who (D) acquired his injury capturing a car crash at a race track. (E) He's well-travelled and presumably adventurous, but may have settled down, now, since we're also made preparatorily privy to the retroactively-relevant fact that (F) Jeff met his current girlfriend on a fashion shoot: (G) She's evidently some sort of celebrity. This is all communicated via a sweeping tracking shot that lingers momentarily on details like Jeff's cast, his mangled camera, the photograph we assume he captured mere milliseconds before surviving the oncoming car, other photos he's taken including a mushroom cloud at what could be Bikini Atoll, and a portrait of Grace Kelly's heroine; first in negative, then on a magazine cover.

It's by making possible clever tricks like these that film has become a paradigmatic example of what Seeley attributes to artworks in general: They embody the tendency to 'direct attention to their artistically salient features' *by design* (Seeley 2019, p. 24). Movie cameras' affordance of variable framing—as well as all manner of other monstrative and narrational techniques noted in Chapter 3—not only piggybacks upon but caricatures the 'natural tendencies' of everyday perception (Seeley and Carroll 2014, p. 237). Our ordinary means and procedures of surveying and attending to the visual world are not only aped by but assisted and cajoled in cinematic contexts by 'diagnostic features [that] help us recognize the perceptual wheat among the sensory chaff' (Seeley 2020, pp. 22–23)—often without exerting any mental effort.

While Seeley's book develops a fine-grained case for how all this works at the neurocognitive level almost *independently* of medium, subject matter, or formal–compositional techniques, our analysis is best served by focusing on the fact that filmmakers' craft is in no small measure enabled and literally constrained by the cinematic frame. VR artists cannot copy Hitchcock exactly because *even if* it were advisable to move the participant's head as if a camera, participants are at liberty to look in any direction while translational movements are unfolding. It's thus become a cliché for VR aficionados to point out with mock alarm, '…but in VR, there *is no* frame!' Director Mathias Chelebourg retorts that VR *does* have a frame—it's just that creators don't have control over it (Chelebourg in Fan and Darnell 2020). We'll have to find other ways to place objects and events in view.

5.1.2 …and 3D Virtual Environments

Miriam Bellard, Art Director at Rockstar Games, conceives virtual environment design as 'spatial cinematography'. Like Chelebourg, she points out that '[e]ven though the player is controlling the camera, we can still create cinematic experiences—we just need to make those experiences by controlling the *environment* (Bellard 2019, circa 03:50 – my emphasis). Many of Bellard's insights are applicable to flat-screen games featuring highly mobile and athletic avatar–characters, which are less common in VR experiences. Presently, at least, VR environment design is often a fairly sedentary, participant-centric affair in which an enclosed space addresses the egocentrically embodied figure at its nucleus, who may only have a few square metres of actual physical space in which to move about. Except for in VR *games* per se, running and jumping are out of the question. Players and participants may, however, be able to glide slowly around using thumbsticks, or 'teleport' through the environment in a staccato fashion by pointing to the virtual floor and pressing a physical button. Despite these differences, and despite that Bellard considers her practice one of 'composing 3D for how it looks in 2D' (Bellard 2019, circa 09:30; a description not applicable to VR), we can obtain considerable insight from her professional experience.

A VR game like *Half-Life: Alyx* makes the most of both wide-open spatial design practices like those that Bellard's heuristics inform *and* more intimate, inwards-facing spatial situations. Though most of the game entails travelling along an unbroken, linear path, one moment takes advantage of a dead-end (equivalent to what Bellard calls 'choke points') to ensure the player does not miss a breathtaking view.[50] Besides the game stipulating that the player *must* visit the vantage point from which the arresting view is best appreciated, the spatial composition from *Alyx* pictured in Fig. 5.1 appears to take advantage of dramatic perspectival or 'leading' lines produced by massive, drooping cables that are visibly subject to simulated atmospheric effects as they trail off into the distance, seemingly in a bid to guide the player's gaze.

Bellard points out that the concept of 'leading lines' is surrounded by a spurious mythos despite having informed compositional practice and its aesthetic study

[50] This is what directors like Steven Spielberg are anxious about when they say that VR is 'dangerous' because it gives participants 'latitude not to take direction from the storytellers but make their own choices of where to look' (Spielberg in Gooderick 2016).

for hundreds of years. The neat little story that gets told to budding artists, art historians, and design students (see, e.g., Cole 1992; Kent 1995; A. Loomis 1947) is that 'a strong compositional line … will lead the eye through the painting' (Bellard 2019, circa 21:00). Bellard points out that this is not quite the case. Clare Kirtley (2018) conducted an eye tracking study confirming that while the viewers of static images may converge on the focal points that leading or perspectival lines point towards, they hardly *follow* those lines' directionality, if at all. Subjects' gaze patterns dwell on the object of interest (which, obviously, in Fig. 5.1 is the large, floating structure), but any attentional synchrony or gaze clustering we might expect to observe there would probably be a product of the focal point's 'social' salience, which influences top-down (Sui, He, and Humphreys 2012). *Half-Life Alyx*'s floating 'Vault' is salient in a top-down manner because we learn at a young age that big things do not generally levitate. This is consistent with Kirley's finding that in static scenes, 'focal points [of interest designated by the artist] did receive more examination time than other locations of equivalent size and location. … [I]t was the *content* of these locations that made them interesting, not simply the location itself' (Kirtley 2018, p. 20 – my italics).

Fig. 5.1: The Vault from *Half-Life: Alyx* (Valve 2020): Salient in a top-down fashion—probably not on account of the 'leading lines' provided by the massive, drooping power cables.

Even without ever having played *Alyx*, we sense that the floating alien building is important, looming over the city as it does, menacingly, like a bulky Sword of Damocles, and our attention is drawn toward it on *that* basis—not because of leading lines. Owing to its salience, it's a prime example of what Disney's cohorts of 'Imagineers' have long referred to as a 'weenie' (Carson 2000; Sklar 2013)—presumably an oblique reference to the iconic 'Cinderella Castle(s)' that punctuate the skylines at several of the media conglomerate's theme parks.[51] When a feature towers above all else, it appoints itself the status of a wayfinding beacon: Curiosity draws us towards it *not* like a moth to a flame (because that would imply bottom-up, stimulus-driven attention!) but owing to an implicit or explicit belief that something important awaits us there. The weenie is an effective attention direction strategy 'because of the mystery element' (Bellard 2019, circa 24:00): Weenies promise us something, and *Half-Life: Alyx*'s Vault is no exception.

While I will not talk more about attention direction or guidance in the capacity of ambulatory wayfinding, we can look again to eye tracking studies to confirm the dominance of top-down factors in task-based explorations of 3D virtual environments.

Magy Seif El-Nasr and Su Yan (El-Nasr and Yan 2006) conducted eye tracking studies of two games: A first-person shooter and a third-person action–adventure game. The researchers hypothesised that low-level visual features like colour and motion might 'grab' players' attention, but that given the goal-driven nature of most games, visual features deemed relevant in a top-down manner (e.g. an exit door or a treasure chest) would be more likely to guide players' gaze. They further hypothesised that since first-person games by definition place their camera behind the avatar's eyes, players' gaze would cluster around the centre of the screen, where an aiming reticle typically sits. Notwithstanding the study's small sample size (six participants), the researchers considered their hypotheses confirmed, stating that 'since action–adventure games … are highly goal[-]oriented, top-down visual features control players' attention more than bottom-up visual features' (El-Nasr and Yan 2006, p. 5).

As suggested, such findings are intuitable confirmations of what most game and level designers probably consider commonsensical: You needn't 'drive' the eye

[51] It's no coincidence that the Disney subdivision using the castle in its logo is called *Buena Vista*.

using low-level visual features like contrast and motion[52]: Giving the player something to look for and indeed *do* is far more important. Once the player or participant is engaged in a search task, *then* using low-level visual features to make their job easier becomes a key consideration. Consequent to this received wisdom, the tendency for game designers to add 'flair' to an object to lend it perceptual salience is so widespread and at times over-egged that the phenomenon has its own entry in the online pop-cultural encyclopaedia 'TV Tropes'. An article titled *Notice This* wryly advises:

> 'If you want the player to notice something, you gotta make it obvious. No, more obvious than that. … You might try:
>
> - Turning the item a different color from the rest of the scene …
> - Turning the character's head toward said object.
> - Making the item glow.
> - Making the item sparkle.
> - Making it emit a sound.
> - Making it huge compared with everything nearby. …
> - Have the item hover slightly and spin around. …
> - Having a nearby NPC verbally point it out.'
>
> (TV Tropes – various contributors) [53]

Though satirical, there are insights to be gleaned from this. Game designers and developers have long experimented with strategies for producing object salience: The academic study of attention in and to 3D game environments would appear to lag behind industry innovations insofar as just as the TV Tropes article hints, the question is not nowadays, 'how best to direct player attention?', but tacitly, 'how best to direct player attention *without alerting them to the fact that their attention is being directed*?' Strategies for achieving the former, more modest task have become so hackneyed that solutions like those lampooned in the TV Tropes article risk drawing criticism from players who tire of having searched-for objects handed to them on a plate.

But addressing the more complex question of how to direct attention *surreptitiously* seems to be several steps beyond what eye tracking studies currently

[52] Although *chiaroscuro*-style lighting may help players not waste their time gazing at nothingness. Some VR experiences stage their action in a small area of well-illuminated virtual space in front of the participant, opting to leave any unused space behind the participant shrouded in darkness.

[53] See https://tvtropes.org/pmwiki/pmwiki.php/Main/NoticeThis – accessed 07/09/2021.

facilitate. As Veronica Sundstedt and colleagues concede: 'Although eye-tracking can tell us *where* a user is looking, understanding *what* a user is looking at can be more insightful in game design' (Sundstedt et al. 2013, p. 543). They detail a computational methodology for encoding semantic information in 3D scenes that may leave researchers better equipped to use statistical inference as opposed to manual qualitative coding to determine players' objects of attention. Yet even if technical innovations like these are successful, ascertaining *what* players visually attend to will not tell us *how* they attend to the thing of interest.

By '*how*', I do not mean physically, like with a turn of the head or a rotation of the eyeballs, but '*how*' mentally; *in what frame of reference*. To ask *how* we apprehend virtual objects, agents, and environments *as* we attend to them is to ask whether an act of attendance *to* a thing is had with a consciousness of the virtual situation's synthetic nature: It is to ask whether the player or participant did a thing organically and spontaneously, or because they sensed that they were being led or even *obliged* to do it. Do I attend to a treasure chest because it is conducive to the accomplishment of my ludic goals, because it is narratively relevant, or because it is glowing, rotating, and emitting sparkly sounds? There is a significant difference, and the latter way of '*attending as*' is clearly more liable to bring about a critical media awareness, which risks undermining immersion.

Fig. 5.2: Another striking composition from *Half-Life: Alyx* (Valve 2020). Eye-catching, certainly. But the player likely attends to the vista because they've been looking for the door.

To develop our conception of attention from being foremost about the perceptual 'where' or 'what' to the noematic 'as', we must first dive deeper into the scientific study of attention.

5.2 Attention as Preperceptual Selection

Science sees attention as both a bottleneck *and* a finite resource stemming from that bottleneck. Attention is said to consist in limits on perceptual and cognitive processing that determine what one can consciously register or perform mental operations upon at a given point in time. When resources are available, attention appears to function like a spotlight. In line with this metaphor, most empirical researchers take attention to encompass the preparatory 'what' of sensory acquisition: Attention is taken to mainly concern the preperceptive operation of illuminating parts of one's internal milieu or external environment to be sampled and experienced at a conscious level.

5.2.1 Capacity Limitation Theories

As the behaviourist paradigm in psychology waned following World War II, taking with it its allergy to the study of inner processes, cognitive approaches emerged. This paved the way for the bottleneck and spotlight analogies noted above. Both metaphors are indebted to Donald Broadbent (1958), whose central claim that attention stems from and is tantamount to limits on perceptual–cognitive processing has been 'hugely and permanently influential' (Mole 2017, §1.6). The basic idea behind Broadbent's capacity-limitation theory of attention (and those that followed) is that our perceptual systems feature some kind of a filter—either before or after a narrow gate in our neural circuitry—that prevents higher-level cognitive processing from being superfluously and expensively applied to the possible totality of noisy, incoming sense data.

5.2.1.1 Bottlenecks

Broadbent's filter model is typical of an 'early selection' theory. It holds that unattended messages—those that aren't actively sought—are blocked *before* reaching the bottleneck in processing that precedes higher cognition and working memory. Despite being revolutionary, the model failed to account for a hypothetical situation tangentially related to the 'cocktail party effect', whereby people conversing in a noisy room can follow each other's words amid the din. The twist on the cocktail party effect that Broadbent's initial proposal fails to explain is that in such situations, we're usually able to discern our own name being called barely-audibly above the hubbub even if we're *not* expecting to hear it, and thus not actively listening. On Broadbent's view, one's name being called in a noisy room should be filtered out.

Anne Treisman (1964) revises Broadbent's model on the basis of her own studies' findings to account for the fact that one's name being called aloud (or other familiar noises like, say, an app notification sound) can grab attention even when not anticipated or actively sought. She proposes the same order of cognitive elements as Broadbent—from the senses, via a large capacity but short-term sensory store, through a bottleneck and a limited capacity channel, to working memory. But importantly, Treisman's attentional filter only attenuates—not blocks—the pre-semantic features of possibly-relevant messages. This means that unattended but semantically-laden messages like one's own name can still make it through to the limited capacity channel. There, if it meets an activation threshold, the message will register in conscious awareness in a manner constitutive of automatic attentional capture (cf. volitional attention allocation), which is when something seizes your attention involuntarily.

Despite its explanatory edge over Broadbent's 'two-serial-systems-and-a-bottleneck picture of perceptual processing' (Mole 2017, §1.6), Treisman's capacity limitation theory is considered neither as ground-breaking nor as enduring as the one the that inspired it *or* the one developed practically in tandem (van der Heijden 1992). For better yet at accounting for the kinds of situation sketched so far are 'late selection' capacity limitation theories, like that of J. Anthony and Diana Deutsch. Deutsch and Deutsch (1963) hypothesised that the filter comes *after* recognition, which ties up a few loose ends stemming from experimental findings of the day. But regardless of which iteration of Broadbent's original model best explains the results of the many trendy dichotic listening studies of the 1950s

onwards, it's worth noting that all three variants of bottleneck theories sketched above concern *perceptual* attention exclusively, with the same being largely true of spotlight theories.

5.2.1.2 Spotlights

Where bottleneck theories explain the allocation of mental resources to mainly auditory stimuli, search- (MacKay-Brandt 2011) or spotlight (Mole 2017) theories of attention instead tap the spatial location of (mainly) visual stimuli. Their focus is more stimulus-driven or bottom-up inasmuch as they 'attempt to say which features of a stimulus determine whether attention is being paid to that stimulus at any given moment' (Mole 2017, §2.7). We now know that one of the major determinants of whether attention is paid to a stimulus is whether it's rendered *salient* by its perceptible properties and (crucially) context.

Spotlight theories don't *only* concern the features of a stimulus that make it contextually salient: They hold that it is a stimulus' spatial location—usually relative to foveal or central vision—that determines whether it will receive visual attention and in turn be perceived. Christopher Mole highlights; 'the point … is not to deny that one can pay attention to something on account of it being brightly coloured … [or] interesting', but to stress that 'one pays attention to brightly coloured [or interesting] things *by* directing one's attention *to the location* of those things' (Mole 2017, §2.7 – my emphases). The spotlight captures how we conceive of attention conceptually and linguistically: We *direct* our attention inwards, to our thoughts and somatic sensations, or we *direct* it outwards, towards, say, an artwork (Watzl 2017, p. 39).

It's important to note that attention's spotlight isn't indicative of where we point our eyeballs or ears (see Kosslyn 1994/1996, pp. 70, 76). Almost everyone has had an experience like this: You open the refrigerator in search of milk. Your gaze is cast over the bottle or carton, but you fail to perceive it: Your thoughts—*your attention*—is elsewhere. This difference—the difference between 'merely' looking and *actually* seeing—hints that attention as prerequisite to conscious visual perception is error-prone, and may hence be exploitable.

5.2.2 Two Kinds of 'Blindness'

Researchers differentiate between two types of perceptual–cognitive 'blindness': *Inattentional* blindness and *change* blindness, both of which are considered failures of visual awareness (Jensen et al. 2011).

The former, *inattentional blindness*, was first probed by Ulric Neisser (e.g. Neisser 1979/2019) and colleagues, and enjoys a monograph-length treatment in Arien Mack and Irvin Rock's (1998) book named for the phenomenon. But it is best illustrated by the now-famous 'invisible gorilla', which appears in a 1999 study by Daniel Simons and Christopher Chabris. In the experiment, participants were asked to count the number of passes made between actors wearing either black or white shirts in a video clip of six players tossing around two basketballs. Most participants could correctly count the number of passes made, but a surprising proportion of them—around 44% across the study's numerous conditions—completely failed to notice a woman wearing a gorilla suit walk through the middle of the scene, pausing momentarily to beat her chest before swaggering off stage right (Simons and Chabris 1999).

The finding that spectators can remain oblivious to such a seemingly unmissable occurrence remains a singularly striking example of how fundamental the concerted dedication of attention is to whether unexpected stimuli are perceived in dynamic scene viewing. Indeed, as Mack and Rock centrally claim, such lapses in visual awareness strongly support the idea that there *can be no* conscious perception of the visual world without cognitive attention directed towards our continually-updated mental models of external reality. This suggests that the thing we call attention is quite separable from our sense organs, and has (or *is*) a non-perceptual component that can be directed 'inwards', towards thought, fully independently of what our eyes, ears, or proprioceptive networks are doing.

Where inattentional blindness is about overlooking things that fall within the visual field but aren't perceived—'the failure to notice … an unexpected item'—*change blindness* describes 'the failure to notice an obvious change', usually because a null stimulus (a grey visual field) is flashed intermittently between two images, one of which has been altered (Jensen et al. 2011, p. 529). Both inattentional blindness and change blindness could be characterised as threats to VR storytellers' ambitions. Is it not *impossible* to guarantee the pickup of narratively-relevant information when participants' powers of perception are contingent on

such a fallible thing as attention? On the contrary; VR practitioners and researchers have already found ways to tap these two kinds of blindness' silver linings, exploiting the phenomena (or something similar) to facilitate disarming and disorienting aesthetic effects that also have the practical advantage of letting experience designers introduce objects to a scene by hiding them in plain sight.

Sightline (Mariančík 2013) is a powerful demonstration of VR's ability to confound cognition, working like a sleight of hand trick to create uncanny, reality-defying effects that take the participant by surprise even when changes are immediately noticed. Here's how *Sightline* works. Imagine standing in a city street and turning around to check what's behind you. There's a grey-clad office block. You turn back to where you were facing and notice that what was formerly a lamp-post has turned into a similarly-sized palm tree while you were looking in the other direction. You check behind you again: The office block has become a cliff face. You glance to your sides: A car has turned into a boulder and a news stand has become a straw hut. You look down: The asphalt is now sand. You're no longer in a city street; you're on a Hawaiian island without ever having moved more than your head.

Of course, since you're bound to notice some if not all of these hardly-subtle mutations, it's not quite change *blindness*. But the violation of the principle of object permanence (Piaget 1963; Harris 1975) nevertheless excites cognition and induces arousal, and experiencing *Sightline* thus feels like witnessing a mischievous ghost work its magic. *Sightline*'s creator has rightly suggested that this technique of swapping out scenographic elements when the participant's head is registered as pointing away from an area of interest could be employed in spine-tinging scene transitions in all different kinds of VR artworks, though few productions have yet made use of the technique. It's a vivid illustration of how we needn't think of 'the frame' as exclusive to flat-screen media: VR participants might be able to gaze anywhere within a scene's spherically panoramic image-space, but they can't attend to everything at once, and *not while their eyes are closed*.

This line of thinking is taken further by artists Szilvia Ruszev and Noa Kaplan, whose hybrid VR artwork/essay *Heterotopias* (2018) uses the FOVE 0 headset's inbuilt eye tracking capabilities to hide cinematic 'cuts' behind participant eye-blinks. The point of masking scene transitions with the spontaneous act of blinking is not to make the participant *unaware* that they're changing locations, but to interpret Michel Foucault's concept for which the piece is named: 'The heterotopia is capable of juxtaposing in a single real place several spaces, several sites that

are in themselves incompatible' (Foucault 1986, p. 25). By effacing the spatial and temporal gaps that separate spaces, the artists render it impossible to derive liminality from attending perceptually to any evidence of transitions.[54]

Lastly, a group of Microsoft researchers have developed a tool called Mise-Unseen (Marwecki et al. 2019). Mise-Unseen exploits actual change blindness: Eye tracking is used to determine when a virtual object can be placed or relocated *within* a participant's field of view, but *outside* of foveal vision.[55] By making changes only in the participant's parafoveal and peripheral visual regions, Mise-Unseen clandestinely 'injects' changes into a virtual scene in plain sight. It can, for instance, be used to rearrange jigsaw pieces laid out on a table in order to put the searched-for piece nearer the participant's hand. It can dynamically switch out paintings in a virtual art gallery to reflect the participant's apparent interests. Or it can bring a locomotive target closer to the participant to abridge the physical distance that would otherwise need to be manually walked. A key finding is that Mise-Unseen's furtive tricks work best when supplemented by (A) tasks and (B) distractors. The researchers found that their self-rearranging puzzle pieces were more likely to go unnoticed when participants were occupied either scanning the other side of the table for the needed jigsaw piece or distracted by a virtual cat.[56]

5.3 Mid-Way Recap

Let's recap takeaways from the contemporary scientific study of mainly perceptual attention. Paramount is that the thing we call attention demonstrably functions like a limited resource, which is why we speak of *paying* attention. It is easy to 'overload' when its demand outstrips its supply. Whether one assumes a

[54] The PC game *Before Your Eyes* (GoodbyeWorld 2021) similarly uses players' webcams to capture eye-blinks as inputs, exploring themes of inevitability and loss by foreclosing certain scenes against players' conscious intentions. (Cf. Laurel's concerns, explored later, that '[i]nput based on non-voluntary measures … might rob the user of his [sic] dramatic agency'; Laruel 1986, p. 99.)

[55] That is, the small, high-definition region at the centre of the visual field—no larger than a fingernail held at arms' length—which, along with optical vergence and accommodation, puts objects in focus, letting us extract high-density spatial information.

[56] Mise-Unseen can also be used to save on development or computational performance costs. See Marwecki et al. 2019, p. 783 or Patney et al. 2016 on 'foveated rendering'.

unitary- or a multiple-resource model of attention (and/or cognition),[57] the bottom line is that too many or intense a perceptual demand can result in an unfocused mental state, poorer decision-making, and worse task performance (Csíkszentmihályi 1990). Such effects are generally undesirable when balancing challenges in game design, but may be advantageous to VR creators who wish to pursue Lemarchand's immersion-through-attention-direction strategy seasoned with a pinch of attentional overload.

When attention is throttled or taxed to the point of paucity, it is necessarily the case that fewer resources are available (Maniscalco et al. 2017) for participants to scrutinise a VR work's visual or sonic verisimilitude, its social plausibility or 'external' consistency, and other things (which *if* negatively appraised) risk giving the participant's ever-present media awareness a critical tinge. The more 'bound up' a participant's perceptual–cognitive resources are by attention-demanding stimuli or tasks, the fewer resources are available to perform reality status evaluations that might foreground the virtual environment as what it is: 'Not real'. Recalling or focusing on the fact that an environment is mediated requires cognitive *effort* (Grodal 2006), which presupposes attentional resources' availability. If immersion is the goal of most VR works (and if immersion is typified, as I have argued, by a relative absence of media awareness that casts the experience in an unfavourable light), then to put it bluntly, bombarding and overwhelming the participant with spectacular scenes and events that bind up all their attentional resources is an expedient, tactical way of creating immersion.

It's a *ceteris paribus* formalisation, but since attention is a finite resource parcelled out in a 'zero-sum' manner, the above claim can be shown to be deductively valid and sound as follows.

i. Attention is a finite resource.
ii. Focusing on the un-reality of a virtual environment requires attention.
iii. Therefore, the more attention is bound up in and by tasks and/or novel stimuli, the fewer resources remain available to focus on the un-reality of the virtual environment.

[57] See, e.g., Cowan 2000 cf. Woodman, Vogel, and Luck 2001, where the former supposes that attention is shared across modalities, abilities, and tasks performed thereby, and the latter argue that, for instance, attention to the contents of working memory draws from a different pool of resources than does attention to sensorimotor routines (like riding a bike).

I. Immersion implies or consists in not attending negatively or at length to aspects of a VR experience that remind one of, or lead one to focus on, its un-reality.
II. See i–iii.
III. Therefore, ensuring that VR participants' attention is bound up in tasks and/or novel stimuli is an expedient way of creating and maintaining immersion.

The approach implied by the above logic won't be to everyone's liking, but it has been leveraged with considerable success in some of VR's most memorable experiences to-date: Diving with sharks, walking the plank, riding a downhill luge, being interrogated by a mobster, becoming Gregor Samsa, visiting the moon, and, of course, failing to repair a broken robot (see Chapter 1), to name but a few. In each case, attention's status as a limited resource can be presumed to be compounded or exacerbated by its interaction with arousal as constitutive of affect: Emotion-laden (esp. *urgent*, negative) situations narrow attention's scope, potentially making it easier to guide or direct (e.g. Fredrickson and Branigan 2005; Lang and Davis 2006; Frijda 2009).

In Chapter 6 and particularly Chapter 7, I suggest that being affectively aroused and attentionally taxed in this way is often concomitant with feelings of being acted upon—*patiency*. Far from being 'overkill' as concerns guiding the VR participant, patiency parallels Sergei Eisenstein's (1923) 'attractions' as well as Antonin Artaud's 'theatre of cruelty' (1938), which I discuss in Chapter 8 (**Conclusion**). Moreover, patiency is implicit in discussions of 'interaction' to begin with. The prefix 'inter-' denotes a reciprocal relation: The relationship between participant and work is bidirectional. If interactive or ergodic media let us *inter-act*, then patiency is presupposed by agency, and should not be seen as a controversial or unprecedented tactic for keeping participants rapt.

Another thing worth noting about attention is the adaptability of the metaphors themselves. The idea of a spotlight is just as applicable to introspective or metacognitive attention as it is to (exteroceptive) perceptual attention, and in the remainder of this chapter I suggest that attention isn't so much a spotlight that illuminates reality in a neutral, unbiased way, without colouring it. Rather, attention in and to VR works can be conceived as a spotlight that comes pre-loaded with at least five coloured gel filters, with each colour—each way of *attending-as*—casting the VR experience in a different light.

Finally, though we haven't dwelt on dichotomic varieties of attention like distributed versus focused attention or automatic versus volitional attention allocation, we can note that they are at once useful rules of thumb and apparently lacking a concrete neural or consistent behavioural reality. On the one hand, the division between automatic and volitional attention seems self-evident with recourse to everyday experience: I do not *choose* to whirl around when the sound of a car backfiring behind me startles me, but I do *choose* to either turn around *or not* when I hear a colleague call my name at the supermarket. On the other hand, sceptics of dichotomic compartmentalisations of attention contend that such attentional binaries are often 'spurious' if not 'false' (B. Anderson 2011), and are generally the product of a kind of reification-through-convenience-of-experimental-operationalisation.

The increasing concern that '[n]o one knows what attention is' (Hommel et al. 2019, p. 2288), that '[t]here is no such thing as attention', or (less contentiously) that 'we do not know as much about [the thing we call] attention as we should' (B. Anderson 2011, p. 1) stems from the fact that attention has been given the status as a proper noun, which lets it be used as a 'concrete concept that can act in a causal fashion' (B. Anderson 2011, p. 1).[58] The word 'attention' houses so many and variegated a thing—tasks, demands, abilities, brain regions, cognitive modules or architectures, reflexes, volitional behaviours, deficits, experiences, and many more things—that it's hard to keep track of what the word ultimately *refers to* or *means*.

Some argue that while there is no such *thing* as attention (e.g. a discrete cortical circuit or cognitive module), there are observable *effects*—mainly subject-level phenomena—that can correctly be called attention*al* (B. Anderson 2011). Philosopher Sebastian Watzl advances a rationale not dissimilar from neuroscientist Britt Anderson's criticism (2011) when he opens his book; '[a]ttention is not another element of the mind … [It is] not a separate box or capacity … [but rather] crosscuts the usual divisions … between the cognitive and the conative, the perceptual and the intellectual', adding, moreover, that 'attention tends to evaporate on a closer look: nothing but one mental state after the other' (Watzl 2017, p. 2). We can therefore say that it is attentional *effects* that get reified and binarized as

[58] Similarly, in *The Blue Book*, Wittgenstein warns that it's situations such as these that produce 'mental cramp': 'We are up against one of the great sources of philosophical bewilderment: *a substantive makes us look for a thing that corresponds to it*' (Wittgenstein 1958/1991, p. 1 – my italics).

a consequence of their measurement in laboratories, and that using attention as a substantive is just one of the sacrifices of language that the pragmatics of discourse occasions us to make.

Whether attention 'really' has binary varieties that can be clearly separated from one another is a moot point. I suggest that while the automatic versus volitional attention binary (for example) may not be underpinned by a concrete neural or consistent behavioural reality, it remains a handy rule of thumb for thinking about how VR creators might approach design problems of attracting or directing attention. We can speak of more or less forceful *attempts* at automatic attention direction in VR, but it may be hasty to treat a thing like a virtual telephone ringing as necessarily capturing participant attention *automatically*. We must bear in mind Anderson's advice that '[w]e need to recognize attention is an effect and not a cause' (Anderson 2011, p. 3): There is more to the thing we call attention than mere preperceptual selection.

5.4 Insights of Introspection

Herman von Helmholtz, William James, and their nineteenth century contemporaries had fewer instruments at their disposal than do modern-day scientists. Many of their insights into the nature of attention were inductively derived from reflection as opposed to the falsification of hypotheses in controlled experiments. While no longer favoured by science per se, introspection is still routinely employed by philosophers. In the chapter's remaining sections, I follow Watzl in contrasting the primary 'tool' of scientific proofs—of which one should neither 'be ignorant' nor 'show false deference' (Watzl 2017, p. 8; see also Nannicelli and Taberham 2014)—with two more accessible methodological tools so to develop an account of *how* we attend to VR artworks *as* different things.

Following from scientific proofs, the second tool is an 'ordinary understanding' of attention. 'Ordinary' should not be confused with 'lay' or 'folk' in the sense that non-experts may implicitly hold incorrect beliefs about psychological

phenomena.[59] Rather, 'ordinary' here means demonstrable with recourse to readily interrogable experience. Watzl explains:

> 'Insofar as … [ordinary] judgments are true, they will tell us something about attention. Insofar as they are epistemically warranted, we can rely on them for answering questions about attention. This much I take to be uncontroversial. … [S]ometimes fairly ordinary truths can tell us something important about attention. For example, if some people are able to focus their attention on a painting for more than five minutes, then attention must be something that is sometimes going on for more than an instant.'
>
> (Watzl 2017, pp. 8–9)

An extension of ordinary understanding is introspection proper, as frequently used by the forecited forefathers of psychology. Watzl notes that like other methods, introspection 'should be used cautiously and with an eye to when it is likely to be reliable, and when it is likely to fail' (Watzl 2017, p. 9). In this respect, I differentiate introspection from 'ordinary' judgments insofar as introspection—by definition a reflexive exercise—is more prone to specious social projection; a biased over-estimation of a postulate's applicability to other(s') minds.

Introspection cannot tell us anything about the workings of cognitive processes, particularly subpersonal ones. But it reflects and gels well with the holism of consciousness: Introspection can provide snapshots of embodied, affective mental states in an articulable manner that mainstream psychology still routinely relies upon when employing subjective self-report ('how did you feel?'). As Watzl admits, we are not unfailing in noting and describing our own experience. But by the same token, he points out that introspection may be roughly as reliable as visual perception itself: We routinely misperceive things but do not consider the occasional fallibility of eyesight to be a serious obstacle to how we live our lives. Therefore, Watzl supposes, we ought not be *over*-cautious of introspection. It was, after all, good enough a method for some of the earliest practitioners of modern science. I rely upon introspection to underscore facts about attention only as corroborated by others' findings.

[59] For example, Guterstam et al. (2019) found that laypeople in social situations tend to construct inaccurate mental models of others' visual attention as 'eye beams'. That is, as invisible, force-carrying lasers that let us 'feel' people's gaze fall upon our bodies.

Von Helmholtz, James, and Wundt began conducting introspective experiments at the nexus of attention and perception prior to the separation of philosophy and psychology (Mole, Smithies, and Wu 2011, p. xiv)—prior even to the formal establishment of psychology. One phenomenon of common interest at the time was the *covertness* of visuospatial attention: The fact that it's possible to fixate one's foveal region on a static object or location and to direct mental energy—without physically adjusting one's gaze—to less-clearly-defined parts of the visual field. Von Helmholtz is credited with being the first to have investigated this empirically (Armstrong 2011). Others followed suit, making complimentary as well as contrasting observations and extrapolations (e.g. James 1890/1983, p. 437; Wundt 1912/1924, pp. 18–20).

As a physicist trained in optics, von Helmholtz' view was that 'central' attention has foremost to do with an organism's physical orienting toward the attended object, and that voluntary attention speaks more to the 'inner forces or activity' that modulate the resulting perception (van der Heijden 1992, p. 32). In his titanic three-volume *Treatise on Physiological Optics*, he observes that '[w]e let our eyes roam continually over the visual field, because that is the only way we can see as distinctly as possible all the individual parts of the field in turn' (Helmholtz 1867/2005, §27). But importantly, von Helmholtz suggests that bodily and eye movements reflect only the *will* to attend more closely to an external stimulus—not constitute acts of attention in and of themselves.

James' experiments that entailed attending to the peripheral regions of a fixed visual field were taken in a different direction. He instead discusses his experiments' findings in terms what is nowadays known as *distributed* attention (and may indeed have coined the term), and goes on to elaborate the probable role of *anticipation* in attention (James 1890/1983, pp. 438–439), not dissimilarly from what is now studied in terms of expectation or vigilance.

The differences in how von Helmholtz and James conceptualised visual attention have led some modern scholars to tell a reductive (his)story about their contrasting views: For von Helmholtz, attention is putatively 'to see' (the '*where*'); for James, it is ostensibly 'to know' (the '*what*') (van der Heijden 1992, p. 38; Duchowski 2007, pp. 4–5). The gulf between their theories is caricatured as expansive: 'There is a huge gap between the view of attention as … determining … *where* in visual space something … is perceived[,] and the view of attention as an effect … of … imagination, pre[-]perception, [and] expectation … [in] determining *what* and *how* something … is perceived' (van der Heijden 1992, p. 38 – italics

original). But to put such minimal versions of von Helmholtz and James' theses in too oppositional a dialogue is to gloss over points of agreement found in their less-well-cited discussions of other sensory modalities besides vision, which is where the nuance is found.

Von Helmholtz did not neglect the anticipatory element in attention more commonly attributed to James (Mole 2017, §1.5). In *On the Sensations of Tone* (1875/2009), von Helmholtz supposes that the kind of attention paid to 'harmonic upper partial tones' (more commonly called overtones) when listening for the *G* in a *C* consists in preparatorily *imagining* what the overtone will sound like (the former note, *G*, being the second overtone, third harmonic, and perfect fifth of the latter note, *C*, 'making three times as many vibrations in the same time'; Helmholtz 1875/2009, p. 33). James concurs, quoting von Helmholtz at length.[60]

> '[T]o observe overtones, it is advisable just before producing the musical tone … which you wish to analyse, to sound the note you wish to distinguish in it. … First gently strike on a piano the note *g'* … then, when its vibrations have objectively ceased, strike the note *c*, of which *g'* is the third partial [or 'in whose sound *g'* is the third overtone'], with great force, and keep your attention directed to the pitch of the *g'* which you had just heard, and you will hear it again in the compound tone of *c*.'
>
> (von Helmholtz 1875/2009, p. 79; James 1890/1983, p. 440)

If this still sounds alien to you, imagine someone playing *Twinkle, Twinkle, Little Star* on the piano: The pitch of the first 'twinkle' is the root note (*C*), and the second 'twinkle' (*G*) is its second overtone, which is the same as a third harmonic: A perfect fifth above the root. This is how a *G* can be heard in a *C*… *If* one is attending in the right way.

The point, here, is that *knowing* what to listen or look for subserves our ability to discriminate things not only perceptually but preperceptually, or attentionally. 'There is no difficulty during a[n orchestral] concert,' von Helmholtz writes, 'in following the melodic progression of each individual instrument or voice, if we direct our attention to it exclusively; and, after some practice, most persons can succeed in following the simultaneous progression of several united parts' (Helmholtz 1875, p. 38). Watzl takes this as evidence that attentional phenomena must be considered as having a non-perceptual component, even if the effects we

[60] I here combine A. J. Ellis' translation of von Helmholtz with the one cited by James, for clarity.

take to be indicative of attentional phenomena are most commonly perceptual. '[That] there are effects of attention on consciousness is fairly uncontroversial. What it is like to listen to a piece of music is clearly affected by whether you focus attention on the sounds of the piano or on the melody being played by the saxophone. The question is what to make of these effects' (Watzl 2017, p. 7).

Note that when we attend to the sound of one instrument among many (as in von Helmholtz's orchestral concert or Watzl's saxophone example), such an act of attendance *is still spatialised*, and so does not decisively show that mental attention's discriminatory ability (attending *as*) can be dislocated from perceptual attention's spatialised thing-finding (attending *to*). The more illustrative case, then—the one that properly supports the claim that attention has an aspectual or discriminatory quality—lies in distinguishing the different acoustic and auditory properties of a singular sound event (cf. separate instruments played in unison).

Wundt's treatment of overtones begins similarly to von Helmholtz' and James', but instead feeds into a discussion of *timbre*.[61] I can attend to the timbre of a sound independently of its pitch *or* its loudness (or vice versa). These attributes are not produced by discrete sound events, but emerge as both physically causal and subjective epiphenomena of a singular acoustic event. When I'm fine-tuning a patch (i.e., a sound or 'voice') on my synthesiser, I am attending above all else to whether I'm achieving the desired level of 'squelch', 'growl', 'womp', or whatever quality of timbre I'm aiming to produce. I will be attending *to* whether that timbre is achieved *at* different pitches, but not *to* the pitches (notes) themselves, or the velocities (as determining of loudness) at which I'm striking the keys. I am attending to an *aspect* of a thing; not its spatial location, and not the thing overall.

To move on from the somewhat esoteric psychoacoustic and audiological examples, consider conversations with strangers. Sometimes a person's accent or voice can be so pleasant or fascinating (or, less charitably, distracting) that one realises one's not been paying attention to the content of their utterances at all. ('Sorry, could you repeat that? I was preoccupied by the silky sound of your voice.')

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[61] Wundt refers to overtones as 'clang-colour'. While there is, on some accounts, a physical relationship between a pure tone's timbre and its overtones, we'll do well to forget this for now and instead think of timbre non-technically, as a sound's subjective flavour or colour. If we take a standard definition of timbre as that which is *not* a sound's frequency (pitch) and *not* its amplitude (loudness), we may end up with a miscellaneous or 'wastebasket' definition of timbre lamented by experts (see Siedenburg and McAdams 2017), but still one that serves our present purposes.

Von Helmholtz's view of attention shouldn't be summed up as concerned only with spatiality, as some have suggested when putting him in dialogue with James (van der Heijden 1992; Duchowski 2007). Von Helmholtz was clearly also concerned with how attentional phenomena let us detect, discriminate between, or focus upon different *aspects* of a singular thing which may not even have a spatial location at all.

Mole agrees that there is an aspectual or discriminatory quality to attention. He says that 'pure spotlight views', per which attention is almost necessarily outward-looking, cannot account for cases like ours above. 'There is, as [von Helmholtz' and James'] … example suggests, a difference between attending to the pitch of a note and attending to its timbre, or to its overtones' (Mole 2017, §2.7). In the same vein, James distinguishes between attending to the flavour of a complex condiment and attending to just one of its many ingredients. He writes: 'The assafœtida in "Worcestershire sauce" is not obvious to anyone who has not tasted assafœtida *per se*' (James 1890/1983, p. 504 – italics original), and thereby emphasises the top-down role of conceptual knowledge in attention. 'In looking for any object in a room, for a book in a library … we detect it the more readily if, in addition to merely knowing its name, … we carry in our mind a distinct image of its appearance' (James 1890/1983, p. 504).[62]

[62] The vehement defender of faculty psychology might retort that James is (and that I am) conflating attention and perception. But to suppose that these two supposed faculties or abilities *aren't* all up in each other's business would be to paint an artificially tidy picture of the mind. As Watzl points out: 'To speak of attention in the retina [or the tastebuds, or the eardrum] … seems like defining a problem away instead of solving it' (Watzl 2017, p. 31).

5.4.1 From Seeing-as to Attending-as

James' now-commonplace idea that conceptual knowledge is brought to bear on attention, so shaping perception, is the subject of a portion of Wittgenstein's *Philosophical Investigations*. The notion of *seeing-as*, or 'aspect perception' (Schroeder 2010), is explored and developed with reference to multistable figures like the famous duck–rabbit illusion (Gregory 1966/1997; Grabarczyk 2013). While Wittgenstein's reflections concern visual perception (Wittgenstein 1953, pp. 193–200) and are hence discussed in terms of '*seeing-as*', we can extend his ideas to a not-strictly-perceptual account of 'attending-as', thus taking attention beyond the domain of purely sensory experience. By this I mean that while Wittgenstein points to the bistable figure of a Necker cube, observing that 'we interpret it, and *see* it as we *interpret* it' (Wittgenstein 1953, p. 200 – italics original), my claims extend to things that do not visibly appear in VR works, and are hence not literally sensorily perceived—things like *story* or *interaction*. Let me elaborate by first describing how bi- or multistable figures are usually treated.

Certain figures can be seen in different and mutually exclusive[63] ways. We can perceive a Necker cube's geometry as angled downwards or upwards depending on which face we mentally designate its front or rear. Wittgenstein notes that the 'illusion' is richer than just seeing a cube pointed this way or that: We can attend to a Necker cube *as* a glass box, *as* a wire frame, and so on. The duck–rabbit figure, the 'young lady/old lady' illusion, and the Rubin vase can all be similarly 'flipped'—almost at will—by the perceiver once all optical interpretations of the image are known to them. Moreover, these figures can be 'seen as' and scrutinised *as* artefacts; *as illustrations*. Hence the 'raw data' of vision can be subjected to and produce multiple perceptual interpretations when mediated by the top-down influence of expectations, knowledge, heuristics, etc. The *intended* interpretations of bistable figures are percept A or percept B. But we can also simply attend to the figures *as* (and indeed *perceive* and *respond to*) ink, graphite, or charcoal on paper, paint on canvas, or pixels on screens. We can attend to and perceive an illusion, in other words, as an *attempt* at illusion.

Vision science and cognitive psychology textbooks usually treat bistable figures by explaining that sensory signals feed into a 'hypothesis generator' that subjects them to both top-down conceptual knowledge and feedback from the active

[63] At a given moment in time.

(physical and perceptual) exploration of objects—'feedback from experience'—to produce informed best-guesses as to what we're perceiving. And while such descriptions mustn't be 'taken too literally' (Gregory 1966/1997, p. 208, Fig. 10.9), they basically capture the psychological side of the constructivist position in philosophy of perception and mind (cf. direct perception or 'naïve realism').

Another interesting case that Wittgenstein also touches upon is facial pareidolia: Seeing faces in things. We see faces in clouds, the moon, car bumpers, and other everyday objects, and often have little control over whether we can make the face disappear or not (unlike multistable figures). Consider emoticons :-) It's hard *not* to see a face in them. We can dwell upon the fact that we *know* the colon, hyphen, and bracket not to be a face, but these thoughts do not make the typographical symbols' face-ness budge. Or consider Dalí's *Slave Market with the Disappearing Bust of Voltaire* (1940).

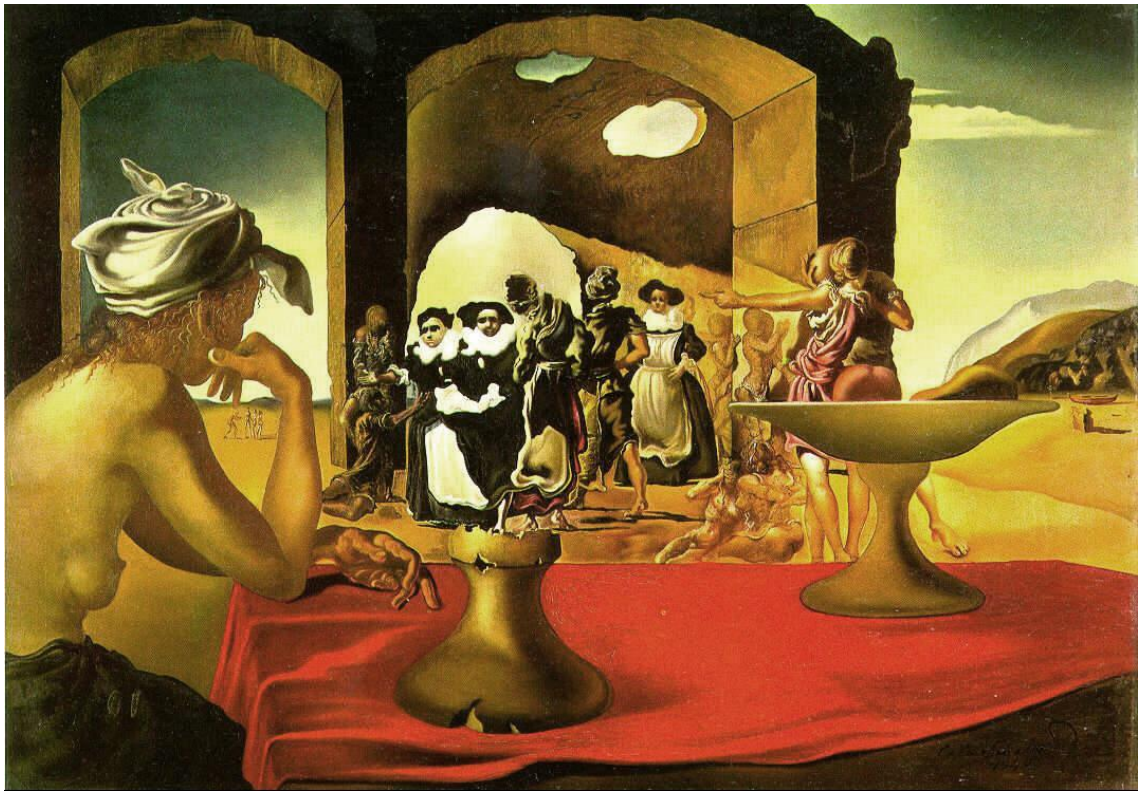

Fig. 5.3: Salvador Dalí's *Slave Market with the Disappearing Bust of Voltaire* (1940). In *Attentional Engines: A Perceptual Theory of the Arts* (2020), Bill Seeley explains how it's more than just facial pareidolia that Dalí exploits, here. Like Leonardo, Dalí had a pre-theoretical sense of how different distributions of diagnostic spatial information (basically, when to paint in fine-grained detail versus when to soften lines and edges) can strongly shape if not determine perception. (See also Livingstone 2000.)

Recall our earlier discussion, made with reference to minimal narratives and alterbiography in Chapter 3, of how narrative cognition has us grope for causal or otherwise meaningful relations between events even in the absence of explicit links, pressing our impressions into narrative schemas. Sometimes the links between narrative events seem so obvious as to make it tempting to declare that one perceives a story *objectively* residing in and among them. But no matter how salient they appear to us, stories are subjective structures that emerge from representations, and cannot be literally (sensorially) perceived. Yet they cohere in our minds as insistently and as unavoidably as faces in things. In the strictest terms, we *perceive* words on a page; light dancing on surfaces, or emitted from screens; we *perceive* acoustic displacements of air—we cannot perceive story per se. Yet we can *attend* to story, which presupposes attending to aspects of an artwork or media presentation *as* suggestive or constitutive of story; *as if* an event is a narrative one, whether it's meant to be or not. By the same token, I can attend to a virtual lever or control panel *as* or *as if* it is indicative of a possible interaction irrespective of whether it houses a genuine affordance (Norman 1988/2013; 2008).

Wittgenstein muses over a similar thing when he talks about a drawing of a triangle in terms of his aspectual 'seeing-as'.

> 'This triangle can be seen as a triangular hole, as a solid, as a geometrical drawing; as standing on its base, as hanging from its apex; as a mountain, as a wedge, as an arrow or pointer, as an overturned object which is meant to stand on the shorter side of the right angle, as a half parallelogram, and as various other things. …
>
> I can see now *this* as apex, *that* as base—now *this* as apex, *that* as base. … Clearly the words[,] "Now I am seeing *this* as the apex" cannot so far mean anything to a learner who has only just met the concepts of apex, base, and so on.'
>
> (Wittgenstein 1953, pp. 200, 208 – italics original)

Wittgenstein's triangle—that it's possible to 'see' (attend to) it in different ways—is abstractly comparable to VR works. Virtual geometry and synthetic sounds are rendered in an objectively inflexible manner through screens and speakers, yet the representation has plastic aspects that can only be attended ('seen') by means of analogy ('it's [like] a game'), by imaginative treatment and/or subjective preference ('the protagonist reminds me of me'), in light of the proper conceptual knowledge ('360° movies aren't interactive'), and so on. If we consider these observations alongside the earlier discussion of attending to different aspects or

qualities of a selfsame auditory event, or attending to a collection of sense data *as* different things, we come to appreciate that Wittgenstein's 'seeing-as'—like von Helmholtz and James' mental attention—transcends sensory perception, and so ought rather be called '*attending-as*'. Indeed, in Wittgenstein's own words, 'seeing-as' is not a 'purely visual' (Wittgenstein 1953, p. 209) or even a 'purely sensory' phenomenon (Dunlop 1984, p. 359): 'Seeing[-]as . . . .' *is not part of perception*. And for that reason[,] it is like seeing[,] and again not like [seeing]' (Wittgenstein 1953, p. 197 – ellipsis original, my italics).

As a final port of call in our discussion of how attention isn't just about attending *to* things but attending *as* or *in the capacity of* certain things, it's worth linking Wittgenstein's brief and 'peculiarly phenomenological' (Seligman 1976, p. 205) commentary to one of the core tenets of phenomenology proper.

5.4.2 Pictorial Intentionality

The reader may be aware that in phenomenology, 'intentional(ity)' is not synonymous with 'deliberate(ness)', or doing something on purpose. Rather, intentionality refers to the *aboutness* of mental states (or utterances or actions), which phenomenologists take to generally have an object. The standard example is that one cannot 'just love': A person must love one or more specific thing(s), even if that thing is *every*thing. Hence the intentional object of 'I love you' is the target of the thought or utterance; their personality, their deeds, etc.

Dan Zahavi (2018) presents a lucid account of Husserl's pictorial intentionality (or 'image consciousness'/'representational consciousness'; Husserl 2005; see also Küng 1973) in vignette form. In the following, I modify Zahavi's example to make explicit the links between pictorial intentionality and what I'm temporarily calling '*attending-as*'.

When I go to the Smithsonian's National Portrait Gallery, I can contemplate—with my eyes open *or* closed—Kehinde Wiley's portrait of Barack Obama by attending to it in no fewer than three ways. I can attend to it *as* an 'image-thing'; as 'a framed canvas with some layers of paint' (Zahavi 2018, p. 18); I can attend to it *as* an 'image-object' (a more or less successful depiction or representation),

or I can attend to it *as* or in terms of the 'image-subject'. That is, *as* Barack Obama; *as if* the former president were really right there in front of me.[64]

All three modes of pictorial intentionality require an initial act of perception followed by cognition. Here, *attending-as* implies both the sensory acquisition of an intentional, perceptual object *and* its subsequent entertainment in thought. But, as we just noted, this is not the case with *attending-as* in and to different media: Sometimes we attend to things that are not or cannot be literally perceived. Dynamics like *story* or *interaction* are not sensorially perceived *but are nevertheless attended*. In audiovisual media that are richer and more complex than portrait paintings, there are necessarily more ways of *attending-as* than the three supposed by Husserlian pictorial intentionality.

5.5 From Attending-as to *Experiencing*

Attention appears prerequisite to all accessible aspects of our mental lives.[65] One cannot perceive a thing, have articulable feelings about a thing, or consciously contemplate a thing without paying mental attention to it. When we make appraisals about an artwork's representational aspects, its gameplay or interaction mechanics, its artefactual qualities, its social dimensions, or how it addresses the self, we are necessarily attending to the aspects of the work that speak of those things, or simply *attending-as*. (*Attending-as* narrative, interaction, etc.) In the following chapter, I take five 'emotion categories' identified in cognitive media scholarship and reason that since they denote not only intentional objects of prospective *emotion* but also intentional objects of *thought* and fundamentally *attention*, they are better referred to as 'frames of experience' in which we can feel or think any number of things—not just have emotions.

[64] Incidentally, this would be a kind of presence experience, according to the International Society for Presence Research's definition (ISPR 2000).

[65] Ignoring phenomena like blindsight.

6 Affect and Emotion

> The spectator himself constitutes the basic material of the theatre.
>
> – Sergei Eisenstein ([1923] 1973)

The previous chapter explored the idea that capturing and directing attention can be seen as similar to—if not identical with—inducing and sustaining immersion. I suggested that guiding attention isn't just about orienting participants' sense organs towards spatial locations: It ideally also entails striving to see that participants attend to or apprehend things in certain ways. VR experience designers must ensure, as much as possible, that things are mentally attended *as* certain things; in certain frames of mind. What exactly are these ways of 'attending-as'; these frames of experience? And how can creators hope to get inside participants' heads, to shape or steer their thoughts? The answer lies with emotion, its more psychologically primitive form, core *affect*, and how emotions' intentional objects have been stratified and categorised in the study of audiovisual media.

Cognitive media scholars (Tan 1996; 2000; Perron 2005; 2013; Frome 2006a; 2006b; 2007) have elaborated several 'emotion categories' that serve practically the same purpose as what I propose to call 'frames of experience'.[66] In Section 6.1, I adapt their classifications of media-cued emotion to detail five mutually inclusive

[66] The change of these theorists' terminology from 'emotion categories' to 'frames of experience' seems permissible given that what the categories really point towards is *objects of thought*. Since both non-emotional thoughts and emotions proper require intentional objects (they must equally be *about* something), 'emotion categories' seems almost constricting. 'Frames of experience' emphasises that we can attend to an aspect of a media work *without* having an affective reaction to it, or an emotion about it. For example, purely constative construals like 'the hero has failed in his quest', 'the key has opened the door', or 'the designer has chosen a bold colour palette' follow from acts of attendance made *at* or *towards* the very same levels or strata as the statements' emotional analogues ('I'm *sad* that the hero has failed in his quest'; 'I'm *relieved* that the key has opened the door'; 'I'm *delighted* that the designer has chosen a bold colour palette').

frames of experience I take to be exhaustive of the ways of we can attend to aspects of VR artworks. Briefly, they are:

- The **REPRESENTATION** frame, wherein we attend to things *as* part of a represented reality. That is, *as* characters, actions, and events forming a web of causally-linked occurrences that together make up a scenario, which may develop in time to form a story.
- The **INTERACTION** frame, wherein we attend to and perceive our own input and/or performance *as* consequential to the outcome of a virtual situation or exchange (even if it is not).
- The **ARTEFACT** frame, wherein we attend to and experience the totality or parts of a work *qua* work. That is, *as* a crafted, usually human-made art or entertainment object.
- The **SOCIAL** frame, wherein we focus on one or more fellow participants acting in or through a multi-user environment.
- The **SELF** frame, wherein we momentarily and/or subpersonally misperceive aspects of a virtual environment *as* acting, or as *able* to act, upon our actual, physical self.

After detailing each of these frames, Section 6.2 outlines the 'conceptual act theory' of emotion (Barrett 2014). The theorists who have previously treated this topic favour 'appraisal theories' (following Frijda 1986), which stress emotions' adaptive benefits and action tendencies. By contrast, the conceptual act theory grows out of a sociolinguistically constructivist project that lets us better differentiate bodily *affect* ('core affective state') from *emotion* proper ('prototypical emotional episodes'). Where emotions hinge on understandings of subject–world relata (e.g. having been wronged by someone), bodily affect alone does not, since it fluctuates in light of primitive aspects of existence shared by all animals: Embodiment and homeostasis, or physical integrity and wellbeing.

This will leave us better equipped to talk about agency and patiency in the final full chapter. There, I flesh out my central claim that high-arousal, affect-laden situations that seem to address the participant and thereby jolt them into the **SELF** frame of experience either engender or are tantamount to experiences of *patiency*. These are often concomitant with 'forgetting' that the experience is mediated at all, causing the participant to attend to the virtual action as on some level *real*, which can be highly conducive if not equivalent to immersion.

6.1 Frames of Experience

A sketch of how the five frames of experience variably render the relationship between participant and virtual–represented world is given below, in Fig. 6.1.

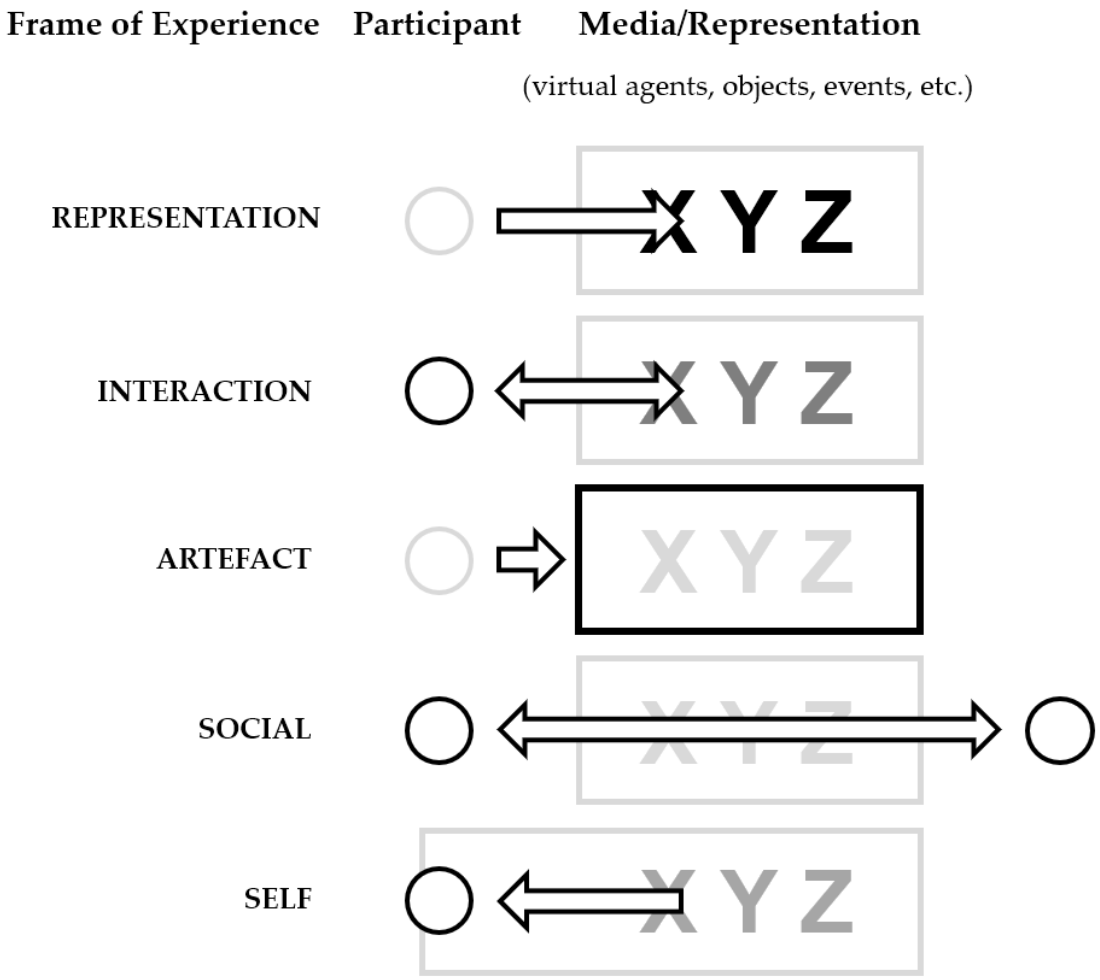

Fig. 6.1: Frames of experience in VR and other interactive, audiovisual media. Greyed-out parts of the figures *approximately* indicate what fades out of conscious awareness when a given frame of experience is active.

The diagram illustrates that attending in or as the **REPRESENTATION** frame focuses us on others' business; on characters' fortunes and follies, with our own sense of self and the means of mediation fading from conscious awareness. The **INTERACTION** frame foregrounds the to-and-fro dynamics of potentially ludic situations,

which can temporarily obfuscate representational considerations. The **ARTEFACT** frame is defined by participants attending to aspects of the work *as* work, or to the means of mediation *as* medium. This can cause us, for instance, to temporarily cease to see characters as autonomous, lifelike individuals, apprehending them instead as creations or constructions. The **SOCIAL** frame can cause us to see 'past' or 'through' the medium and attend to a human user 'on the other side', so to speak. And the **SELF** frame entails being momentarily or on some level incognisant of the fact that the experience is mediated at all, usually owing to an urgent (mis)perception that one is *actually* being (or is about to be) acted upon.[67]

As we will see, frames can be active simultaneously such that I attend to a game-like **INTERACTION** in terms of its consequences for a **REPRESENTATION** (say, if the fate of a beloved character hangs on the outcome of a deadly duel). Let's zoom in and consider each of the frames individually, itemise examples, and unpack the 'emotion categories' from which the five frames of experience are adapted.

6.1.1 Representation

In *Emotion and the Structure of Narrative Film: Film as an Emotion Machine*, Ed Tan (1996) develops the concept of 'the diegetic effect' (Burch 1979). Tan holds that under the spell of the diegetic effect, viewers experience the fictional film-world[68] as akin to a parallel reality, or an extension of our own. He cites the imaginatively elaborated illusion of a persistent, authentic reality as '[t]he perceptual and cognitive basis for … situational meaning [in the feature film]' (Tan 1996, p. 52).

Tan notes that theatre has historically striven to scaffold something like the diegetic effect, but that cinema has a visuospatial advantage over stage productions: '[Film's] diegetic effect is supported by a more general one, observed in studies of the perception of pictures. … [A] monocular perspective … draws the beholder in a position that is defined in relation to an imaginary space behind the window

[67] The difference between the **INTERACTION** frame and the **SELF** frame can be thought of like this: A tennis rally is a symmetrical exchange that sensitises us to the '*inter-*' aspect of a gameful *inter*-action. The **SELF** frame, meanwhile, speaks to the flash of activity you feel throughout your nervous system when you sense that a tennis ball is on a high-speed collision course with your head.

[68] Burch uses 'diegetic'; Tan uses 'fictional'. For our present purposes, as for Tan (1996, p. 19 n[39]), the distinction is not a pressing one.

formed by the picture plane and the frame' (Tan 1996, p. 52). He is describing the same perspectival quirk that makes it appear as if a portrait's eyes follow us around the room: The painter's viewpoint is like a monocular camera into which the subject is always looking. Consequently, wherever one sits in a movie theatre (bar perhaps the front-most lateral seats), one gets the same visual impression of profilmic space. Tan takes this elementary optical lifelikeness to undergird much of cinema's affective efficacy. Naturally, theatre creates illusions of reality, too—'*la réalité virtuelle*', in the words of dramaturge Antonin Artaud (1938, p. 49)—but film levels the playing field by decreasing the chances that audience members in the less desirable seats will get distracted gazing up at lighting battens or at actors waiting in the wings.

Tan states that the illusion 'of a magic window through which one observes another space' conveys a sense that one is 'literally—indeed, physically' present in the film's fictional world (Tan 1996, p. 53). A direct consequence of the optically-upheld diegetic effect is for the film as a crafted artefact to recede from figurative view: It's thought that as long as spectators are rapt by situational meaning conveyed in and by a film's moment-to-moment narration, they're broadly (though never *absolutely*) indisposed to contemplate the film as a human-made object. Tan admits, however, that the sense of being an attendant witness to a film's plot is indeed conspicuously contrasted by the fact that diegetic events *cannot befall viewers themselves*: Spectators are always one step removed from diegesis, kept distant by the film's windowed presentation. Movie viewers are always positioned as **External–Passive–Self**, to apply the language of Chapter 2. Therefore, following emotion theorist Nico Frijda (1986), Tan sees fiction emotions as necessarily 'object fate' or 'fortunes-of-others' emotions (Frijda 1986; Ortony, Clore, and Collins 1988, pp. 92–105; see also Järvinen 2008): They are by definition about agents or characters that are *not* oneself. Tan's first emotion category can be preliminarily defined as concerning other entities; their relations and situations.

In a later essay, *Emotion, Art, and the Humanities*,[69] Tan (2000) expands his initial emotion category to have relevance beyond 'the traditional feature film' of 'classical Hollywood cinema' (Tan 1996, p. 8), renaming it 'representation emotion(s)'. Echoing the Husserlian logic of pictorial intentionality noted towards the end of the previous chapter, he writes:

[69] An entry in Guildford Press' *Handbook of Emotions* (Lewis and Haviland-Jones 2000). N.B.: Second Edition only.

> 'Art works can be appraised [in] at least … two ways, each resulting in a … distinct object of emotion. One is the art work as a [hu]man made, material artifact ('Oh, what a lovely painting!'). Emotions related to the artifact may be called … [*artifact*] *emotions*. The other object is the representation … itself ('Yech, what an ugly man!'). Figurative paintings represent persons and objects in another time and place, a novel conjures up a fictional world, a sculpture mimics a human figure, … and so on. … Emotions resulting from appraisals involving elements of the represented world are called [*representation*] *emotions*.'
>
> (Tan 2000, n.p.)

Representation emotions are practically the same as fiction emotions or narrative emotions (Frome 2007), only they needn't be about purely *fictive* things or situations, and are not limited to strictly *narrative* media. Labelling this frame of experience 'the **REPRESENTATION** frame' acknowledges that we can also have fortunes-of-others or object-fate emotions (as well as *non*-emotional thoughts; *non*-valenced perceptions) about *non*-fictional things that *do* exist in reality. This distinction is useful, and is best exemplified by itemising some prototypical and less-prototypical examples of thoughts formulated and emotions felt in the **REPRESENTATION** frame.

First, a textbook example. Being vicariously sad for Simba the lion when his father, Mufasa, is killed in Disney's *The Lion King* (Minkoff and Allers 1994) is a paradigmatic **REPRESENTATION** emotion. Here, sadness is had both towards and because of a narrative fiction. Any sadness felt for Simba takes the protagonist's sympathetic situation as its intentional object and occurs *without* an awareness that Simba only visibly exists because paint has been applied to acetate.[70] Should a spectator not *feel* anything in particular towards Simba but nevertheless register that 'now the lion cub is fatherless', I would take this to be similarly indicative of the **REPRESENTATION** frame, albeit *in the absence of emotion*. Any relief or satisfaction felt when the evil Scar gets his come-uppance are the intended correlates or outcomes of the allegiance we're meant to feel towards the young protagonist.

Now consider semi-factual works—so-called 'true fictions' (Friend 2012)—bearing in mind the human tendency to track and respond emotionally to non-fiction narratives in a manner that is consistent both in kind (Zillmann and Knobloch

[70] A baldly constative thought like, 'the cartoon lion is hand-drawn' would be indicative of the **ARTEFACT** frame—*not* the **REPRESENTATION** frame—since it betrays a strong media awareness.

2001) and in degree (Goldstein 2009) with how we respond to fictions. Recall our passing references to Randall Okita's *The Book of Distance* (2020); a VR biopic and docudrama. The non-fiction narrative's optimistic beginnings are quickly undercut by harrowing misfortunes as the paranoia surrounding World War II leads Canadian authorities to visit untold cruelty upon Randall's grandfather Yonezo, his wife, their young children, and some 22,000 other Japanese immigrants. The family's farm is seized and sold without their consent; they are separated and interned in labour camps. And on August 6th, 1945, the U.S. military drops an atomic bomb on Hiroshima. Voiceover narration and mimetic monstration portray Yonezo learning that his parents and siblings back home are among the eighty-thousand civilians killed in the attack.

Those of us who had to pause *The Book of Distance* and remove the VR headset to wipe tears off its lenses were touched by **REPRESENTATION** emotions had towards a *non*-fiction narrative. Thinking about historical atrocities can evoke melancholy on any day, but when we experience strong reactions to dramatised or stylised 'based on a true story' narratives, it is precisely *how* events are represented that makes us attend and emote at just the 'right' time. It is the particular way *The Book of Distance* re-presents and contextualises a world-changing moment in virtual space, in and through orchestrated time, and in relation to sympathetic narrative agents that lends the moment such emotional acuteness. We cry in part for the historic loss of life, but owing mainly to our apparent proximity to some of its most immediate victims. It is the fact that we have spent time with and indeed *seem to be there with* the Okita family—both those who emigrated and those who remained—that makes the representation hit home so hard.

Here, Tan's claims about the affective immediacy of the diegetic effect again become relevant. Where Dirk Eitzen (2020; 2021) argues that VR is at an emotive disadvantage compared with film owing to its (current, apparent) inability to show emoting faces in close-up,[71] I suggest that what VR lacks in time-tested cinematographic practices like reaction shots may be partially counterbalanced by simulated spatial proximity. That is to say; if, as Tan supposes, film's illusion of space gives us perceptual access to diegetic worlds, then VR's co-habitable volumes do away with the need for perspectival tricks altogether by phenomenally injecting the participant into a (potentially) narratively structured, affective

[71] The reasonable rationale being that VR is therefore less suited than film to leverage affective mimicry and/or motor empathy (see Plantinga 1999 cf. Coplan 2006).

environment. We no longer need peer through magic windows: The door's wide open.

As Yonezo is shown silently processing the news in the foreground, within arm's reach of the participant, his little sister plays in a traditional Japanese home behind him. He falls still, and the spotlight on him dims as the scene begins to splinter and evaporate in slow motion. Tatami mats are torn from the floor, shoji screens are pitched off to the side, and an innocent child is frozen in time. It would be wrong to suggest that we do not feel for the real, once-living figure of Yonezo's sister, and even more egregious to imply that our sympathies for the war dead do not contribute to the lumps in our throats. But it is the one-two punch of the non-fiction narrative's structure and measured spatiotemporal unfurling that explain much of the climax's affective momentum. Heaping loss upon loss, injustice upon injustice, and providing participants with spatially proximal figures with whom to sympathise, *The Book of Distance* renders this globally ruinous moment as the low point in the life of one man in particular. Twenty minutes ago, we had no idea who Yonezo Okita was. Now, as he stands before us, we weep both for and with him. This is the power of attending and emoting in the **REPRESENTATION** frame—a medium-*non*-specific phenomenon potentially lent further acuteness by VR's ability to put us *there*.

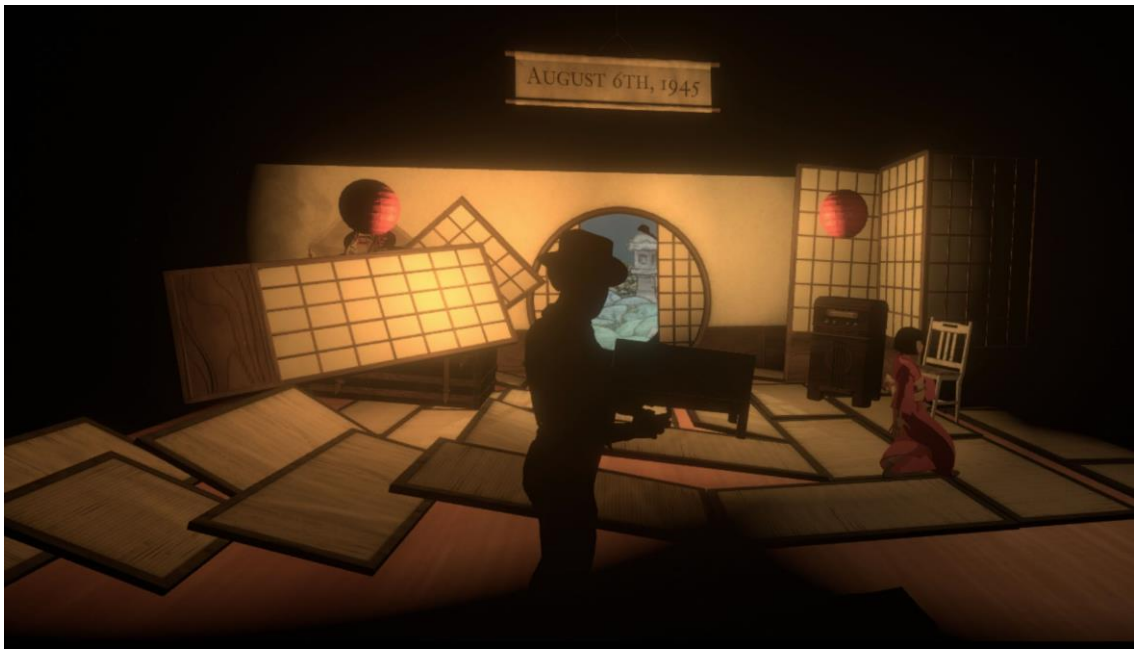

Fig. 6.2: *The Book of Distance* (Okita 2020).

6.1.2 Interaction

When we cease to be mere observers and become virtually acting agents; players or participants piloting avatars or other loci of control, the intentionality of our thoughts and feelings may point towards things that *we ourselves have done*, or that we've fundamentally *failed to do*. Games and interactive artworks thus boast a different emotional 'palette' or affective 'register' from film (Wright quoted in Burdick 2006; Isbister 2016). Non-interactive media like film can cue a few 'first-hand' emotions like genuine fear or disgust at a realistic depiction of gore (Carroll 1990). But bar moments of self-reflection or mind-wandering (Vaage 2009; Hanich 2019), movies—which trade almost exclusively in empathic or vicarious emotion—cannot elicit *first-hand* guilt, pride, regret, anger, or frustration, since these are all contingent upon an individual's own (in)actions.

The two-way relationship afforded by interactive media is captured by what Bernard Perron (2005; 2013) calls 'gameplay emotion'. However, since not all interactive media are meant to be approached or experienced playfully, I suggest that refiguring this category as the **INTERACTION** frame of experience is a simple way of extending its applicability. Renaming the category lets it account for feelings elicited in relation to interactive media that are decidedly *not* games. Prompting output from an AI chatbot is an interactive exchange that is not usually intended as a game. Similarly, Chilean artist Marco Evaristti's brutal and controversial artwork *Helena* (2000), in which live goldfish were placed in water-filled blenders in an art gallery, is decidedly un-game-like. Exhibition attendees discovered that the blenders were indeed operable, and the fish very much blendable. Those who pressed the fatal buttons were engaging in (an) interaction, but were *not* actuating game mechanics or enacting 'gameplay'. Regardless, to make our initial examples relatable, it is indeed wise to begin with the cultural category of video- or computer games per se.

Perron (2005) begins by noting that Tan has 'above all' defined emotions in film viewing as '*witness emotions*[,] because they are elicited … [in relation to] a controlled and invisible observer's position' (Perron 2005, p. 2 – italics original). Perron admits that in games, just as in film, narrative *can* play a significant role in our appreciation of the work. 'But', he asserts, 'they are certainly not the main part of the experience. … [W]e are playing for *gameplay emotions* … [which are] emotions arising from our actions in the game … and the consequent reactions of the game(-world)' (Perron 2005, p. 3 – italics original).

Perron's gameplay emotion situates the player's frame of psychological reference squarely within the game *as* a ludic system. That is, *irrespective* of diegesis or representational layer, or any lack thereof. The experiencer of emotion in this case is fundamentally a physical and a virtual agent: We cannot be said to experience gameplay emotions when we watch a friend or an Internet streamer play, since in these contexts, we are not in control of the action ourselves.[72]

The feeling of panic or suspense caused by a game displaying a real or a phoney countdown timer is a classic case of gameplay emotion. We feel flustered and act in a hurry because the prospect of failure promises to have repercussions for our real time and enjoyment—and probably also threatens an unfavourable virtual outcome, too. One might have a similar physiological reaction when watching a character rush to defuse a bomb in film: The heart pounds and attention becomes focused on the high-stakes race against the clock. But despite biological parallels between these two types of media-cued panic, the **INTERACTION** version of panic caused by a ticking timer in a digital game is fundamentally dissimilar from its filmic or **REPRESENTATION**-based counterpart.

Assuming the countdown timer in this hypothetical example is not a bluff, its depletion is likely to result in some sort of setback, punishment, or fail state ('Game Over'). This may imply narrative consequences but, more proximally for the player, is likely to result in the loss of in-game resources and/or having to reinvest real time and effort to restore progress. Emotions had in the **INTERACTION** frame therefore speak to a different configuration of relata between self and virtual world than do 'fortunes-of-others' emotions: They are fundamentally about our (in)actions within, and relationships to, games' simulated environments. Further examples include thoughts and feelings had in prototypically videogame-y situations like, 'do I have enough ammo to kill this demon?'/'*oh no!*—I don't have enough ammo to kill this demon!', but also incredibly mundane, non-game-like interactions that are hardly likely to elicit emotion, such as, 'this kitchen cabinet opens smoothly'/'I'm *exhilarated* by how smoothly this kitchen cabinet opens'.

[72] Cf. Frome's spectatorial 'game emotion' (Frome 2006a), which is not easily distinguishable from narrative or representation emotion, since it is not about one's own actions but rather witnessing the fortunes of others in the capacity of an observer.

Fig. 6.3: Simulation mechanics so mundane it'd be a stretch to call their enaction 'gameplay'. *IKEA VR Experience* (IKEA 2016).

INTERACTION is thus not synonymous with gameful situations. In some cases, speaking of the **INTERACTION** frame seems preferable to 'gameplay emotion' on account of the *ordinariness* of the situation (Fig. 6.3); other times, it is owing to the *seriousness* of the work (Fig 6.4). An example of the latter is Shola Amoo's *Violence* (2020). The piece considers the relationship between race and perceived acts of violence, imploring us to question whether our preconceptions and knee-jerk reactions about what's socially and morally justifiable in terms of protest and activism aren't shot through with the unconscious biases of structural racism.

In *Violence*, a Black man thrashes choreographically around an enclosed, sterile space, neither deliberately ignoring nor explicitly acknowledging you. Participants are likely to discover that they can assist him in attempting to break down the walls of their shared confines by striking at the white panels that form the claustrophobic enclosure. While doing so, participants might entertain thoughts or feelings like, 'my actions aren't effective', or 'we're trapped', which may *or may not* be accompanied by tell-tale bodily sensations of fear or anxiety. In terms of perceived relationships between self, actions, and environment, thoughts or emotions that emerge in this way, in the **INTERACTION** frame, are indeed analogous to Perron's gameplay emotion. But admitting that this frame of experience captures not only feelings but also *thoughts* about any and all forms of **INTERACTION**

(as opposed to only games and gameplay *emotion*) lets it account for such situations as the scenario solemnly and symbolically depicted in *Violence*.

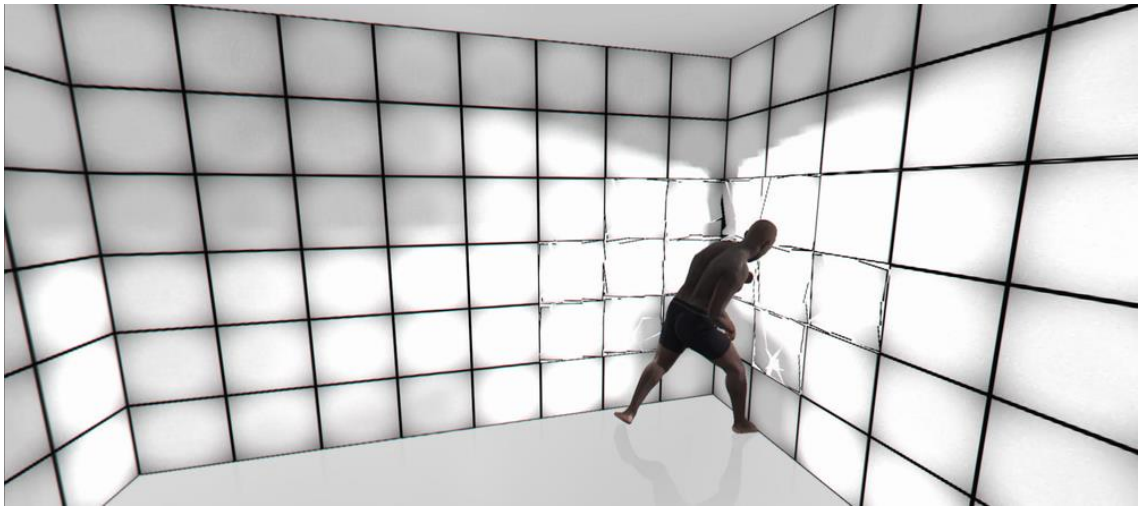

Fig. 6.4: *Violence* (Amoo 2020): Not a gameful situation.

6.1.3 Artefact

Not all media-cued thoughts or feelings point 'inwards', towards the world projected by a work. Some are characterised by media awareness betrayed by the work underscoring its status *as* a work. Tan and Perron are joined by Jonathan Frome (2006a; 2006b; 2007) in acknowledging that while evoking **REPRESENTATION** and **INTERACTION** emotions may be the *idée fixe* of film and playable media, these two primary modes of narrative and agential experience are far from exhaustive. That media can be apprehended as artefacts—while usually subordinate to 'story' or 'gameplay'—is equally important to audiovisual and interactive artworks' total modi operandi. Though he takes **REPRESENTATION** emotions to be dominant, Tan admits that '[a]s soon as … [audiences] are aware, no matter how fleetingly, of the operation of … [an editorial] intelligence, they are … aware of the film as artefact' (Tan 1996, p. 65). Emotions and non-emotions had in this way, with an awareness that some creator is behind the work, indicate that the viewer, player, or participant is attending in the **ARTEFACT** frame (Tan 1996; 2000; Perron 2005; 2013; Frome 2006a; 2006b; 2007).

Tan considers sudden plot twists as prospectively orienting audiences towards a film *qua* film. Games can draw attention to their artifice by having an in-world entity addresses the flesh-and-blood player via their avatar–character, perhaps advising the virtual agent (and not the player themself) to 'press B to open your inventory' despite that neither the B button nor a thing called an inventory are supposed to exist within the game's represented world. We experience artefact emotion when we're delighted that a film's cast have burst into song and dance; when a computer-generated face epitomises the 'uncanny valley' effect (Mori 1970); when we're incredulous that a character has been killed off so early in the plot, and are hopeful that they'll make a comeback in the third act, and so on. A viewer, player, or participant may be attending in the **ARTEFACT** frame but *not* experiencing an emotion if, for example, they notice an instance of product placement but do not feel strongly about it one way or the other.

With reference to flouting the conversational maxims of relevance and succinctness (Grice 1975), Tan observes that awkwardly long fight scenes, lurid gore, or 'torrid lovemaking' (Tan 1996, p. 64) can all draw attention to the work *as* artefact via the creative agency evident in the very act and process of choosing to monstrate or narrate a sequence in a particular way. Though Tan's examples of **ARTEFACT** emotions all bear a slightly negative tint, this frame of experience isn't only about noticing things that seem overwrought, lacklustre, or annoying. **ARTEFACT** thoughts and appraisals are equally often about perceived positives like sublime aesthetics, dizzying spectacle, or ingenious design. I shortly revisit the claim preparatorily made in Chapter 4 that despite being typified by media awareness, **ARTEFACT** appraisals do not harm immersion *as long as they are positive*.

Attending to popular or fine artworks in the **ARTEFACT** frame is by no means the preserve of critics, scholars, or aesthetes, and does not amount to the participant slipping into a 'distanced' and 'analytical' mode (cf. Klimmt and Vorderer 2003), even if they are drawn to an object of attention in full view of its illusionism. Furthermore, it is not *necessarily* the case that emotions had in or owing to this frame are less strongly felt than emotions had in other frames of experience (cf. Frome 2007, p. 833). A recent and celebrated example of attending in the **ARTEFACT** frame shows that even 'the average' player can be intensely, profoundly awe-struck when consciously focusing on something that they know to be a clever artistic trick.

Visual effects developer Matthew Wilde spent many months working on a piece of code that vastly enhances the perceptual realism of bottled liquids in the

flagship VR game *Half-Life: Alyx*. The innovative 'booze shader' was patched into the game as part of an official update, and was met with astonished, expletive-laden reactions from VR fans left reeling by the unprecedented visual fidelity of Wilde's method for rendering liquids.[73] Following the booze shader update, some half-million players were able to experience the artefact emotion of *awe* (or fascination; wonderment; admiration, etc.) as they bore witness to the most lifelike alcoholic drinks ever to be simulated. Internet communities' vocal reactions to the booze shader were so noteworthy that they drew the attention of games and technology journalists.

Fig. 6.5: The 'booze shader' in *Half-Life: Alyx* (Valve 2020). Appreciating the artistry and illusionism of this feature requires active perceptual exploration and is likely to inspire interest, fascination, and even awe. Hence contrary to what's often assumed about **ARTEFACT** emotions, a viewer, player, or participant attending to something *as* a design decision cannot be considered indicative of them slipping into a 'distanced' or 'detached' mode of (un)involvement.

A key issue, then, is whether the kind of media awareness presupposed by the **ARTEFACT** frame works against immersion defined as a psychological state that is similar to, if not identical with, *involvement* (Vorderer 1993; Klimmt and Vorderer 2003). I contend that it does not. Though it sounds counterintuitive, psychological immersion in VR and an awareness of the media experience *as* mediated are *compatible*, with **ARTEFACT** appraisals potentially even *reinforcing* immersion as long as they are appreciative or approving. Frome notes that **ARTEFACT** appraisals 'can cause frustration, amusement, surprise, and other emotions in much the same way that gameplay and narrative can' (Frome 2007, p. 833). While I agree completely, I think it's necessary to differentiate between the prospective

[73] In computer graphics, a shader is a piece of code (a script) that dictates how the surface of an object should be rendered relative to viewing angle, light sources, reflections, refractions, etc.

influence of negatively-valenced, positively-valenced, and ambivalent **ARTEFACT** appraisals, since not all of them will influence immersion in quite the same way.

Let's assume a player or participant is immersed in a VR experience to the point that they've not had a thought in the **ARTEFACT** frame in almost half an hour. They're *totally* absorbed or involved in whatever activity/ies they're enacting, which for the sake of the present example is an 'escape room'-style VR game in which a series of puzzles must be solved in order to unlock doors or similar. To be clear, this hypothetical participant *has not been consciously thinking about the fact that they're in VR*. But after struggling with a difficult puzzle for some time, entertaining several lines of thought in the **INTERACTION** frame ('does this key fit the lock?'; 'maybe I can crack the safe'; 'the pen might unlock the door', etc.), they finally become frustrated and slip back—against their best intentions—into the **ARTEFACT** frame, which gives rise to dissatisfied appraisals. 'This puzzle is stupid!'; 'the designers are stupid!'; 'how am I supposed to figure this out?'; 'the key is a red herring!'; 'this is unfair!', and so on. Their immersion is dissipated, and it'll take some quite impressive, attention-grabbing situations to help reinstate it.

Now consider what might've happened had this participant solved the puzzle earlier, instead of feeling frustrated by it. 'Ingenious design!'; 'what a head-scratcher!'; 'I wish *I* could come up with stuff like this'. They move on, their immersion preserved by the fact that their media-aware thoughts had and appraisals made in the **ARTEFACT** frame were appreciative or *positively-valenced*.

As mentioned in Chapter 4, media psychologists Christoph Klimmt and Peter Vorderer distinguish between the two extremes of 'a distant, analytical way of witnessing the events presented by the medium (low involvement) and … a fascinated, emotionally and cognitively engaged way of enjoying the presentation (high involvement)' (Klimmt and Vorderer 2003, p. 347). They write: 'People who consume a media product in the [low-involvement,] analytical mode of reception are conscious of the mediated nature of the experience', implying that an awareness of the experience as mediated means we are *not* fascinated; that media-aware VR participants are *not* emotionally and cognitively engaged or involved. I take this to be too bipolar an assessment—one that is cast into doubt by the *Alyx* booze shader example (wherein players are simultaneously intensely absorbed and entirely media-aware) as well as by the VR-specific observations of Hartmann and Hofer (2021).

Hartmann and Hofer (2021, p. 10) note that '[d]uring exposure, attention can move away or return to the medium, causing dynamic shifts in the salience of media awareness'. This fits with how I believe we rapidly and (mostly) involuntarily switch between frames of experience. While experiencing *Wolves in the Walls* (Billington 2018), I might be attending-as **REPRESENTATION** one moment, concerned about Lucy's loneliness. The next second, I might be attending in the **INTERACTION** frame as I try to fend off the wolves. I then switch without really realising it to the **ARTEFACT** frame in noticing and appreciating how wonderful the virtual environment's scenography and lighting design are. Here, since I'm fundamentally *appreciating* something in the **ARTEFACT** frame, my immersion is not jeopardised. When I appreciate *Alyx*'s booze shader or *Wolves in the Walls*' stunning set design, I am indeed *analysing* aspects of the work, as Klimmt and Vorderer claim, but it is incorrect to suggest that this makes me feel 'distant' (Klimmt and Vorderer 2003, p. 347), or that I am distan*ced* from diegesis by my fleeting appreciation of artistry.

Fig. 6.6: 'Oh no, too much!' Helping Lucy concoct a 'magic potion' in *Wolves in the Walls* (Billington 2018)—a moment that's likely to be attended at least partly in the **INTERACTION** frame: Lucy hands the participant different ingredients that can optionally be added to the cauldron.

On the one hand, it seems Klimmt and Vorderer are hasty to suppose that being aware of an artwork *as* a work, or media *as* mediated, is the same thing as the

viewer, player, or participant feeling 'distanced' and 'uninvolved'. But on the other hand, it seems slightly too permissive to suggest, as Hartmann and Hofer do (following Grodal 2002, p. 72), that 'the more *salient* users' media awareness, the more it "… add[s] to, and enriches, the phenomenal experience"' (Hartmann and Hofer 2021, p. 5 – my italics). Only *positive* salience or media awareness *enriches* the media experience.

To restate this in the plainest possible terms: The media awareness presupposed by acts of attendance made in the **ARTEFACT** frame is not, in and of itself, harmful to immersion (Hofer et al. 2020; Hartmann and Hofer 2021). Only *negative* or disapproving appraisals made in the **ARTEFACT** frame prospectively *detract* from our enjoyment of the work—and often, by extension, our immersion.

6.1.4 Social

The **SOCIAL** frame is active when a VR participant knows and attends to the fact that another human is controlling part of the virtual environment in real time (cf. pre-recorded performances). This is slightly different from what's captured by the concept of social *presence* insofar as social presence, like spatial presence, is defined as an illusion of non-mediation. Social presence implies the medium 'melting away'; becoming transparent and revealing the human user on the other end of the line *in high definition*. While I have suggested that the tendency to look 'through' or 'beyond' the medium is typical of the **SOCIAL** frame in VR (Fig. 6.1), this is neither a necessary condition nor the same as suggesting that we're given high-fidelity or unfettered social access to the other individual. As I define it, the **SOCIAL** frame can co-occur with, say, the **ARTEFACT** frame such that we're aware that another human is there *because* the work or the medium draws attention to itself and indeed *prevents* frictionless communication—not because it self-effaces.

For instance, if you and I meet in a stylised social VR world like *Half + Half* (Normal 2019), we may spend the first few minutes joyously laughing at each other's wibbly-wobbly avatar arms. Neither of us appears *un*mediated, and we do not perceive a figuratively high-bandwidth social connection between us since we cannot even speak to each other. (*Half + Half* converts all microphone input into 'nonsense' talk—both a fun little detail and a shrewd safeguard to prevent 'griefers' from spouting verbal abuse.) We'd be attending to features or aspects of the game-world (our arms; our speech) in the **ARTEFACT** frame, but with the human

user we know to be controlling that figure in mind. Or, alternately, we'd be attending to one another in the **SOCIAL** frame, but not experiencing a high degree of social co-presence (relative to what VR might otherwise afford) on account of obstructions that we attend to in the **ARTEFACT** frame.

Fig. 6.7: 'Noodley' avatars that cannot mediate speech in *Half + Half* (Normal 2019).

The **SOCIAL** frame can furthermore co-occur with the **REPRESENTATION** or **INTERACTION** frames of experience. This holds inasmuch as participants may also *deliberately* frame-switch in an attempt to make less tractable parts of the experience (i.e., others' unpredictable actions) consistent with their personal ludonarrative aspirations or the collective project of role-playing. Jonas Linderoth (2012) applies Goffmanian frame analysis (Goffman 1972/1986) to ethnographic observations as to how role-players in *World of Warcraft* (Blizzard 2004) effortfully 'upkey' game events to sustain a mutual make-believe. If one player needs an item from another (causing them to think in the **SOCIAL** and **INTERACTION** frames in tandem), they may 'upkey' their request to make it consistent with the **REPRESENTATION** frame, so not to disturb other players. Instead of typing, 'need HP' in the chat window, they might write, 'my essence ebbs away! Quick! A Lifestone!', so minimising the risk they'll harm others' immersion by 'reminding' the group that they're 'only' playing a game. One player's voluntary and effortful activation of

the **REPRESENTATION** frame may thus minimise the risk that others will be forced to involuntarily attend to the gameplay-related request in the **SOCIAL** and/or **INTERACTION** frames.[74]

To transpose Linderoth's findings to our current context, we can say that **REPRESENTATION** perhaps resides at the coveted core of multi-participant VR experiences where amateur actors strive to jointly forge a story. Unpredictable **SOCIAL** factors would therefore present perhaps the greatest threat to the consistency or believability of a collectively reified diegesis (Farkas et al. 2020, §4.1.2).[75] While not a universal truth,[76] this is certainly the case with theatrical VR performances in which professional actors shepherd a group of silent participants. An example of this is *Tempest* (Tender Claws and Piehole 2020): A brilliant reimagining of Shakespeare's magical comedy staged inside *The Under Presents*. Each performance of *Tempest* features a master of ceremonies playing the role of Prospero (or Prospera)—the only participant able to speak—whose job it is to prompt, corral, and entertain the group of human-controlled time sprites who come along for the ride. The actors who embody Prospero/a are such skilful emcees—such adroit directors of attention—that participants may forget that (A) other humans are 'playing' the other avatar–characters, and that (B) there is a physical and social reality to come crashing back to at the end of the forty-five-minute performance.

While it would be an exaggeration to say that attending to *Tempest* in the **REPRESENTATION** frame causes our ability to attend in the **SOCIAL** frame to recede into nothingness, a successful performance certainly *minimises* the amount of attending we do—the number of thoughts we form or appraisals we make—in the **SOCIAL** frame. For example, at the end of my first performance, having spent three quarters of an hour blissfully distracted from reality, I was suddenly reminded of real-world social issues when Prospera playfully suggested that my Miranda

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[74] Following Gary Alan Fine's classic study of tabletop role-players (Fine 1983; also Goffman 1972/1986, p. 81), Linderoth refers to players' psychological frames as 'laminated', which is to say frames *can* be simultaneously active *without* fatally co-mingling. I take this to be consistent with my claims about acts of attendance and appraisals made in the **ARTEFACT** frame only being harmful to immersion when especially negative.

[75] I take virtual spaces like *VRChat* (VRChat 2017) or *Rec Room* (Rec Room Inc. 2016) to be closer to Internet chatrooms than story-worlds, and do not consider them 'VR experiences' on the basis that they lack the kind of deliberately designed experiential arc that I take to typify the label.

[76] Some players or participants, for instance, might prefer the chaos of a poorly role-played narrative to the successful collective enaction of a plausible and well-executed one.

hadn't much subverted Shakespeare's two-dimensional, arguably sexist characterisation of the teenaged heroine. The accusation was justified. Had I known we were allowed to 'flip the script' without being considered troublemakers, I wouldn't have agreed to marry Ferdinand just because he and his shipmates had gathered a dowry of firewood. As Prospera sarcastically pointed out, 'a strong, independent woman' my Miranda was not.

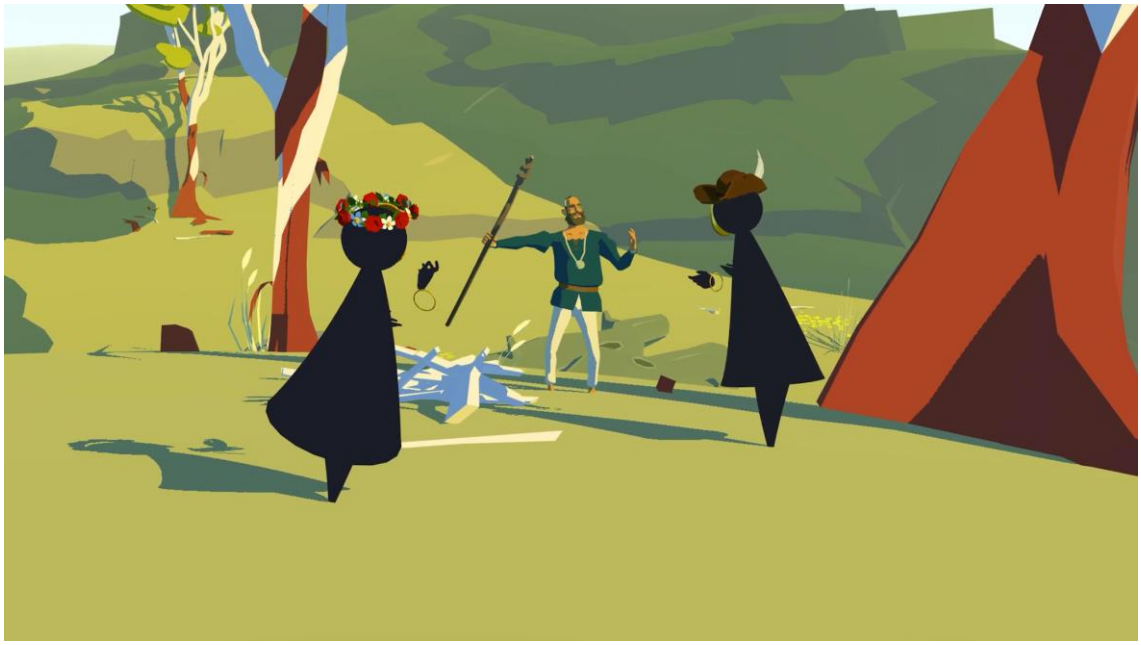

Fig. 6.8: A Prospero marries a Miranda to a Ferdinand during a performance of *Tempest* (Tender Claws and Piehole 2020) inside *The Under Presents* (Tender Claws 2019).

Where role-players develop strategies for insulating or 'laminating' the **REPRESENTATION** frame from unpredictable, potentially distracting **SOCIAL** factors (Linderoth 2012), amateurs like myself may be vulnerable to undesirable social emotions on account of their inability to silo off an awareness of real life. Prospera's tongue-in-cheek reproach of my failure to challenge Shakespearean gender stereotypes made me feel the uniquely **SOCIAL** emotion of *shame*. I say 'uniquely' because similarly to how I argued that panic, pride, and relief are essentially different in the **INTERACTION** frame as compared with the **REPRESENTATION** frame, *shame* felt in the **SOCIAL** frame is different from *shame* felt in single-participant VR experiences. I may feel a private kind of shame or guilt when I loose a longbow arrow at my robot dog in Valve's single-participant VR hub *The Lab*. But only in multi-participant experiences like *The Under Presents*' virtual staging of *Tempest* can I experience a truly **SOCIAL** kind of embarrassment (Zahavi 2012).

6.1.5 Self

The **SELF** frame is active when participants respond affectively and/or behaviourally to a virtual stimulus—a situation, event, or an agent's action—as if their *actual* person is being addressed: Not one's individuated *biographical* self, but the sense of physical self that appears common to most higher mammals.[77] Attending, perceiving, and (re)acting in the **SELF** frame presupposes a cognitive response that is faster, more automatic, and is not as extensively processed as the 'fortunes-of-others' appraisals that typify the **REPRESENTATION** frame, or the weighing up of performance-related factors that connotes the **INTERACTION** frame. Behavioural reactions had in or owing to the **SELF** frame are evidence that the participant has momentarily and pre-rationally (mis)perceived, on some level and to some degree (ISPR 2000), that a virtual object or entity can or will act upon them in some way, either positively or negatively. (Recall the 'react-as-if-real' paradigm discussed in Chapter 4, Section 4.1.2.1.) In this sense, appraisals made and reactions had in or owing to the **SELF** frame are indicative of presence experiences, even if only fleeting. The following examples of how the **SELF** frame centres on one's sense of bodily integrity and psychological safety are well-documented in the scientific literature.[78]

Virtual body ownership illusions can be induced in VR when the participant's physical body position matches that of the avatar body (Yuan and Steed 2010; González-Franco et al. 2014; Kondo et al. 2018). The illusion of avatar body ownership can be strengthened by synchronous visuotactile stimulation: If an experimenter strokes the participant's hand with a feather in sync with a virtual feather

[77] The affective 'core' self, after Damasio's 'core consciousness' (see J. Waterworth and Riva 2014; A. Damasio 1999).

[78] Frome's 'ecological emotion', named for J. J. Gibson's ecological psychology, is similar to the **SELF** frame. A key difference is that Frome takes ecological emotion to underpin all other emotion categories (besides artefact). Responding with, say, fortunes-of-other emotions to a fictional event *as if real* means apprehending the situational meaning of that event *as if* it were part of one's own ecology, or oneself a part of *its*. (See Frome 2006a; 2006b.) I prefer to designate the frame with reference to its antecedent and/or object: The self, or self-preservation. Conceptually, this disentangles it from the **REPRESENTATION** and other frames somewhat, though they can and do still co-occur in practice.

that appears to do the same to the (avatar's) virtual hand, an illusion of virtual body ownership can be quickly, robustly, and dependably established.[79]

With an illusion of virtual body(part) ownership in place, something wonderfully wicked can be achieved: In one setup (González-Franco et al. 2014), participants observe their virtual hand be sliced by a knife that thrusts up through the tabletop on which it sits. The perceived threat triggers motor cortex activation consistent with the participant having integrated the virtual hand into their body schema. They 'believe', on some unconscious level, that the hand is really theirs; that their physical self is being harmed. VR entertainment experiences can easily trigger similar reflexes or reactions. Startles and flinching caused by what we may safely assume to be genuine virtual body(part) ownership illusions are both indicative and potentially reinforcing of acts of attention, perception, and appraisals made in the **SELF** frame.

In *Don't Let Go!* (Skydome Studios 2016), participants don their VR headset, sit at their computer desk, and place two fingers on their physical keyboard: Their avatar visibly does the same at a virtual desk and keyboard. The challenge is not to flinch—to keep your fingers on the keys—while phobic material and dangerous things are paraded before you. Spiders and snakes scuttle and slither across your virtual hands on the virtual desk; a swarm of bees gets close to your face; a velociraptor enters the room and sizes you up. Though far from concrete evidence of a body ownership illusion taking hold at the neural or cognitive-architectural level(s), all the behavioural hallmarks are there. It's fascinating to watch participants—newcomers to VR especially—squirm and struggle to suppress musculoskeletal reactions like the withdrawal reflex as their eyes insistently 'tell' them that their actual, physical **SELF** in danger.

As VR becomes more mainstream and familiar, such strong reactions will become harder to elicit. Participants will develop media schemata that help them better differentiate reality from virtuality on an unconscious level, so tempering the intensity of pre-rational reactions. But even when outward reactions are partially suppressible, some researchers suggest that autonomic responses betrayed by physiological markers like electrodermal activity (EDA; galvanic skin response, or GSR) indicate that participants' nervous systems respond in a manner

[79] This is similar to how the non-VR 'rubber hand illusion' is induced (see Kammers et al. 2009).

consistent with 'real life' independently of any attempts at maintaining a cool veneer of indifference.

Jim Blascovich and Jeremy Bailenson (2011, Ch. 3) discuss the inevitability of sweaty palms when exposed to the famous VR 'pit demo', now reimagined commercially as *Richie's Plank Experience* (Toast VR Ltd. 2016) (see also Meehan 2001; Jerald 2015). In *Plank Experience*, participants are invited to walk to the end of a two-metre virtual board that juts out the side of a skyscraper some fifty storeys above street level. This seemingly simple task can be made surprisingly (and often comically) difficult by our inbuilt aversion to 'visual cliffs' (E. J. Gibson and Walk 1960); our impulse for self-preservation, or maintaining bodily integrity. Typical reactions among first-timers—even those who claim not to be nervous about heights—include shaking, sweating, swearing, and refusing to walk the plank. Even those who make it to the far side of the gangway are sometimes too nervous to jump to their virtual demise (which, of course, doesn't really hurt unless you actually fall over).

Fig. 6.9: *Richie's Plank Experience* (Toast 2016). Don't look down. Or do.

The ocular bias that causes this apprehension is oftentimes so strong that even removing the participant's headphones, holding their hand, and offering words of reassurance does little to impede a debilitating fear response. As with virtual versions of the rubber hand illusion, the impression of danger can be intensified

by adding other forms of sensory stimulation to produce cross-modally corroborated perceptions. Putting a real plank on the floor (which wobbles slightly side-to-side, providing tactile sensations in the feet and legs) and aiming an electric fan at the participant to simulate wind seems to considerably heighten fearful reactions had during a pit demo or *Plank Experience* in or owing to the **SELF** frame.

A third, less unpleasant way VR can make us feel as though our actual **SELF** is being addressed is via virtual agents—particularly when they establish eye contact and maintain mutual gaze, or enter one's personal space. Studies from the Virtual Human Interaction Lab at Stanford show that participants feel uneasy at having their peripersonal space encroached upon or their gaze held in VR just as in real life (Bailenson et al. 2001; 2003). Naturally, this is unpleasant when it's a stranger or someone we're not interested in. But what about when we *like* the look or demeanour of the virtual human who approaches at us? Similarly to how Slater (2009) describes a forward or flirtatious virtual agent saying 'hello' as eliciting a natural response (see Section 4.1.2.1), participants exhibit a degree of behavioural realism in response to affable virtual humans following social norms (Pan, Gillies, and Slater 2015), and social interactions with attractive virtual humans has been found to cue physiological responses like blushing (Pan, Gillies, and Slater 2015) or sexual arousal (Renaud et al. 2002).

Fig. 6.10: *Together VR* (AURORA 2018): An unintentionally awkward 'dating simulator'.

To some, the fact that virtual agents can cause blushing or sexual arousal will seem self-evident. Pornographic games have existed for decades, and given that some form of erotic literature has presumably been with humanity since the advent of the written word, one might wonder; what's so special about VR's ability to cue realistic responses to sexy or friendly characters? The answer lies with how much or how little cognitive effort is required to elicit the kinds or magnitudes of reaction described above, or to suppress them. By presenting the participant with an external stimulus that they neither have to imagine into existence (as we do when reading erotic novels) nor are able to 'wish away' (as when we attempt to diminish the reality of movie monsters by turning away from the screen), VR leverages the automaticity and hermeticism of the visual system to circumvent the potentially diminishing influence of rational 'reality status evaluations' (Qian 2000; Grodal 2009).

As Frome (2006b) points out apropos vertiginous depth cues in an IMAX film, the specialised optic cells and associated visual subsystems responsible for detecting distance and motion are themselves incapable of evaluating a stimulus as 'real' or 'not real'—they simply report what they sense (see Tovée 2008, Ch. 4). The outputs of these specialised local systems serve as inputs to a higher-level, more consciously amenable global system for evaluating a percept's reality status. But in their very activation, the local visual subsystems still 'tell' the nervous system to be ready for action—just in case. This is precisely why some participants are scared to walk the plank in *Plank Experience* despite *knowing* and consciously *believing* that the seemingly dangerous drop isn't 'real' at all.

As with depth cues, we can attempt to attenuate our more extreme reactions to movie monsters or attractive virtual humans (e.g. screaming, hiding, running; reaching out to touch an attractive but intangible virtual human), but we cannot choose *not* to perceive them *as* monsters or *as* prospective sex partners. Of film viewing, Torben Grodal writes:

> '[T]he "stupid" robot neurons in the visual cortex are bombarded with often strongly emotion-evoking images, and it is only further along in the [perception–emotion–cognition–motor action] flow that a special brain mechanism will evaluate the reality status of these images in order to control our responses … according to their reality status.'
>
> (Grodal 2009, p. 154)

Noël Carroll (1990) calls this a paradox of the heart. The mere perception of something that seems threatening is enough to excite parts of the peripheral nervous system, via fast and automatic pathways, that underpin the appropriate survival response. We can learn to attenuate, but not to cognitively penetrate the visual subsystems' non-conscious functioning. The same holds for pleasant, appetitive things insofar as virtual food elicits emotional reactions 'similar to those expected in real[-]life situations' (Gorini et al. 2009). Stereoscopic 360° video pornography is found to be more sexually arousing than '2D' (flat-screen) pornography (Elsey et al. 2019; Simon and Greitemeyer 2019), and first-person or 'point of view' ('POV') pornography is seemingly more arousing than 'voyeuristic' scenes irrespective of whether it's delivered via HMD or conventional screens.

In summary, having a lifelike reaction to an object of representation because it appears to be relevant to the SELF—because some positive or negative affordance is perceived (Grabarczyk and Pokropski 2016)—is neither new nor specific to VR. What *is* new is the depth and tenacity with which these illusions take root in the embodied mind, the magnitude and persistence of the lifelike behaviours effected on the basis of our (mis)perceptions, and the felt intensity of the affective responses that spur us into action.

6.2 From Affect to Emotion

We've spoken about affect and emotion, but haven't formally defined them yet. What *is* emotion? And what is *an* emotion? We all recognise joy, fear, and anger as emotions, but what about 'butterflies' or startles? Are objectless states like ennui emotions? How about excitement? Affective scientists James Russell and Lisa Feldman Barrett note that '[e]motion is too broad a class of events to be a single scientific category, and no one [theoretical] structure suffices' (Russell and Barrett 1999, p. 805). Cognitive linguist George Lakoff goes so far as to suggest that emotion may be an 'essentially contested concept' (Lakoff 2016, p. 4; Gallie 1956), meaning the term defies an essence-specifying Aristotelean definition. Fortunately, there are at least five criteria on which scientists, philosophers, and other experts agree (Plamper 2015).

Points of consensus include that emotions comprise some combination of bodily feelings (sensations), mental evaluations (appraisals), and behavioural motivations (action tendencies). They take root in neurobiology and have a loosely

corresponding or broadly co-occurrent—but not strictly determining—cognitive architecture (structure). They can be differentiated by their phenomenal component (experience), and are articulated via culturally-inflected linguistic labels (emotion concepts) that we use to interpret and communicate our emotional lives to others (Niedenthal 2008; Moors 2012; Barrett 2014; Scarantino and de Sousa 2018).

Some of the media scholars cited in this chapter (e.g. Tan 1996; Perron 2005; 2013, following Frijda 1986) privilege emotional appraisals and action tendencies to the relative neglect of experiential and conceptual considerations. Others (Frome 2006a, following Damasio 2003) emphasise the common neurophysiological basis of all affective experience, and in so doing risk riding roughshod over valuable distinctions between emotion-like bodily sensations that may fundamentally *lack* an object on the one hand (core affective state), and more cerebral, potentially even affect-free assessments of perceived relationships between self and world on the other (emotional construals). If a theory is to help explain how media artworks elicit feelings *and* illuminate the role played by emotion in those very artworks' design, then that theory must strike a balance between appraisals, feelings, and behaviours; between emotions' structure, experience, and concepts.

To this end, I argue the cause of the constructionist approach (Barrett and Russell 2014; Barrett 2017), which houses the conceptual act theory of emotion (Russell and Barrett 1999; Barrett 2006a; 2006b; 2014). This contemporary perspective emphasises emotions' social learnedness, subjective psychological construction, context-sensitivity, and resulting heterogeneity. On the constructionist view, emotion is neither a suite of innate, 'hardwired' cortical programmes nor a natural category of which there are a finite number of discrete instances (Griffiths 2004; Barrett 2006a cf. Ekman 1992; Panksepp 2012).

Rather, emotions emerge as *conceptual acts*: They are linguistic concretisations of the embodied feelings caused by largely unconscious, automatic appraisals of perceived situations. In affective scientist Lisa Feldman Barrett's terms (Russell and Barrett 1999; Barrett 2006b; 2006a; Barrett et al. 2007; Duncan and Barrett 2007; Barrett and Russell 2014; Barrett 2014; 2017), prototypical emotions like anger or joy are the consequence of the conceptual *act* of labelling one's core affective state, which is to consciously identify and assign an object and/or a cause of an experienced bodily feeling, so giving it a name and an articulable reality.

6.2.1 Core Affective State

Constructionism's Jamesian approach[80] holds that upon encountering a stimulus or situation with survival or personal relevance, we first detect changes in our core affective state (which perhaps simultaneously triggers behaviours like fighting, fleeing, or appetitively approaching), *then* label and cognise our bodily sensations in terms of emotion concepts 'learned from language, socialization, and other cultural artifacts within the person's day-to-day experience' (Barrett 2014, p. 293).

Core affective state (or core affect; hereafter just affect) can be likened to a 'neurophysiological barometer' (Barrett 2006b, p. 31): It is ever-present, variable over time, and is susceptible to spikes or other sudden changes caused by internal or external stimuli. Hearing someone shriek in terror can trigger an affective change, but so too can drinking too much coffee or getting slightly sunburnt. Affect thus reflects a continual somatic reorienting: We are *always* in an affective state whether we register it or not, and our affective state is *always* changing, even if it's hovering undetectably around the 'neutral' zone. Much of the time, we aren't in pronounced enough an affective state to really articulate how we feel. ('I feel… normal.')

Affect's theoretical structure consists in two bipolar dimensions intersecting at their mid-points onto which a circumplex (or three) can be projected for illustrative purposes. (See Fig. 6.11.)

[80] As in the James–Lange theory of emotion, which suggests that we're sad because we cry—not vice versa (see James 1884; Lange 1885).

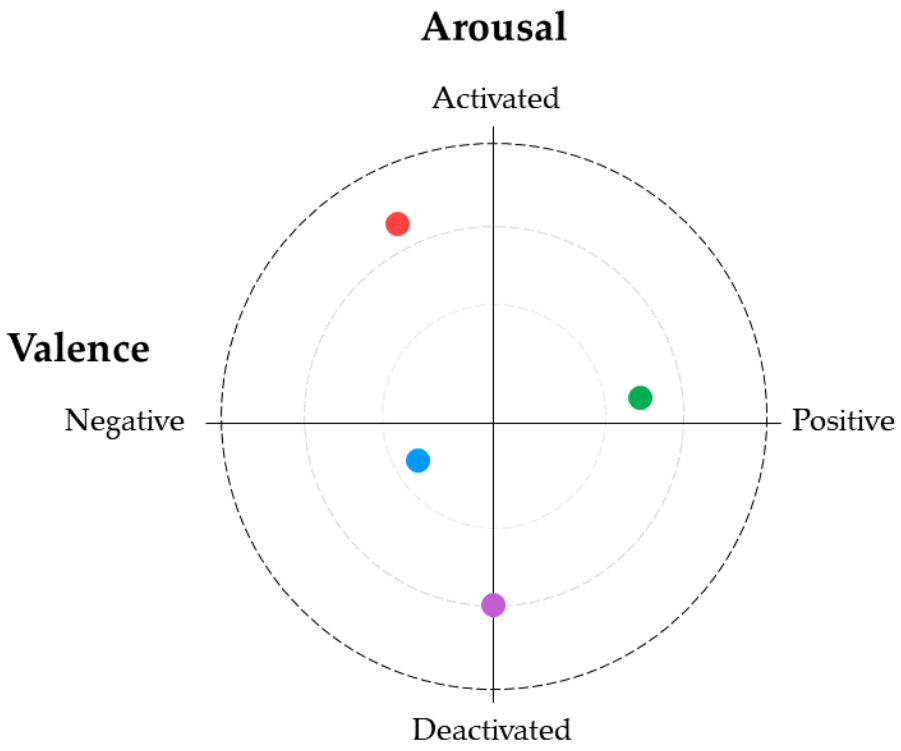

Fig. 6.11: Affect's theoretical space consists in two bipolar dimensions (**Valence** and **Arousal**) plus a circumplex. The coloured dots denote possible core affective states that are each receptive to different *and multiple* emotion categorisations, or conceptual acts. The red dot could be fear *or* anger depending on the bodily feeling's perceived antecedent (cause or object) and assigned emotion concept. Green could be joy *or* relief. Blue could be disappointment *or* embarrassment. Purple, lacking a valence, suggests plain old tiredness, but could equally be conceptually and linguistically reified as either an emotion *or* a more free-floating mood state.

Affect's first dimension is valence, sometimes called 'hedonic tone'. Valence can obviously be positive or negative, and less obviously neutral or *ambi*valent. Positive feelings emerge from positive or appetitive appraisals, perhaps cueing approach behaviours, while negative feelings are aversive, and are generally accompanied by avoidance tactics. Affect's second dimension is physiological *arousal*: We always feel in some way activated or deactivated. When all is 'normal', we feel neither palpably excited nor sleepy (activated/deactivated); neither good nor bad (positive/negative), and may barely be able to detect our own affective state—let alone categorise and describe it using emotion concepts like 'euphoric' or 'indignant'. In these cases, neither of affect's two dimensions pass the thresholds requisite for us to consciously register an embodied feeling.

Mild or middling affective states might include 'waking up feeling chipper' (Russell and Barrett 1999, p. 806), which implies a noticeable positive valence and a pleasant, perceptible level of arousal. Strong or major affective states are the most marked, and hence the most likely to manifest in terms of prototypical emotions. Most forms of fear and anger imply high arousal and a marked negative valence, but will have different causes, intentional objects, and understandings about how a situation relates to oneself. Affect's two dimensions do have an underlying neurophysiological reality to them, but as I describe them here, they are abstractions. In phenomenal experience, affect's dimensions or components blend such that subjectively, 'a person has one feeling rather than, for example, unpleasant and, separately, deactivated' (Russell and Barrett 1999, p. 809).

Affect alone isn't conceived as able to have an intentional object, although sudden changes one's core affective state can of course have detectable *causes*. In free-floating mood states, we don't think of our feelings as indicative of any *aboutness*: We may feel grumpy or despondent, cheerful or full of beans 'just because'. A startle response can be considered an affective reaction that is had *because* of an inbuilt impulse for bodily self-preservation despite not immediately being *about* anything. In the exact moment we startle, we have yet to determine an object of attention and perception. A startle, lacking an intentional object, is therefore not an emotion. It is, however, an affective reaction that may lead to emotion.

If a friend sneaks up on you and deliberately makes you jump, you might momentarily feel all the bodily hallmarks of fear, followed by relief, and then annoyance or anger if the startle made you drop your croissant. Here, the change in affective state that amounts to your startle is the emotion's *antecedent* (cause), but not its object: Your friend's unthoughtful prank is the object of any emotion that follows, which, on the constructivist view, only manifests if and when you consciously register how you're feeling (angry *at* the friend; sad *about* the croissant) in terms of a relationship between self and world. Affective states being interpreted in terms of subject–world relata is how emotions proper emerge. For the most familiar and common emotions, eliciting situations can be stereotyped: When they are, they are referred to as paradigm scenarios.

6.2.2 Emotional Construals

The emotional paradigm scenario for anger is having been wronged (de Sousa 1987/1990; Plantinga 1999). Should we feel all the bodily hallmarks of anger—a flushed face, a furrowed brow, shaking, racing thoughts—but note that we haven't *actually* been victimised, we may surmise that we are instead experiencing a lesser or different emotion (perhaps unfounded envy or some non-prototypical variant of anger) despite that our affective state remains the same. Perhaps it *is* anger, but caused by or directed towards something so trivial we'd rather not *admit* that it's anger—for instance feeling furious about losing a game. How we construe a situation—a relationship between self and world—as productive of our affective state thus determines whether we consciously experience and verbally report righteous indignation, unjustified jealousy, mere 'gamer rage', or something else entirely. Affect *informs* and *underpins* emotion, but construals of relationships between self and world are what seals the deal.

Amid all this, an appraisal—rather, a series of appraisals and rapid, subsequent *re*-appraisals—takes place (e.g. Scherer 2009, p. 1315, Fig. 2). Since the initial appraisal is the component that accompanies my pre-rational, affective bodily reaction, it plays a foundational role. But initial appraisals can be tempered by subsequent appraisals. Let's say I come face-to-face with a giant virtual spider.[81] My perception of a big, spider-shaped thing is *antecedent* to everything I feel and do that follows, but we cannot call it an object of emotion. The spider's most salient features—its spindly legs moving in a non-mammalian, almost alien manner—produce a silhouette-like representation in 'perceptual memory': This is stimulus recognition. I detect a familiar object, but have not yet categorised it. The spider-image's low-level visual features (its shape, how it moves) trigger 'hot', bottom-up, affect-laden cognition (Duncan and Barrett 2007).

Barrett (2006b, p. 32) states that the object is unnamed at this point. It has not yet manifested as consciously-accessible, but nevertheless causes the computation of its 'affective value'. Within just 25 milliseconds (*twenty-five thousandths of a second!*), my initial, rapid, and automatic appraisal is made (Russell 2003, p. 157): This primes me to effect evolutionarily-tuned, reflex-like behaviours in dealing with the perceived threat. In preparation for that, I experience bodily changes: My heart rate skyrockets; my peripheral nervous system is excited. Around 50–

[81] Cf. James' famous bear example (James 1884).

100 milliseconds after first sensing the spider-image, higher cognition compares the stimulus-driven perceptual representation with conceptual information stored in memory: I register that the object is a spider (though all I'm *really* sensing is pixels on a screen that suggest the shape of a spider). Knowledge proper can now be applied. Reappraisals are made, and this is liable to temper my reaction. I may startle upon perceiving what I initially take to be a giant spider, but the retention that 'this isn't real' prevents me from sprinting into a wall. I may back away from the perceived threat or try to attack it despite *knowing* it's not real, but the top-down application of cold(er) cognition prevents me from assailing it as wildly as I might a *real* giant spider. I do not smash my VR controllers against the wall in a misguided attempt to really kill the thing.

When all is said and done, what emotion do I experience? As James presciently hinted, this is not determined until I categorise my affective changes and the action tendencies that accompanied them in light of emotion concepts (Niedenthal 2008). This is the conceptual act that gives the theory its name. Whether I unconsciously 'decided' to fight or take flight, I could call my experience *either* terrifying *or* exciting. Both are valid options, reflecting different construals of the same situation, how much displeasure it harboured, and my own subjective preference for high-arousal media exposures. In theory, two individuals could have identical affective reactions to the same virtual stimulus but report different emotions in light of varying personal histories with the object or situation they perceive. They may perform different conceptual acts in reifying an identical affective experience to produce wildly differing emotional construals.

Constructionist accounts like Barrett's elegant conceptual act theory are compatible with the appraisal theories favoured by cognitive media theorists cited in this chapter *as long as* the appraisal is taken to be *constitutive* and not wholly *causal* of any emotion that follows (Ortony and Clore 2014). We can conclude this quick dip into the near-bottomless topic of emotion's ontology by stressing the benefits of a perspective that balances emotion's structure, appraisals, action tendencies, bodily feelings, phenomenal component, and concepts.

One advantage has to do with the context-sensitivity of affect as productive of emotion. As Gerald Clore and Andrew Ortony highlight, the evidence increasingly points towards emotions being 'more readily distinguished by the situations they signify than by patterns of bodily responses' (Clore and Ortony 2013, p. 335). As I have argued throughout this chapter, different emotions and indeed different frames of experience in VR amount to different apprehensions of relata

between self, world, and other agents. Fear for another is not the same as fear for oneself. Fear owing to something *I've done* is not the same as fear that something *may be done to me*. A constructionist view of emotion helps emphasise this, letting us distinguish between the frames of experience on the basis of the intentional object *and cause* of the feeling.

Further advantages are closely related in that they have to do with how different aspects of 'full-blown' emotions can be dislocated from 'raw' bodily affect. In forming and articulating opinions about VR and other media (particularly in the **ARTEFACT** frame) we employ emotion concepts in ways that often have little to do with how we actually *feel* or *felt* in terms of affective experience. Statements like, 'I was *angry/sad/overjoyed* that the designer did that' may not reflect the types of autonomic activity or action tendencies that are usually tied to those emotions 'in the wild'. Instead of concluding that they aren't 'real' or candid expressions, a constructionist perspective lets us instead say that they're simply emotion concepts dislocated from affective experience.

Relatedly, a constructionist account (as opposed to appraisal theories or basic emotion theories) lets us dislocate affect and emotion from the action tendencies that have historically been taken to define them. Perron, for instance, falls into the trap of giving a reductionist gloss of Frijda when he writes that, 'emotions are action tendencies' (Perron 2005, p. 5). Frijda has since[82] stated that he is disinclined to posit a single definition of emotion, or even a most important dimension. 'I do not exactly hold the view that "emotions *are* action tendencies"', he states, 'since the word "emotion" has no agreed-upon definition' (Frijda interviewed in Scarantino 2014 – my emphasis). The point is that we mustn't suppose that a VR participant who *doesn't* sprint into a wall when they see a giant spider is any less *fearful* than one who does. We can suppose that the one who reacted 'realistically' was perhaps experiencing a higher level of arousal and so had a harder time managing their affective reaction's control precedence (Frijda, Ridderinkhof, and Rietveld 2014). But to equate or reduce an emotion to an action tendency would be a mistake (even if that action tendency is taken as indicative of a higher level of presence or immersion).

Lastly, distinguishing between bodily affect and emotion proper underscores the vital difference between subpersonal feelings most strongly had in the **SELF** frame

[82] That is, since both Perron's publication and, of course, since the publication of Frijda's landmark book, *The Emotions* (1986).

and the (generally) more cognitively, conceptually-elaborated thoughts and feelings we have in and owing to other frames. Recall *Plank Experience*—the clearest example of how what would ordinarily count as an appraisal made in the **REPRESENTATION** frame ('what a nice view of the cityscape') is above all felt as relevant to one's own physical wellbeing. When VR participants have strongly aversive, fear-like affective reactions on the virtual plank, it is precisely because of a failure of 'cool', top-down cognition to temper and suppress 'hot', bottom-up, affect-laden perceptual experience. Ask the trepidatious participant why they're hesitating to walk the plank and they'll say it's because of the drop. Ask them if they know that the drop isn't real, and they'll confirm that they *do* know that. *But it's right **there***. They are debilitated not by belief per se, but by something more sub-doxastic (Gendler 2008; 2019). Whatever it's called, I take this to be indicative of an affective reaction—not quite a full-blown emotion—since emotions proper hinge on beliefs about states of affairs in the world (see Tavinor 2009, p. 135).

In the following and final chapter, I elaborate agency and patiency, explaining how the **SELF** frame is most conducive to engendering the latter. Experiences of patiency, in turn, are posited as the missing puzzle piece in discussions of how to create and sustain immersion. It's long been thought that letting the player or VR participant *act*, *act*, *act* is key to scaffolding attentional and agential involvement. But as we have seen (and shall further learn), the prospect of being acted upon—whether positively or negatively—is an equally acute way of seizing the participant's entire consciousness and focusing them intensely on whatever it is that addresses them and appears able to act upon them.

7 Agency and Patiency

> For wherever the hand moves, there the glances follow;
> where the glances go, the mind follows;
> where the mind goes, the mood follows;
> where the mood goes, there is the flavour (*rasa*).
>
> – Nandikeśvara (c. 4/5 B.C.)

Agency has been approached in three main ways in the study of virtual environments and interactive narratives: (1) Agency as actuating one's body to control an avatar via an interface, (2) agency as the execution of specific virtual actions as supported by simulation mechanics, and (3) agency as restricted to narrative decision-making; as applicable *only* when a story is shaped by a player or participant's deliberate decisions. All three approaches have merit in relation to VR, yet none is sufficient to account for all shades of agency encountered across the spectrum of things considered VR experiences. Rather than reconcile or render compatible these three contrasting perspectives, I suggest that we're best served by questioning, *why do we **want** agency*? What purpose does it serve in VR design as productive of participant experience, and what alternatives are there to affording the participant unlimited, unconstrained options for exercising agency?

In general, it seems, players and participants crave agency because immersion is most prone to emerge—we're likeliest to 'lose ourselves' in VR—when every affordance perceived, every decision made, and every action attempted is accepted as valid and supported by the simulation (Grabarczyk and Pokropski 2016). But given that VR and AI technology is still decades away from being able to concoct and autonomously manage scenarios littered with a near-infinite number of possible interactions on the fly, we must instead wonder; how to make mandatory exercises of agency (that is, actions that are essentially non-choices) feel organic, spontaneous, and non-constricting? Media artist and theorist Josephine Anstey (2005, p. 125) holds that 'rather than looking for ways to provide freedom and choice, we should be researching dramatic methods for manipulating users'.

My proposal for how to achieve this centres on *patiency*—the feeling of being acted upon.

As a force or a dynamic epitomised by its ability to *move* the participant; to excite the mind–body into action, patiency can be used to attentionally and affectively guide participants along designers' intended experiential arcs. Patiency-inducing situations can be contrived in VR such that participants are led into 'snares' (Anstey 2005a; Barthes 1970) that see them traverse a VR experience intuitively; pre-reflectively, thus minimising the risk that they'll dwell on whether an action was mandatory, or an exercise of agency 'illusory'. Following Anstey's ideas about how to 'script the interactor' (Murray 1997/2016a; Anstey and Pape 2002), I argue in this final expository chapter that catering towards patiency is every bit as important as affording agency in VR design thinking, and is evident in artworks that leverage 'physical or social context to constrain the users' actions and [control] pacing and surprise' (Anstey 2005a, p. 125).

The most successful VR experiences braid agency and patiency such that attention is guided, affect is elicited, immersion is scaffolded, and patiency is felt as every bit as pleasurable as the exercises of virtual agency we've come to covet so insatiably.

7.1 Three Views of Agency

Three main approaches are evident in the theorisation of agency in interactive media, each aimed at a different level of abstraction or analysis (Bódi 2020). For the sake of naming these positions, let's call the first 'bodily agency' and think of it as concerning agency at the micro-level; at the level of embodied cognition as causal of motor action. Bodily agency begins with the role fulfilled by a player or participant's mental and muscular activity (intention and action) and ends with the actuation of an avatar body. As such, it can be thought of as a functionalist perspective that makes only implicit commitments about a virtual environment's designed interaction mechanics,[83] which is where the second perspective's purview falls.

[83] Notwithstanding that the act of moving an avatar body *can itself be constitutive of mechanics*.

Let's call the next approach 'mechanical agency'. In its design-oriented manifestation, this understanding of agency equates possibilities for action with verbs, reasonably assuming that players or participants will enact individual virtual actions more or less as designers intend. Virtual actions like pushing, pulling, picking, opening, closing, grasping, flicking, holding, swinging, throwing, hitting, pressing, pinching, lifting, twisting, snapping, placing, putting, pointing, selecting, clicking, pouring, holding, writing, taking, accepting, hitting, carrying, and aiming serve as the basis for most exercises of mechanical agency in VR. Such verbs (and limitless others) combine with different virtual tools or instruments and contextual situations to produce an infinite number of possible meanings. *Throwing*, for instance, could result in an act of *saving* (a life). On this view, agency is equivalent to the actions afforded by a game or simulation's mechanics. But, according to some theorists, agency only occurs when outcomes are 'desired', or when the actions that produce certain outcomes are performed *deliberately*.

The third position can be dubbed 'narrative agency'. It concerns *only* decisions that shape a story's unfolding or conclusion. According to the strictest adherents of this view, a participant must be choosing between a branching plot structure's forking paths for an action to count as agential at all. Hence narrative agency is agency at the macro-level. Focussing on interactive stories' architectonics (a superordinate formal factor), narrative agency is disinterested in *how* either players or their avatars go about effecting the physical and virtual actions that cause pivotal plot events in a represented world. Proponents of the 'narrative agency' position are interested *only* in how multicursal story structures are traversed.

7.1.1 Bodily Agency

Let's first get a better sense of how agency has been approached as a fundamentally embodied phenomenon. As the reader may recall from Chapter 2 (Section 2.3.1.1), Andreas Gregersen (2008; 2014; 2016; 2019; also Gregersen and Grodal 2008) holds that digital games involving figurative representations remap players' intentions and actions via interfaces to controllable avatar bodies. The channelling of intentions through unnatural artefacts like keyboards, mice, and gamepads becomes effortless given even minimal practice thanks to the plasticity of embodiment and mind (see also Klevjer 2006; 2012; Vella 2015).

The crux of Gregersen's (and Grodal's) argument(s) is that 'different control schemes map different aspects of action onto different virtual bodies—all of them take our specific physical embodiment into account in order to produce specific experiences of [virtual] embodiment [and agency enactable thereby]' (Gregersen and Grodal 2008, p. 66). On this view, an avatar is not dissimilar from Heidegger's 'ready-to-hand' hammer (1927) or Merleau-Ponty (1962) and Michael Polanyi (1966)'s illustrative if problematic 'blind man's cane'.[84]

Minutiae aside, the basic idea behind these examples and analogies is that tools get incorporated into our field of awareness and intention when we use them to sense and act in the world: They become transparent; invisible—no more of a hindrance than the shoes on our feet as they fade out of conscious awareness and become integrated in our repertoires of situated action (Suchman 2006). The logic of tool-use becomes a kind of 'tacit knowledge' (Polanyi 1966/2009): We do not attend to the pen in our grasp—we just channel our agency through it. An avatar seen this way is equally a kind of tool; a prosthesis of sorts (Klevjer 2012).

Gregersen and Grodal note that the 'immediacy' (Bolter and Grusin 1999) or readiness-to-hand of physical and virtual tools has a concrete neurophysiological reality. Activity has been observed in the brains of macaque monkeys that is consistent with the cognitive-architectural-level idea that the body schema (again, see Section 2.3.1.1 or de Vignemont, Pitron, and Alsmith 2021)—the 'action-oriented [mental] representation' we have of our bodies—expands to include reach-extending tools like a croupier's rake (Maravita and Iriki 2004). This certainly helps explain how VR users can quickly learn to control and effectively wield elongated limbs (Kilteni et al. 2012), third arms (Won et al. 2015), and even mammalian tails (Steptoe, Steed, and Slater 2013).

Though Gregersen (and Grodal)'s explanation of how we control avatars applies equally to flat-screen media and VR, the experiential quality of the latter is obviously very different. Piloting an avatar in VR feels quite unlike how we control

[84] According to Dreyfus (Dreyfus 1990), the 'blind man's cane' is also referenced by Wittgenstein, although no citation is provided. Philosopher of disability Joel Michael Reynolds points out that (besides being unnecessarily male gendered) the 'blind man's cane' analogy for how tools become sensorimotorically transparent when familiar to the user 'omits the social dimensions of disabled experiences, misconstrues the radicality of blindness as a world[-]creating disability, and operates via an able-bodied simulation that conflates object annexation or extension with incorporation' (Reynolds 2017).

conventional game avatars in distal screen-space. Exercising agency over one's avatar body in VR is more like donning a motorcycle helmet and a clumsy pair of gauntlets: We can still survey a scene and (nominally) handle objects as we usually would, and generally only encounter fatal breakdowns in the sense of ownership and agency we experience over our avatar-mediated actions when tracking systems falter (Kilteni, Groten, and Slater 2012; Jeunet et al. 2018).

For example, if I rotate my hand to look at my avatar's palm but instead see my avatar's arm drift off into the distance, a disruption is evident between my efferent (outbound) motor signals and the afferent (incoming) sensory signals that should otherwise let me monitor my physical and virtual actions. My intention to rotate my hand has failed to tally with my apparent (i.e., represented) bodily action owing to hardware issues (e.g. tracking interference). I may still feel more or less like the owner of my avatar body, but I cannot be considered the agent behind my hand drifting away: A real-world equivalent would be someone yanking my arm away from me against my will.

A 'standard conception' of action, which hinges on an agent's intentions, thus further typifies the bodily approach to agency in virtual environments. Philosopher Markus Schlosser offers a general definition.

> '[A]n agent is a being with the capacity to act, and 'agency' denotes the exercise or manifestation of this capacity. The philosophy of action provides us with a standard conception and a standard theory of action. The former construes action in terms of intentionality, the latter explains the intentionality of action in terms of causation by the agent's mental states and events. From this, we obtain a standard conception and a standard theory of agency.'
>
> (Schlosser 2019, ¶1)

Gregersen (2008) gets his standard conceptions of action and agency from Donald Davidson (1980), who explains vital differences between intentional and unintentional[85] actions, and whether the owner of the body that seemingly effects an action must be considered the agent of that action. Gregersen follows Davidson in differentiating between the actuation of our bodies—our 'primitive' actions, or

[85] As in deliberate and non-deliberate. Note that we are no longer abiding by the specifically phenomenological definition of 'intention/al(ity)' mentioned in Section 5.4.2.

basic motoric activity that subserves more complex chains of causal action—and things that can be achieved thereby, like posting a letter or killing a king.

According to Davidson, all 'primitive' actions (hereafter P-actions) are body-based, and can be distinguished from any 'unintended begettings' that follow. But performing a P-action that ultimately produces an undesirable outcome does not mean that one is *not* the agent at the root of the causal chain. In his example, if I catch my foot on the edge of a rug and spill some coffee in the process, both the stumbling and the spillage are *my* actions: *I* am the agent of both events, as well as the sequence they comprise at any given level of granularity, despite that I intended neither.

'[M]istakes are actions,' Davidson tells us (1980, p. 46), 'for making a mistake must be doing something with the intention of achieving a result that is not forthcoming'. He goes on: 'Hamlet intentionally kills the man behind the arras, but he does not intentionally kill Polonius. Yet Polonius is the man behind the arras, and so Hamlet's killing of the man behind the arras is identical with his killing of Polonius' (1980, p. 46). Hamlet is thus the agent of an unintentional *gross* action that followed from an intention that triggered a series of basic bodily P-actions (grasping, unsheathing, lunging/stabbing, etc.).[86]

Plugging a VR example into the Davidsonian rationale shows that *un*intentional actions and/or the unforeseen consequences of *intentional* actions ought to be accountable for by any conception of agency in media. Crucially, agency can *malfunction*, and a theory of agency in interactive simulations like games or VR experiences *must not* obscure that our actions do not always go according to plan.

In *Aperture Hand Lab* (Cloudhead 2019), participants are made to shake hands with a robot that has the cocksure personality of a corporate CEO. 'Gotta shake that hand. Put 'er there', the robot insists, before complaining that the first handshake is too gentle. Participants will go to shake the robot's hand a second time. Only this time, its arm is torn off, causing it to wail in pain. 'You broke my arm! You're still holding it, you monster!' Now: First we must acknowledge that some participants will very much intend to rip the arm off the CEO-bot. Those who

[86] Ironically, as we soon see, Murray's account of agency in *Hamlet on the Holodeck* insists that an individual should *not* be considered an agent under such circumstances, since the specific outcome of their action is unintentional.

approach the interaction with mischievous or malicious intent are not relevant: We'll focus on those who have no conscious intention of ripping the arm off.

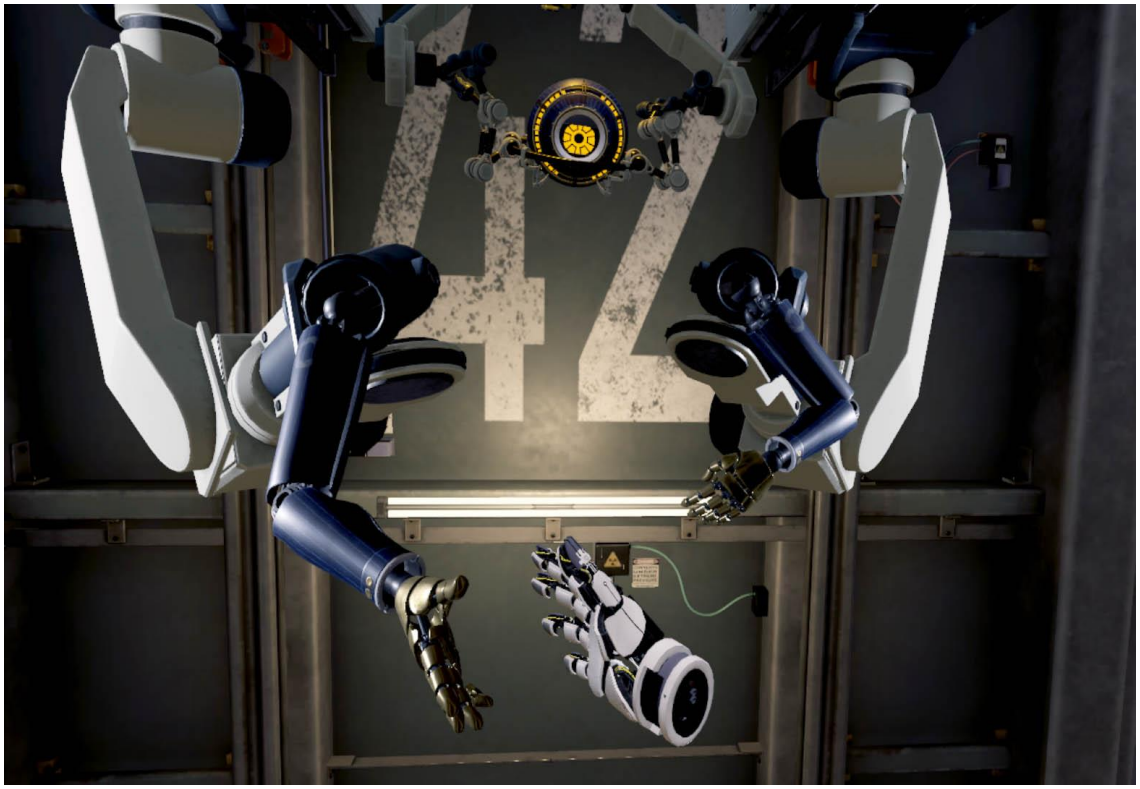

Fig. 7.1: An accident waiting to happen. *Aperture Hand Lab* (Cloudhead 2019).

Davidson's view is that the unwitting participant causes the destruction of the robot's arm as an almost direct consequence of the bodily P-actions that constitute one half of a handshake *irrespective* of innocent intentions. '[A]n agent causes what his [sic] actions cause' (Davidson 1980, p. 52). For the participant *not* to be an agent, the robot would have to unilaterally grab their hand only to have his own arm fall off without any effort exerted on their part. But this is not how the interaction works 'under the hood'. The moment the simulation detects an up-and-down motion as indicative of a handshake, the arm comes off. So, as long as there is intention behind the relevant P-actions to grasp and shake the robot's hand, *we must attribute what follows from that intention to the participant regardless of whether they want the robot's arm to come off*. Moreover, this attribution of agency must be made independently of whether any other courses of action were available to the participant. As Hans-Joachim Backe points out, 'decision theory has

compellingly argued … [that] intentions and decisions are not identical; many actions are not based in choices' (Backe 2017, p. 2, following Resnik 1987, p. 12).

Similar situations abound in VR. *Virtual Virtual Reality* (Tender Claws 2017) sees you unplug cables that turn out to be life support systems for artificial consciousnesses: The participant's P-actions of grasping and pulling cause the unwitting cessation of several synthetic lives. *Accounting* (Crows Crows Crows 2016) has you remove a battery from a machine to use for your own selfish ends. It transpires the machine was keeping the climate cool: You're the agent behind a terrible forest fire. *A Short History of the Gaze* (Pedercini 2016) has you snap touristic photographs of famous landmarks, which causes those landmarks to disappear in the very act of capturing them. *Bonfire* (Darnell 2019) begins with the participant crash-landing a spaceship because a lever snaps off in their hand. *Wolves in the Walls* (Billington 2018) has you add one too many ingredients to a magic potion, making it explode in a plume of blue-green smoke. *Crow: The Legend* (Darnell 2018) casts you as the Spirit of the Seasons, cajoling you to wave your hands in a manner that brings about a harsh winter that threatens a group of animals' survival. And so on. In all cases, the participant should be taken to qualify as an agent: They may not desire the outcomes of their virtual actions, but must be considered inadvertently responsible for them.

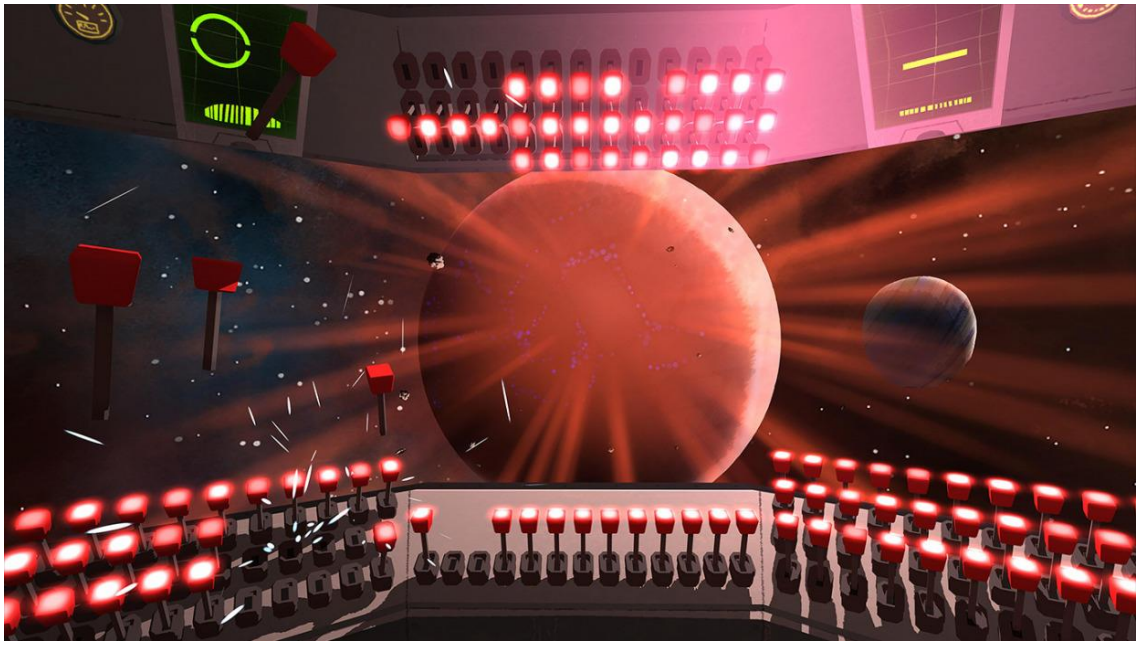

Fig. 7.2: Like Davidson's hypothetical captain who sinks the Bismarck by pressing the wrong button, the participant begins *Bonfire* (Darnell 2019) with a lever breaking off in their hand, causing their spaceship to crash-land on a nearby planet.

Can we ever *not* be the author of an action that we or our bodies have caused? Davidson holds that if a warship's captain presses a button believing it will summon a deck-hand who will bring him tea, when in fact the button launches a torpedo that sinks the Bismarck, then that captain *is* the agent who sank the Bismarck. 'But if he fell against the button because a wave upset his balance, then, though the consequences are the same, we will not count him as the agent' (Davidson 1980, p. 53).

The fact that we are often the agents behind any and all knock-on effects of our bodily actions causes problems for the meso- and macro-level schools of thought I've labelled 'mechanical' and 'narrative agency' respectively, whose adherents generally like to think we're only the agents or the authors of our actions when their outcomes are immediate, perceptible, and deliberate.

7.1.2 Mechanical Agency

'Mechanical agency' can describe the ideas of scholars who locate agency in a media system's 'material affordances' (Bódi 2020, p. 14) as accommodating of players' or participants' desires. This is not a monolithic position, but I presently push back against a recurrent theme that I take to be typical of it: The idea that *how* agency manifests must be made transparent to participants; that it's somehow unfair or undesirable for a simulation to trigger events against a participant's wishes or will, without their express, conscious intention.

Noah Wardrip-Fruin and colleagues look to resolve a tension between agency as a participant experience and agency 'as a structural property of works' (Wardrip-Fruin et al. 2009, p. 8). They define the concept as 'a phenomenon … involving both the game and the player … that occurs when the actions players desire are among those they can take (and vice versa) *as supported by an underlying computational model*' (Wardrip-Fruin et al. 2009, p. 1 – italics original). Similarly, Michael Mateas and Andrew Stern (2005, n.p.) write that '[a] player has agency when she can form intentions with respect to the experience, take action with respect to those intentions, and interpret responses in terms of the action and intentions; i.e., when she has actual, perceptible effects on the virtual world', adding that 'the player should be able to discern the underlying rules of the simulation'.

These conditions dovetail with the concerns of Brenda Laurel, who writes that '[i]nput based on non-voluntary measures like galvanic skin response or brain wave activity, if allowed to influence the action, might rob the user of his [sic] dramatic agency by obscuring or overriding the connections between his [sic] conscious choices and actions and their consequences' (Laurel 1986, p. 99).

The problem with these definitions and desiderata is that they risk prescribing all the fun out of VR. Not all actions are performed *consciously*, and some of the most impactful ways VR experiences can bewilder and entrance participants is by gleaning input in an oblique, almost clandestine manner—say, by recruiting near-involuntary movements like gaze behaviours[87] to trigger events that are *not* intended or desired by participants, yet which still produce interesting outcomes.

Consider this (admittedly clichéd) imaginary VR scenario: You're sitting in a smoky 1920s speakeasy. Your fast-talking acquaintance says, 'don't look now, but here comes Sal the Chopper'. Without thinking, you turn and lock eyes with Sal, who bops you on the head and steals your private investigator's license, gun, and hat. The participant might not have *wanted* these things to happen, and might not be able to form a mental model of the underlying simulation that will let them avoid similar encounters in the future (cf. Mateas and Stern 2005; Wardrip-Fruin et al. 2009). But whether this development was among the narrative possibilities the participant desired, we must still count their having turned to look at Sal the Chopper as an exercise of virtual agency. If this is, as Laurel suggests, to 'rob' a participant of their dramatic agency, then we must question her understanding of how tragic fates standardly befall dramatic protagonists. To paraphrase the Bard, 'tis sport to see the engineer hoisted by their own petard.

Similarly, it seems excessively stipulative to restrict agency to only physical and virtual actions that produce *perceptible* outcomes (cf. Mateas and Stern 2005). An outcome being perceptible doesn't only require that we can see, hear, or feel it: It also presupposes that we can learn of the exact nature of causal relations between our inputs and the simulation's response. We may be aware of the general possibility that our involuntary movements could be gleaned by the system for use as inputs, but if we do not know precisely when and how that will happen, or how our actions map to specific outcomes, then we can hardly call the outcomes of our actions perceptible or discernible. Again: This is not perforce a problem. Our understanding of agency in VR should absolutely include all manner of obscured

[87] Head and neck movements or, in the near future, unconscious eye movements such as saccades.

and opaque relationships between the inputs and outputs. The participant's goal is not to create a mental model of the rules of the simulation, and the task of a VR designer is hardly to school the participant in their creation's inner workings.[88]

7.1.3 Narrative Agency

The most visible account of agency in interactive media comes from Janet Murray (1997/2016a): She describes it as 'the satisfying power to take meaningful action and see the results of our decisions and choices' (2016, p. 123), and 'the thrill of exerting power over enticing and plastic materials' (2016, p. 143). Murray's pithy descriptions of agency remain influential despite her reliance on terms like 'satisfying' and 'meaningful' having drawn criticism for rendering the concept of agency 'underdeveloped', 'vague', 'equivocal', and 'limited' (see Wardrip-Fruin et al. 2009, p. 2; Vella 2015, p. 162; Bódi 2020, p. 3). It's noted that much of the chapter in which Murray sets out to explicate agency 'reads as more of a catalog' (Wardrip-Fruin et al. 2009, p. 2).

Murray bemoans situations in which 'participation is circumscribed' (Murray 2016a, p. 123), which leads Wardrip-Fruin et al. (2009, p. 2 – my italics) to observe that 'Murray's agency is not … simply doing what we are expected to do *without shaping the larger structure*. Simple participation is the digital equivalent of singing along with a leader or dancing steps called by another'. Murray's fixation on being in control is striking. She laments narrative forms that invite input in ways that have participants 'serve only as the butt of a joke' (2016, p. 143), and would presumably abhor being cast in the lead role of a VR drama that features the same kind of ill-fated conclusion as the namesake of her influential book.

Way back in Chapter 1 (Section 1.1.6), Murray's notional holodeck was sketched. Her 2017 description emphasises that agency reinforces immersion and vice versa. 'Scripting' or guiding the participant is necessary in order to keep them wanting to (inter)act, which should, in turn, deepen their sense that the virtual world is rich, realistic, and responsive, which will make them want to engage with it more eagerly, and so on *ad infinitum*.

[88] Obviously, as usual, I'm talking about VR art and entertainment. (Recall our discussion of *Piggy* from Section 2.4.1.) The opposite is more likely to be true in the context of training simulations and other 'serious' VR applications.

What this idealised view gets right is that VR participants—'interactors', in Murray's terms—must be scripted or otherwise prompted to behave in certain ways (Anstey and Pape 2002; Anstey 2005a); to perform certain actions on cue. If elegantly executed, such an exchange would indeed reinforce immersion in a cyclical, almost self-sustaining process of enjoyment derived from alternately attending, acting, and *being affected* in the **REPRESENTATION**, **INTERACTION**, **ARTEFACT**, **SOCIAL**, and **SELF** frames. What Murray's proposal gets wrong—like game designer Ernest Adams (2009)—is that the kind of agency effected by participants in order for their actions to qualify as agency in the first place *must* be narrative agency, or the ability to shape a story's course.

Adams first gives a definition of an 'interactive' story as 'a story that the player interacts with by contributing actions to it': 'A story', he offers, 'may be interactive even if the player's actions cannot change the direction of the plot' (2009, p. 160). He then distinguishes an interactive story from one that affords 'agency' by stipulating that '[t]he power to change the direction of the plot—the story's future events—is called agency. … If [a player's] decision does not actually affect the future events of the story, he [sic] has no agency' (Adams 2009, p. 160).

In order to show why the 'agency-as-control-over-a-plot' definition held to varying degrees by Murray and Adams is untenable, we must dip into the architectonics of interactive narrative by comparing some structural topologies collected by Ryan (2006).

7.1.3.1 Narrative Architectonics

Fig. 7.3 depicts a vector—a unicursal structure; a straight narrative line with one path of advancement and no options for getting side-tracked. According to Adams' definition, a vector (or other unicursal structure) can house an *interactive* story, but not one that affords *agency*, since no control over plot is possible. On this view, it doesn't matter what the nodes represent. Each could signify a step of Senneca's five act structure or Freytag's pyramid (exposition, rising action, climax, falling action, denouement). It could be the dramatic events that are constitutive of those steps (e.g. *see father's ghost*, *pretend to go mad*, *plan to kill uncle*, *visit England*, *have a fencing match*). Or, alternately, the nodes could denote senseless mandatory actions (*open door*, *walk through door*, *close door*, *tie shoelaces*, *blow nose*). Murray would presumably hold that little to no agency is afforded by vectors

since the actions amount to 'mere' participation—going through the motions, as it were—and are hence not 'meaningful' or 'satisfying'. Adams would likewise deny that the vector affords agency on account of its linearity.

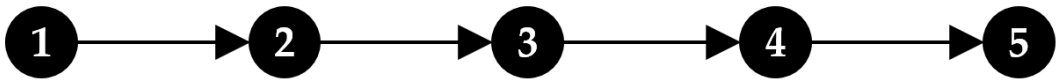

Fig. 7.3: The vector—a unicursal structure.

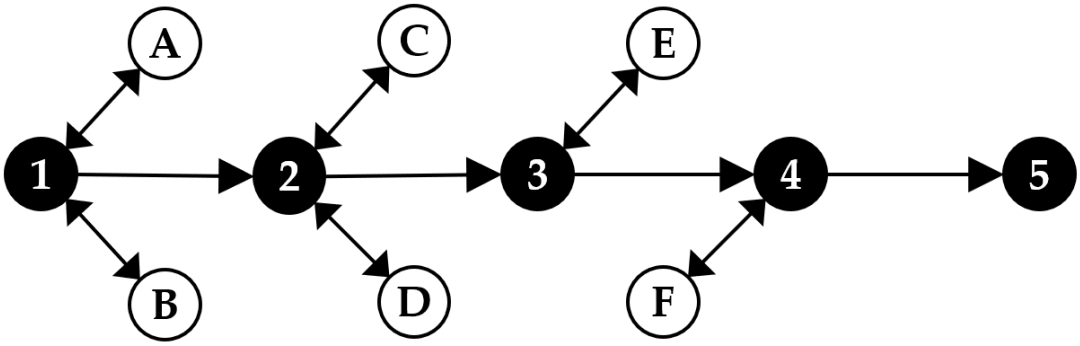

Fig. 7.4: A vector with optional side-branches.

Fig. 7.4 is a vector featuring only optional side-branches; Fig 7.5 is a multicursal structure featuring optional *and* mandatory, mutually exclusive side-branches. Fig. 7.4, according to Adams, *is* interactive but remains unable to afford agency, as the plot's central trajectory is still unilinear. Fig. 7.5, however, *would* afford agency according to Adams, since participants who visit plot-points C and E will not witness or enact D and F.

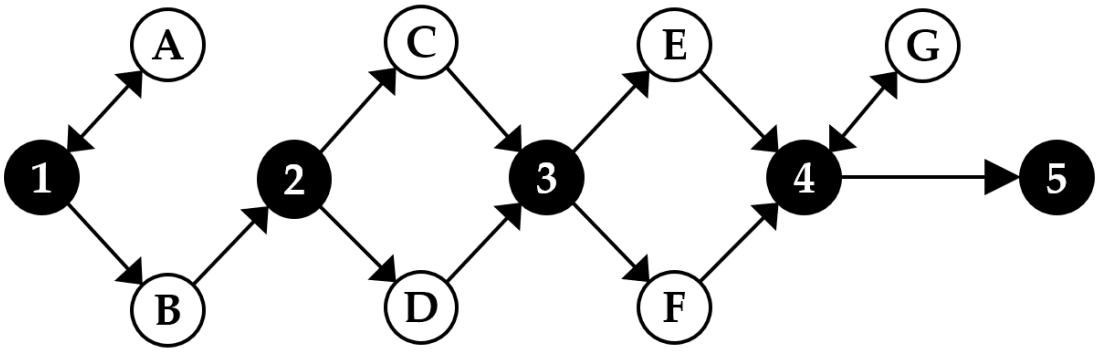

Fig. 7.5: A multicursal structure

Fig. 7.6 depicts two 'networks': One has more interconnectivity than the other. According to Murray and Adams, both *could* afford agency *if* cleverly engineered to produce 'satisfying' stories independently of the order in which nodes are visited. Likewise, Fig. 7.7, which Ryan (2006) calls 'the complete graph' (a network with absolute interconnectivity) and Fig. 7.8, which I will dub a 'hub', *could* afford agency as defined by Adams *if* ingeniously plotted.

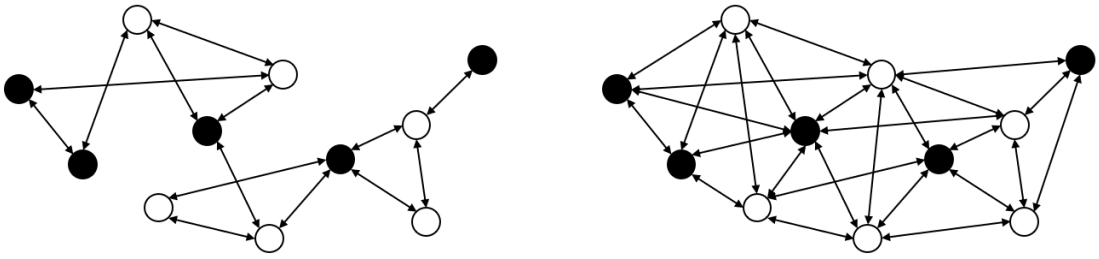

Fig. 7.6: Two networks. Same number and layout of nodes, but with different connections. Devising 'traditional' plots to fit such architectures can be tricky to say the least.

Fig. 7.7 (L): A 'complete graph' (Ryan 2006), or a 'mesh'.
Fig. 7.8 (R): A 'hub', or, in network theory lingo, a 'star'.

But the gold standard for Adams and Murray's narrative agency would be the 'tree', depicted in Fig. 7.9. Here, we can take each stratum of nodes to represent either plot-points or less weighty (inter)actions that the participant must perform. Any *non*-plot-determining (inter)actions wouldn't count as agency according to Adams, though, which raises the insoluble question; is there a consistent way to separate 'big', plot-determining actions or events from lesser ones…?

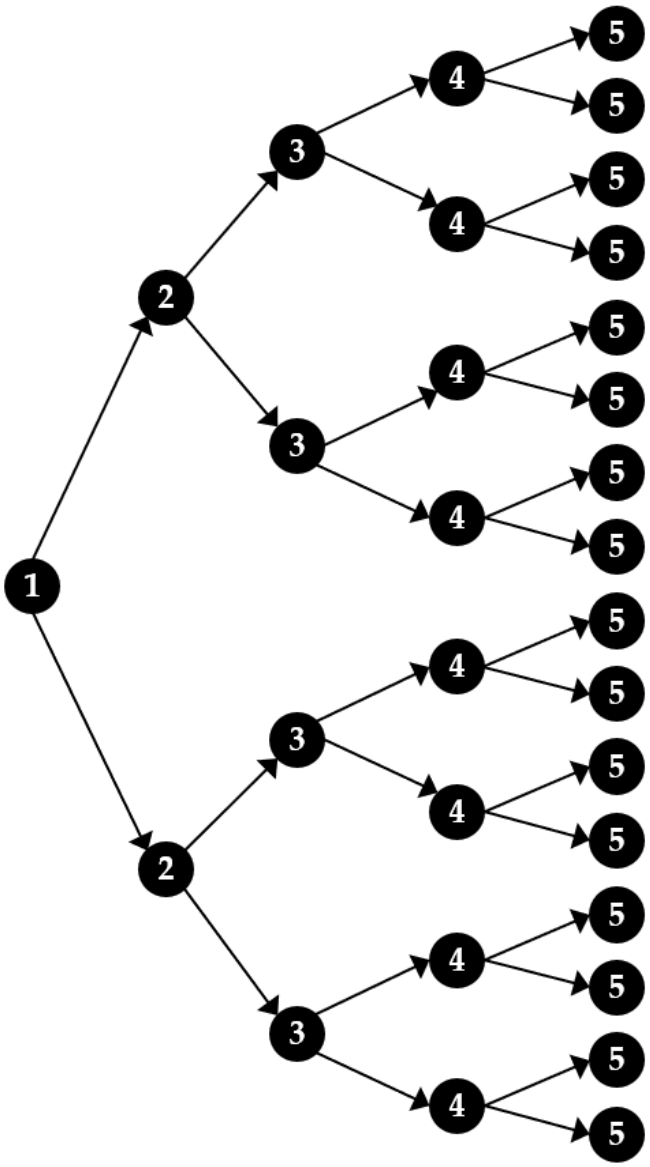

Fig. 7.9: The venerated 'tree'. Costly, labour-intensive, and time-consuming to implement on account of its tendency to increase in complexity at an almost exponential rate. Not every node need produce two new branches or offshoots, but when they don't, theorists, critics, and players alike tend to complain of dead-ends, or feeling 'railroaded' towards certain outcomes.

7.1.3.2 'Illusory' Agency

To crudely reiterate, in terms of the above, a problem first sketched in Chapter 1: Players and theorists are frequently unrealistic about how much 'agency' can be designed into a game, work of interactive fiction, or VR experience. We expect branching structures that resemble trees, but the complex and labour-intensive reality of crafting virtual worlds—even when only textual as opposed to graphical—means we often end up traversing linear vectors with conciliatory side-branches, or limited networks instead. Game developers' most common workaround to this perennial practical problem is to have branching paths connect back up again further down the line, long after a decision has been made, so to avoid having to write unique scenarios, record motion capture performances, create digital assets (and so on) for each and every branching path. It goes without saying that since trees can branch exponentially, it is not a structure that's practical to pursue without relying heavily on procedural content generation.

This frequently means, in effect, that players or participants are offered a choice that later transpires to have effectively been a *non*-choice. As Esther MacCallum-Stewart and Justin Parsler observe in their treatment of 'illusory' agency (2007):

> There are two (non-exclusive) ways that a designer can seek to address agency. They can seek to grant as much freedom as they can[,] or they can seek to disguise the fact that possible actions are limited. … This process of 'tricking' a reader [sic] into believing they have greater impact on and import within the game we have termed 'Illusory Agency'. This is a facet of the game design which appears to allow the player free reign and personal choice, but in fact guides them along rigid lines through a relatively linear narrative.
>
> (MacCallum-Stewart and Parsler 2007, §1)

MacCallum-Stewart and Parsler endorse what they identify as illusory agency in a role-playing game, noting that it can be deployed to create the sense that a virtual world is far richer, more detailed, and responsive than it truly is in terms of mechanics or plot architecture. Others, however, view illusory agency less charitably. Of the choice-driven story-game *The Walking Dead* (Telltale Games 2012), Sarah Stang writes; '[w]hile these games are enjoyable and critically acclaimed, they present the player with false choices and offer only an illusion of agency'. Stang's conception of agency at times appears close to that of sociology, where agency is equated to personal autonomy or choice, and at times close to Murray's:

'[S]imply providing branching narrative trees is not enough to *satisfy* the player if he or she does not feel that the choices offered are *meaningful*' (Stang 2019 – my italics).

The point is not to deem illusory agency 'good' or 'bad', but to devise alternatives that are tailored to the perceptual and affective idiosyncrasies and affordances of the VR medium specifically. As MacCallum-Stewart and Parsler note: 'As long as the player goes along with the … experience … and does not peer too closely at what they are doing, then a sense of agency is maintained' (MacCallum-Stewart and Parsler 2007, §8). One way of ensuring the participant 'goes with the flow' and does not poke and prod for the limits of the simulation is to bombard them with attention-demanding, self-concerning situations. Enter patiency.

7.2 Patiency

I first define patiency narrowly, by tying it to specific bodily sensations and saying what I believe it *is*. I then open up patiency to more liberal and poetic interpretations, fleshing out the concept by saying what it is *like*. Examples of how patiency is felt and experienced in VR are provided.

7.2.1 What Patiency Is

Patiency is the inverse of agency. I say 'inverse' and not 'opposite' because the opposite of agency could be argued as a *lack* of agency. *Patiency is not a lack of agency*; it is not a paucity of choices or options for acting: ***Patiency is the feeling of being acted upon oneself***, and is typified in VR by the flesh-and-blood participant being made to *feel something* that loosely corresponds with what their avatar–character might feel were it capable of perception and inference.

Patiency in VR can include positive feelings, like the warm, chest-filling sensation you get when an attractive person sidles up to you or 'makes eyes' at you. It includes neutral or ambivalent experiences, like being made to feel curious or alert by the uncanny realisation that an object (or an environmental feature like a wall or a door) isn't where it was a moment ago. And patiency is most readily identifiable in 'negative' (yet no less sought-after) virtual situations and the affective

reactions elicited thereby: Patiency is most pronounced when participants experience arousing, affect-laden bodily sensations like vertiginous reactions to depth cues, psychophysiological 'jolts' owing to sudden or pointed intrusions of personal space, and pretty much anything else that excites the nervous system to the extent that a reaction is palpably *felt*. **Patiency is typified by sensations felt in the biological body caused by changes in the virtual stimulus array**.

Accordingly, patiency can be thought of as using the VR participant's body as a site for feedback (Murphy 2017a). Where a quarter of a century ago we were surprised to find gamepads rumble in our hands, VR sees us blown away by the medium's ability to excite us into physical action; to animate if not manipulate our bodies and unconscious minds through the fairly dependable elicitation of instinct-, impulse-, and reflex-like behaviours.

While patiency is the inverse of agency (a *sense* of being acted upon as opposed to a *sense* of acting), it is not elicited in quite the same way as bodily, mechanical, or narrative agency. With agency, a physical body has to move an avatar body, mechanics have to be successfully enacted, or a story or plot has to be altered for agency to manifest. With patiency, however, the participant need only *perceive* some potential benefit or threat to the self: This can be enough to 'act' upon them affectively. For instance, if you're alone in a room and all the lights go out, leaving you in darkness, you may experience patiency—feelings of being acted upon—despite that nothing has acted upon your (avatar's) virtual body. Similarly, if you see a virtual minecart careering towards you and dive out of the way just before it hits you, you may experience patiency despite that the perceived threat does not collide with your virtual body.[89] Patiency is felt in the *biological* body, and the strong sensations that are typical of it can be cued *without* the simulation representing harm to the participant's avatar body.

Though patiency is not *defined* by an inability to virtually act, our first example of how patiency manifests and functions in VR just so happens to be when the participant's avatar–character is tied to a chair for interrogation in *PlayStation VR Worlds: The London Heist* (Harding 2016). Here, patiency emerges as a three-pronged attack on the participant's mental and somatic activity. In most cases, this will have the net effect of riveting the participant's attention on the characters confronting them, forcing them to attend to the intimidating virtual agents in the **SELF** frame of experience (that is, *as self-relevant*), and causing strong bodily

[89] Indeed; patiency can be argued as the 'force' that impelled you to dive out of the way.

reactions like reflexes, a visceral 'lurch' in the stomach, and tightness in the chest as a menacing character enters the scene and eventually lunges at the participant. Whether one enjoys the kind of tense situation typical of crime thrillers or not, the finale of *The London Heist* is a strongly patiency-inducing sequence that strives to see the participant *gripped* by the drama that unfolds around them and directly implicates them.

See Figure 7.10. Obviously, the cropped, static, 2D image does not give an impression of how it *feels* to be in this situation in VR, so the reader will have to try their best to imagine. First, the virtual situation aims to induce physiological arousal by immobilising the participant's avatar–character. Realising that your virtual proxy does not afford fleeing a violent, claustrophobic encounter may be enough to cue the kind of aroused, affective reaction that is strongly symptomatic of patiency. Second, the interrogator leans in close to the participant's egocentric viewpoint, crossing from 'extrapersonal' or 'reaching' space to their 'peripersonal' space, likely intensifying the experience of arousal (Bailenson et al. 2001; 2003; Blascovich 2002) and in so doing refreshing the participant's attention. (As if it could have waned!) Sony's marketing team well knew the affective power of this moment, and strove to portray in a TV ad how it *feels* to have a stereoscopic image assail one's senses by showing a live actor, playing patient to the virtual action, reel at the invasion of their intimate personal space (see Fig. 7.11).

Fig. 7.10: Interrogated by a thug in *PlayStation VR Worlds: The London Heist* (Harding 2016).

Fig. 7.11: Advertisers' impression of patiency stemming from an alarming intrusion of a participant's peripersonal space.

Third, another antagonist enters the scene and begins wrestling with the interrogator for a gun. In this moment, the participant is likely to be attending to the action in the **REPRESENTATION** frame: As a helpless witness to the struggle, they may have momentary 'fortunes of others' thoughts and emotions, since the bespectacled arch-villain is keen to see both the participant's avatar–character and the muscle-bound thug (that is, the interrogator, who is secretly an ally) dead and silenced. The criminals' tussle sees the gun fly into the participant's hands (which somehow come unbound) and the tables are turned: All eyes are now on you. The participant may still be experiencing patiency insofar as they remain virtually tied to a chair (and may hence feel vulnerable), but they simultaneously wield agency in that their hands are free to manipulate an instrument (bodily agency); they have the option of aiming the weapon and pulling its trigger (mechanical agency), and may thus decide the fate of all three characters (narrative agency). Confronted with a choice, the participant weighs up their options in the **INTERACTION** frame. Who would be the most fun or advantageous to shoot?

'Shoot this *fackin*' idiot!', the cockney crime-lord commands.

'Don't listen to 'im! 'Ee's a *fackin' snake!*', the interrogator retorts.

Three endings are possible, and many participants will not hesitate for even a heartbeat to dispose of the true villain, whose identity has been amply signalled.

But I would like to concentrate on what happens if the participant vacillates about who to shoot for more than a few seconds, misses their target, or accidentally drops the gun.

'I've 'ad enough of this', the crime-lord spits while grabbing his knife, dispatching the henchman, and lunging towards the participant, stabbing their avatar–character in the chest. The action is punctuated by synthetic sound effects that enhance the perceptual salience of the knifing, supplementing the simulated sensation of being stabbed. Those with an ear for sound design may notice that an artificial '*wooomf*'—a hefty bass hit with a gradual attack and a long-tailed release—underscores the violent gesture. A high-end '*shing!*' punctuates the blade's fatal application, and a flat, tinny, whining noise follows its withdrawal, indicating that the avatar–character has been mortally wounded as the scene fades to black. But many participants (newcomers to VR especially) will not register these auditory embellishments—not for inattentiveness or for lack of an appreciation of audio, but because the deliberate design of patiency into the scene has served its functional purpose: Participants will be far too preoccupied by the illusion that *they themselves* are being attacked to be distracted by thoughts or attentive acts made in the **ARTEFACT** frame.

In this way, positioning the participant as **Internal–Active** (and ideally **Self**) makes it easier and more plausible to address them directly, via in-world agents. Virtual agents' ability to speak to *and to act upon* the participant('s avatar–character) as part of the same diegetic reality means it logically follows that participants attend to virtual agents' actions and intentions in the **SELF**-reflexive frame of experience. That participants fixate on the humanlike figures as either potential threats or benefits to their physical selves necessarily deepens their immersion. Participants of course *know*, consciously and rationally, that a virtual knife cannot cause them physical harm. But that knowledge; that *media awareness* is not at the forefront of their minds in the heat of the moment. Just as movie monsters' sharp fangs and inhuman movements electrify the spectator's nerves by appealing to parts of the visual and emotional systems that function prior to and almost independently of rational reality status evaluations, the 'hot', affect-laden cognition that typifies patiency experiences in VR can cause participants to attend and react to things *pre*-rationally, *as if real*.

7.2.1.1 Patients versus Experiencers

From the preceding example, one might get the sense that patiency is inherently negative. This is not the case. A term borrowed from linguistics, patiency is simply the fact or felt quality of being a passive patient as opposed to an active agent: It is a semantic or a thematic role denoting being acted upon, and *being acted upon is by no means necessarily unpleasant*. In sentences like, 'the parent hugs the child', 'the child tickles their sibling', 'the tall person carries the shorter person across the fast-flowing stream', 'the flirter fires their love interest a seductive stare', 'the fairy godmother magically transforms the young woman into the belle of the ball', and 'the dominatrix whips the client', each grammatical construction follows the same general pattern: The agent acts upon the patient, and the patient has a pleasant time because of it. It is also important to note how not all of these examples involve the agent touching the patient, as well as how things that are normally experienced as negative can be felt as pleasurable owing to the experience being contained within a 'safe' play frame or recreational context.[90]

In VR just as in real life, physical force transfer (or *simulated* physical force transfer) is not a necessary condition for something to qualify as an agent that acts upon a patient. A flirtatious or an intimidating gaze can act upon its recipient with a kind of 'psychic' energy that excites the patient's embodied mind in much the same way a physical touch would. Impressions can act upon us as forcefully as words, which can in turn act upon us *almost* as emphatically as physical happenings. Consider a sentence that employs the language of physical force transfer to capture that words can have a similar effect to actions. 'The art academy instructor dealt a *devastating* blow to the student's ego, delivering an *eviscerating* critique of their best efforts at pointillism.' The adjectives in this example are hyperbolic, but it serves to underscore that things other than literal strikes and strokes can be corporeally *felt*.

Sometimes non-verbal and non-physical communicative acts are felt as blunt or cutting, while other times they may energise and enchant. 'The audience's

[90] Hearken back to our earlier mention of hedonic reversals (Zillmann 2008; Zuckerman 2014). Game studies' concept of 'the magic circle'—the subjective, psychological boundary that separates play and 'ordinary life'—is also relevant, here (e.g. Huizinga 1949; Salen and Zimmerman 2003; Juul 2008), though note that it is not without its sceptics (e.g. Consalvo 2009). Jaakko Stenros (2012) provides a comprehensive review of the concept and debate.

applause uplifted the presenter', and 'the girl's giggle gave the smitten schoolboy butterflies' are both indicative of positive patiency experiences. On my formulation, patiency in VR is anything *felt* by the participant caused by the virtual stimulus array irrespective of whether that thing is simulated physical force transfer (being virtually hit), the transfer of 'psychic' energy (being virtually glared at or bombarded with insults), or any other way of acting upon the participant—for instance by restricting or manipulating the space in which they find themself (e.g. containment, confinement, or being placed in an 'impossible space' like a living labyrinth whose layout constantly changes).

The idea that virtual agents can and do interact with physical patients—given that the former cannot literally *touch* the latter—contrasts with how Gregersen (2016) unpacks the patient role with reference to Ray Jackendoff's (2007) cognitive linguistics. Gregersen's essay *Hit It* shows how cognitive media analyses can 'steer a course' between culturally-transcendent universals and specificity by identifying the demographic-independent aspects of generic formal design structures: In this case, the core cognitive structure of 'hitting stuff' (Gregersen 2016, *passim*) in screen-based fighting games. Gregersen couches his analysis in Ronald Langacker's (2002) framework of canonical agency, which is argued as 'in its simplest form … reduced to the interactive representation of a person hitting something' (Gregersen 2016, p. 54; also Gregersen 2008, p. 19)—a paradigmatic situation in flat-screen games that is shown to be universally understood on account of its grounding in human embodiment.

For Gregersen, three roles are essential to the kind of videogame-mediated exchange that is typified by two players standing at an arcade cabinet, playing a game like *Street Fighter II* (Capcom 1991): They are ACTOR (or agent), PATIENT, and EXPERIENCER. He defines the latter as 'the conceptual unit which experiences some kind of cognitive or embodied change … ; certain psychological and physiological effects' (Gregersen 2016, p. 59), writing that '[t]he immediate relevance of the EXPERIENCER role is limited to the change of mental and embodied states that each player undergoes when he or she does not avoid the other player's [avatar's] transfer of [simulated] physical force … [T]he overall goal is to [have one's avatar] fulfil the ACTOR role while avoiding [it] playing the role of PATIENT' (Gregersen 2016, p. 62). Therefore, the entity that I am designating a *patient*—namely the flesh-and-blood VR participant when they feel in any way acted upon by a virtual object, entity, or occurrence—Gregersen would rather call

an *experiencer*. For him, avatars can be patients, but players or participants are only ever experiencers. Let's further consider the differences.

As we've seen, Gregersen holds that players of games are *physical* agents whose intentions are mapped via interfaces actuated by P-actions to the *virtual* actions of virtual actors or agents. Avatars in two-player fighting games act upon one another's simulated bodies, alternating between ACTOR (or agent) and PATIENT roles as they trade virtual blows. At any given moment, the human owner of a struck PATIENT avatar may be an EXPERIENCER, with the different designations reflecting an asymmetry between the depicted agony of the avatar and the non-nociceptive experience of the player, who watches their avatar get hit but does not much feel like they themself have been punched, kicked, or hit by a '*Hadouken*'.

While VR participants in *The London Heist* obviously do not feel as though they have actually been stabbed (at least not for more than a fraction of a second), my way of setting things up such that virtual agents can act upon flesh-and-blood participants is intended to reflect that in VR, the participant doesn't perceive a separate avatar body in distal screen-space via which they act. As suggested previously, the participant's body schema serves as an avatar-bodily awareness, so when a virtual agent lunges at the VR participant with a knife, or the walls begin to close in on them, it is *they* who 'undergoes a change of state' (Gregersen 2016; Jackendoff 2007; Dowty 1991)—*not their avatar*—thus qualifying the VR participant as a patient; as *more than* a mere experiencer of empathic effects and affects.

VR participants can still be considered experiencers as opposed to patients when they react strongly to events that do not address them directly (say, in the **REPRESENTATION** frame), like when the two criminals fight over a gun in *The London Heist*. The empathic reaction possibly felt when witnessing one character slug another in the jaw positions the participant as more of an experiencer than a patient, leaving room for us to consider the viewers of movies and the players of games experiencers insofar as they may likewise be made to *feel*. But only when they feel *personally* threatened by the man lunging at them with a knife or *personally* addressed by a seducer's simulated stare—when they feel their hearts jump into their throats because their body schema or some other subpersonal stratum of consciousness 'believes' that they're about to be acted upon—does the VR participant adopt the role of patient proper.

7.2.2 What Patiency Is Like

I have so far defined patiency in VR as the felt quality of being acted upon either 'physically' (that is, *virtually* physically) or affectively by virtual agents, objects, and events. From the designer's perspective, it is perhaps more useful to say what patiency is *like*, which should in turn help illustrate what it is good for.

Patiency is like a leash on which the designer can pull so to guide the participant.

Patiency is like a cattle prod or a *keisaku*—an 'encouragement stick' used by Zen masters to rejuvenate pupils' focus during lengthy meditation sessions.

Like agency, opportunities for patiency can be designed into VR environments. When deployed with finesse, patiency can help artworks that embody unicursal structures feel organic and frictionless rather than artificial and 'constipated' (Crawford 2004, p. 130). The goal in this case would not quite be to keep the participant 'on track'; to prevent them from making a 'wrong turn', since they may only have one possible path through a work anyway. Rather, patiency-inducing situations and the prospect of being acted upon can be designed into VR works such that participants are steered towards designers' intended courses of action *without* feeling like decisions are being made on their behalf. Patiency can make participants feel as if their chosen courses of action (perhaps made in pursuit of self-preservation or desire) are the outcome of *their own decisions* rather than being mandatory or prescribed.

Aarseth writes of Laurel's poetics that '[e]ither users will surrender to the playwright's ideas of acceptable behaviour and become docile servants of the narrative, or (more likely) they will revolt against the system's narrative goals' (Aarseth 1997, p. 138). Neither of these styles of engagement sounds particularly desirable. Both imply that the participant is mindful of the work's artifice at all times. 'Docile' suggests an attitude of knowing submissiveness or grim resignation, while 'revolt' is the behaviour of someone who does not enjoy the situation in which they find themself. Despite Aarseth's pessimism about how participants will respond to interactive narratives that do not afford absolute, unconstrained freedom, he does come across as sympathetic to Laurel's position: He appears to join her in disfavouring 'the rigid structure of do-the-right-thing-in-the-right-sequence-or-you'll-be-sorry poetic[s]' that her hypothetical, 'cyberbardic' (Koenitz

2015, p. 54) drama manager would presumably help dislodge from its position of pragmatic dominance in interactive narrative design.[91]

Contrary to Laurel (1986), Murray (1997), and seemingly also Aarseth (1997), I'm of the opinion that we should in fact embrace or at least tolerate a 'do-the-right-thing-in-the-right-sequence' poetics of interactive artworks, and simply look to improve, streamline, and augment the experience that typifies it. The fact is that in 2021, a 'do-the-right-thing-in-the-right-sequence' approach to interactive story structures continues to prevail on account of its economy: Everybody knows that multicursal plots are costly to implement, and even in text-based interactive fictions like Twine story-games (cf. VR), a 'truly' branching narrative—a fractal-esque 'tree'—exponentially increases the amount of work to be done with every bifurcation. Can we not engineer situations such that VR participants neither surrender nor revolt, but rather 'go with the flow' or—better yet—are made to mistakenly believe that they're determining their own fate?

In a later writing, Aarseth again suggests that gameful situations are at times defined by an attitude of wilful transgression—'a symbolic gesture of rebellion against the tyranny of the game' (Aarseth 2007a, p. 132). But he concedes that overall, '[w]e as players are only half ourselves when we play, the rest of us is temporarily possessed by the [comparatively tractable, predictable] implied player' (Aarseth 2007a, p. 133, following Iser 1974). Patiency, then, can be thought of as a rationale for plotting the behaviours of an *implied* VR participant; an *idealised* agent or design persona (Pruitt and Adlin 2010) who is more (com)pliant than transgressive, is unlikely to revolt, or is at least open to unconscious influence, 'manipulation' (Anstey 2005a) or 'seduction' (Aarseth 1997, pp. 136–140). Ideally, VR participants needn't revolt *or* submit. If all goes according to plan, they won't even know they're being guided.

Aarseth's earlier view of players or participants as *either* 'docile servants' *or* as liable to revolt is too binary an assessment. Participants can demonstrably be led to do things without even realising that they're being choreographed, *if and when* the exigencies of the virtual situation impel them to think and act as the designer intends through the use of affective engineering. The sense of urgency that often accompanies patiency suggests that participants who are steered towards enacting certain behaviours are not 'docile servants' in that they may remain ignorant of the fact that they're being puppeteered at all: The designer's intentions become

[91] Crawford (2004, p. 130) likewise laments a so-called '*Kill 'Em If They Stray*' approach.

their own. As Aarseth notes (1997, p. 138) that Murray (1991) has argued, the one-sided dialogue that unfolds between participant and experience designer as mediated by lively and responsive virtual environments is one in which 'the user can be manipulated in new and powerful ways' (Aarseth 1997, p. 138). Nowhere is this truer than in VR, where the participant's embodied, egocentric view of the world makes it all the easier to exploit survival instincts, reflexes, and a general sense of corporeal and social vulnerability. Let's look at examples of how patiency can push a participant towards authorially intended outcomes.

Accounting—a zany and grotesque VR drama of sorts—is not shy to leverage patiency in prodding the participant along its unicursal structure. Two moments from the whirlwind 'voyage and return' narrative (Booker 2004) stand out as exemplary applications of patiency for the purposes of making more agreeable its frequent and forceful demands that the participant perform 'distasteful symbolic actions' (Aarseth 1997, p. 138). In the first, the participant finds themself in a peaceful woodland clearing. The serene nature scene is rudely interrupted by a foul-mouthed little man ('Tree Guy') who leans out of a tree hollow and begins hurling invectives without respite. Tree Guy's endless torrent of verbal abuse is designed to *initially* be entertaining, expertly delivered by Justin Roiland (of *Rick and Morty* fame) in his trademark improvisational style. But whether one enjoys

Fig. 7.12: 'Tree Guy' from *Accounting (Legacy Edition)* (Crows Crows Crows and Squanchtendo/Pugh and Roiland 2016). Patiency by means of verbal onslaught.

Roiland's comic tone or not, Tree Guy's profanity-laden onslaught quickly becomes grating: The participant is bound to begin working under pressure, rushing to find their way out of the forest. They must juggle a phone call with their manic supervisors back at the accounting office while trying to tune out the sound of Tree Guy's sweary salvoes in their other ear *and* figure out what to do.

The idea is to make the participant act hastily, without considering the outcomes of their actions. They later return to the forest to find it ablaze—a consequence of their selfish behaviour for which they must be held *accountable*. It's for this reason that a definition of agency in which only deliberate, intentional, or desired virtual outcomes—or only those with clearly-signalled outcomes—qualify as 'agency' is not tenable for VR drama (cf. Mateas and Stern 2005; Wardrip-Fruin et al. 2009). Dramatic agency should occasionally be unpredictable, and *must* be allowed to backfire (cf. Laurel 1986; Murray 1997/2016a). Battering the participant with patiency is one way to make them make decisions as ill-advisedly as Oedipus, Macbeth, Hamlet, and their ilk.

The next scene in *Accounting* has the participant perform a far more 'distasteful' and stereotypically dramatic action: They must kill the King of VR. How to make the participant *want* to commit regicide when they have no prior knowledge of this monarch or his manner? The answer, it seems, is to establish him to be as vulgar as possible, as swiftly as possible. Patiency here manifests as a social dynamic: The King instantly comes across as a clingy, unintelligent, self-centred, gluttonous, annoying, and repulsive ruler who develops an affectionate attachment to the participant *far* too quickly for comfort. That the participant cannot move more than a few steps away from the King heightens the sense of physical aversion that typifies negative affective reactions. By the time the King had begun describing his bowel movements to me, I'd grabbed a knife off the banquet table and was ready to make the same mistake every good dramatic protagonist does: Killing the King was the only course of action available to me, anyway, and he was starting to make me feel uneasy, so I was eager to do it; unfazed by the prospect that I might be being 'forced' to do so. *Accounting*'s creators applied patiency to 'trick' me into adopting *their* intentions as if they were my own organic motivations. This is indicative of how less vigorous forms of patiency that do not electrify the nervous system can still 'move' participants to behave in certain ways. As a friend of mine reflected upon concluding the experience: 'I didn't *want* to kill him, but I *definitely* didn't want to be left alone with him, either'.

7.2.2.1 Anstey's Snares

Josephine Anstey (Anstey 2005a; 2005b) and Dave Pape (Anstey and Pape 2002) advocate 'manipulation' by similar means to what I'm calling patiency. They, too, see value in pushing participants towards enacting certain behaviours and in making certain actions mandatory. Anstey suggests that 'the construction of the user's sense of "agency," … typically understood as the user's sense that she can act in a virtual environment' (Anstey 2005a, p. 125) cannot effectively emerge without simultaneously establishing that freedom and choice will also be restricted, at times curtailed by artistically-motivated 'structures of constraint' (Anstey 2005a, p. 125). Such structures can be woven into a scenario such that neither the system's limitations nor the mandatory actions that betray a closed, linear path are immediately apparent to the participant, preoccupied as they should ideally be with an attention-demanding situation.

Anstey's point of departure is thus to 'reject both the possibility and need for absolute freedom in an interactive narrative' (Anstey 2005a, p. 125): As I have quoted her previously as stating, it makes far more sense that we research and develop methods for 'manipulating' participants; for 'setting the user's mind to work along a certain, desired, path of signification' (Anstey 2005a, pp. 125–127). To this end, Anstey 'co-opts' and recontextualises Roland Barthes's 'idea of creating a trap in fiction' to describe how she and Pape designed a virtual agent—the titular Thing in their three-act VR drama, *The Thing Growing* (Anstey 1997)—who bears down on the participant with a 'high-handed personality' (Anstey and Pape 2002, p. 152) in order to bring about conflictual situations and goad predictable responses to them. She writes:

> 'Interactive fiction should be a series of snares … that manipulate the user's actions by manipulating the user's emotions. Providing … self-referential scenes that slowly reveal information and surprises, forming emotional highs and lows and raising tension, is a staple of drama. This process can be seen as luring the user along an emotional path, a psychological journey. … [It']s not enough to set up the conditions that will evoke the emotions, … we must provide actions that suit that emotional scenario. … [T]he actions must be specifically designed to reveal the state of mind of the user. … The snare must be baited by the author, activated by the user, and checked by the [system] …'
>
> (Anstey 2005a, p. 126)

What Anstey goes on to sketch in terms of baiting, activating, and checking snares is at once a '[c]ommon sense psycholog[ical]' paradigm for nudging participants towards certain affective states and associated actions and a platform-agnostic method for implementing such situations technically (Anstey 2005a, pp. 126, 128).

In Anstey's words, '[t]he bait is the emotional stimulus plus a possible action(s) dangled in front of the user, inviting her to the next step of performed agency. The author … establishes a constraining social context' (Anstey 2005a, p. 126). Constraining contexts can be built up not only by 'social' agents but also by responsive virtual environments that demand attention by appearing somehow *alive*. Just as bossy or needy virtual agents like *Accounting*'s King or Anstey's Thing seize attention and elicit emotion through pseudo-social patiency, virtual environments that appear animated by some kind of spectral agency—perhaps violating principles of object permanence (Piaget 1963; Harris 1975)—can likewise serve to bait snares. Recall the description of *Sightline* from Section 5.2.2: An

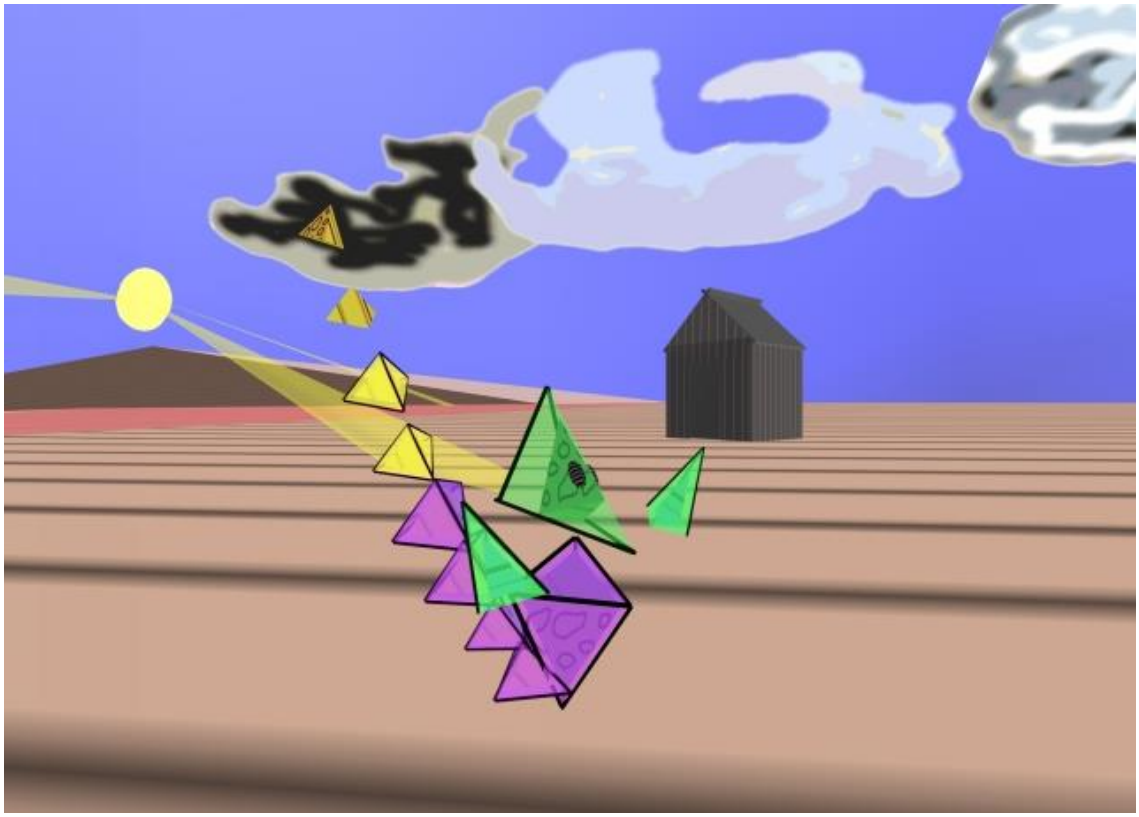

Fig. 7.13: The eponymous Thing from *The Thing Growing* (Anstey/Anstey and Pape 1997): A 'high-handed' personality that's perfectly suited to setting up 'snares', and possibly also eliciting a sense of social patiency (by being overbearing, emotionally needy, etc.).

ever-evolving virtual environment that changes every time the participant looks the other way. *Sightline* can be argued as built around 'snares' insofar as every enacted behaviour (every rotation of the head) serves to advance the monstrative activity (i.e., the iterative scene changes): The sense of uneasiness or befuddlement that this produces amounts to an arresting experience of patiency that does not centre on embodied virtual agents.

Of participants 'activating' snares and the system 'checking' them, Anstey writes that 'actions must be deliberately designed to fit in seamlessly and logically with the narrative and emotional context; … to reveal as much as possible about the user. … Her action will stem from her emotion' (Anstey 2005a, pp. 126–127). In terms of system logic afforded by VR hardware, Anstey and Pape's CAVE and ImmersaDesk systems of the 1990s function almost identically with present-day VR systems and artworks: A finite state machine architecture gleans input from participants' motion-tracked head and hand positions (generally by means of ray-casting[92] and/or trigger geometry[93] placed on avatars' heads and hands), and littered invisibly about the virtual scene (Anstey and Pape 2002).

The system uses logic scripts to determine if and when the participant is waving their hand, touching an object, nodding or shaking their head, looking at or away from an area of interest, moving through a volume of virtual space, crouching or laying down (and so on), often within seconds-long windows of opportunity. This approach is still very much evident in contemporary VR artworks. At several points in *Wolves in the Walls*, for instance, Lucy will try to hand the participant an item: If her logic scripts do not detect the participant's hand moving close to the object to grab it within about five seconds of her offering it, she will resume whatever she was doing, with narration having to find another way to move the story along. Lucy's attempts to involve the participant in her story do qualify as

[92] To paraphrase the Unity game engine's documentation files; conceptually, a ray-cast is like an invisible laser beam fired from an arbitrary point in space: Any visible or invisible object that falls in the beam's path can be detected and reported.

[93] In first-person games like the influential Half-Life series, trigger colliders have long been used to determine if and when a player's avatar glides through invisible checkpoints. Virtual tripwires triggered in this way can cause events like set pieces (e.g. vehicles or buildings exploding in full view of the player) or new enemies to spawn. (See Gregersen 2008, pp. 133–134 for a brief discussion.) In VR, the technique is augmented such that rather than just one collider representing the player or participant('s avatar), a collider is attached to each tracked body part, which affords a finer-grained monitoring of the participant's physical and virtual movements.

what Anstey calls snares, albeit ones that do not manifest a dynamic of patiency. Lucy may be perceived as cute and as worth protecting, but it would be a stretch to say that she 'acts' upon the participant in the same way the King of VR does.

Like patiency, snares are ultimately about scripting the interactor or guiding the participant. The idea is not to tailor a scenario to a participant's personality given their responses to snares.[94] The idea is rather to use snares and the patiency experiences they can foster to obscure that the participant is traversing an inflexible, unicursal structure in the first place—or to make it less likely they'll care. Anstey and Pape are right to point out that 'scripting the interactor clearly has a psychological component' (Anstey and Pape 2002, p. 152); that virtual environments can be thought of as 'emotion machines',[95] and that guiding the participant is paramount in VR experience design.

Unlike standard approaches to scripting the interactor, however, Anstey's vision is not reliant upon foisting onto the participant a pre-defined, often clichéd class of character like knight, cowboy, or private investigator. Her goal 'is to make a scripted space for the interactor … but [without] creating a role for them to play' (Anstey and Pape 2002, p. 152). Anstey and Pape intend, in other words, to position the participant as **Internal**–**Active** and above all **Self**. Anstey's snares are the formal manifestation of the psychologically functional experience of patiency, which, as we've seen, is most easily created in the **SELF** frame of experience.

7.2.2.2 Patiency-Adjacency

Several scholars have observed design considerations, media aesthetics, or subjective experiences that sound similar to patiency, but are not identical with it. It's worth noting these before concluding.

Brenda Laurel acknowledges that:

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[94] Anstey (2005a) suggests that participants' responses to snares can indeed be used to tailor the VR experience to their personalities, though this arguably defeats the point somewhat, creating more work for designers and developers in much the same way a multicursal structure increases the amount of labour to be done with each branching path.

[95] Anstey (2005a; 2005b) follows Perron (2005), who in turn follows Tan (1996) in describing media as 'emotion machines'.

> 'A system in which the user is encouraged to do whatever he [sic] wants will probably not produce a happy experience … When a person is asked to "be creative" with no direction or constraints what[so]ever, the result is … often a sense of powerlessness or … paralysis of the imagination. Limitations … paradoxically increase one's imaginative power by reducing the number of possibilities open to him [sic].'
>
> (Laurel 1986, p. 104)

Laurel's 'constraints' could be confused with patiency at first blush, but there are important differences that can be spelled out in the language of Laurel's acquaintance, design guru Don Norman (Norman 1988/2013).

Let's imagine for a moment that Laurel is picturing the kind of creativity that might stem from a VR participant being presented with a bottomless toybox filled with building blocks, model trainset or racetrack components, figurines, LEGO® pieces, and other odds and ends. A 'constraint' as Laurel sees it could take the form of a design brief or an objective with clear parameters. 'Build a stadium to host a made-up sports event for aliens with three legs', for instance. Alternately, constraints could emerge from the material to be manipulated: Perhaps some of the building blocks do not fit together as expected. This, in Norman's terms, would yield *anti-affordances*.

As is often pointed out, an affordance (after J. J. Gibson 1966, Ch. XIII; 1979) does *not* describe a property of an object in isolation, but rather a relationship between an object and an agent's intended usage of it. 'The presence of an affordance is jointly determined by the qualities of the object and the abilities of the agent that is interacting' (Norman 2013, p. 11). Thus, a chair that lacks a flat surface onto which to put one's buttocks does not afford *sitting*; a hammer that lacks a head does not afford effective *hammering*, and so on. These are anti-affordances. Anti-affordances may serve as constraints to creativity as Laurel suggests, but they do not amount to elicitors of patiency. Rather, *negative* affordances may be elicitors of patiency. Negative affordances are not the same as anti-affordances.

A tool with a negative affordance is a handgun with a backwards-pointing barrel: It *does* afford shooting, but not the kind of shooting that most people would want to do. A spherical boulder rolling down a narrow corridor promises a negative affordance: It affords flattening everything in its path. An explosive vest speaks of a negative affordance, and it is precisely because the perception of such a negative affordance is liable to elicit feelings of patiency that Taiwanese media artist Hsin-Chien Huang chose to place the participant inside one in his macabre but

brilliant, award-winning VR experience *Samsãra (Episode I)* (Huang 2021). Suddenly finding oneself wearing an explosive vest is not intended to direct attention towards a *specific* object of attention or site of action: It serves mainly to trigger psychophysiological arousal—a sharp and pronounced affective reaction—as the participant braces for a grisly demise that (thankfully) never arrives. Simply being confronted by prospective, negative affordances can trigger feelings of patiency, and this has little to do with Laurel's constraints on play.

Fig. 7.14: Consistent with its themes of life, death, and rebirth, *Samsãra (Episode I)* (Huang 2021) puts participants in a series of striking and poignant situations. Pictured above is a low-orbit space shuttle collision.

Vicki Williams, in her doctoral thesis *Frameless Fictions: Embodiment, Affect, and Unruly Encounters in VR and Virtual Environments*, mentions 'compromised agency' (Williams 2021, p. 45, *passim*). She notes that agency and immersion dominate public and commercial VR discourse, but that '[l]ittle, if any reference is made to the odd, discomforting affective implications of VR'.

Seth Giddings and Helen Kennedy (2008) document their experience of playing *Lego Star Wars* (Traveller's Tales 2005). Midway through their autoethnographic reflections, they rhetorically ask: 'What if, rather than privileging … the player's agency, our starting position were that … [player and system] … each [act up]on the other?' (Giddings and Kennedy 2008, p. 21). They observe: 'There are

pleasures too then in the *abdication* of agency … a *lack* of control or ability to move unrestricted in the world is not entirely unpleasurable' (Giddings and Kennedy 2008, p. 26 – my italics). And how! A VR horror experience that draws from the playbook of haunted house amusements would not be deemed successful if the participant could move through the environment unmolested. They *need* to hear doors latch behind them; to have the lights suddenly go out; to be chased by ghoulies that can't be beaten back; to get the sense that the walls are closing in on them. In this respect, the horror genre is positively brimming with examples of how to guide player or participant behaviour through the application of patiency. The only reason I have not concentrated more on horror is that I feel it would be a mistake to make patiency appear synonymous with or reducible to *fear*.

Of course, hearing a zombie bang on a door may trigger a startle response, and that startle response would be indicative of patiency as I defined it at the start of Section 7.2. Moreover, such an experience of patiency *is* going to make you think twice about opening that door. Unless you've a death wish, you'll seek out another door—a door the designer wants you to open. Giddings and Kennedy come close to naming patiency when they write that players' 'relationship to the avatar and the world … [contains] elements of both … 'being acted upon' and a sense of possession of that action—a performative possession: 'I am doing', 'I am being', as well as 'I am being made to do' (Giddings and Kennedy 2008, p. 28). Their observations likewise come close to Perron's reflections, made in *Silent Hill: The Terror Engine*, that '[t]he ability to act within and upon the world is certainly one important form of agency, and a great source of pleasure. But … one gets as much emotion from the power to *act upon* as from the possibility of *being acted upon*' (Perron 2012, p. 114 – italics original).

7.2.2.3 Patiency's Etymology

Lastly, Vella resurrects the archaic meaning of 'passion' as an antonym of 'action', finding traces of patiency in Ricœur's Christian existentialism (Ricœur 1990). Vella notes that patiency or *passion* positions the ludic subject as 'a tissue upon which the world can leave the mark of its own affect' (Vella 2015, p. 294), with intense emotion potentially being experienced as 'something beyond one's control, something one has no choice but to succumb to—in short, … a sentiment one suffers, rather than actively undertakes' (Vella 2015, p. 294 n[9]).

Tracing patiency's etymology is one way to summarise what I take it to be good for as a design strategy in VR experiences. Dictionaries define patiency more or less as it has been used in this chapter—as '[t]he quality of being acted on, passivity'—and tell us that comes from the Latin *patientia*, 'perhaps after Anglo-Norman *paciencie*' (OED n.d.). The former root, emerging circa the 13th century, describes a 'quality of being willing to bear adversities, calm endurance of misfortune, suffering, etc.'. The latter root, dating from roughly the same period, connotes 'the quality of … submission'. *Patientia* speaks to '*indulgence*, leniency; humility; … *submission to lust*' (EtymOnline n.d. – my italics). The Online Etymology Dictionary entry continues:

> '[A]n abstract noun formed from the adjective *patientem* (nominative *patiens*) "bearing, supporting; suffering, enduring, permitting; tolerant," but also "firm, unyielding, hard," used of persons as well as of navigable rivers, present participle of *pati* "to endure, undergo, experience," which is of uncertain origin.'
>
> (EtymOnline n.d. – italics original)

There are many dimensions to *patience* or patiency that could be emphasised, but I will pick up Vella's thread by first focusing on 'lust', then closing with the peculiar reference to 'navigable rivers'.

This chapter has characterised experiences of patiency as somewhat *strident*; as emerging from broadly confrontational situations where the participant is placed in a position of mild peril even when no other agents are involved (e.g. vertigo in *Plank Experience*). But I have also maintained that patiency can be experienced when one feels appreciably affected in a positive way; say, by an alluring gaze; a seductive utterance; a scintillating sharing of personal space. The positive experiences of patiency epitomised by moments like these are integral to explaining the appeal of VR works that range from coy 'dating simulators' like *VR Kareshi*

(Illusion 2020 – see Fig 7.15) or the previously pictured *Together VR* (AURORA 2018 – refer back to Fig. 6.10) to outrightly pornographic content.

Fig. 7.15: *VR Kareshi* (Illusion 2020). Date a barista or, if you prefer, pet his husky puppy.

I've not dwelt at length on such genres to avoid giving the impression that VR is only good for porn and play. But one cannot deny that patiency is evident in the capacity that Vella hints: As *passion*; in physiologically and even sexually arousing situations. Perhaps a milder, desexualised version of this kind of appetitive 'passion' is felt towards cute things, and can also rightly be called patiency. Murray predicts that encounters with 'inherently charming' virtual creatures 'will trigger our most basic interactive impulses—to offer them food, pet them, and clap with pleasure as we watch them cavort' (Murray 2016a, p. 241).

If such reactions can indeed be elicited from VR participants *pre-volitionally*, then I'd suggest that what's evident is indeed the 'magnetism' of a positive, passionate patiency experience. Participants who aren't attracted to the virtual barista in Fig. 7.15 may instead be drawn uncontrollably towards his husky puppy. Many VR users will confirm that they felt physically drawn towards the playful robot dog in Valve's *The Lab*. We may approach cute characters like Konrad the kitten in *Konrad's Kittens* (Kunze 2016) so that we can enact bodily and mechanical agency (stroking, holding, carrying the cat, etc.). Should we feel *moved* to do so, then this

could be a manifestation of patiency; of feeling acted upon *by one's own 'passions'*—less a conscious attempt at enacting virtual agency by way of rationality.

In this way, patiency is an excellent usher of participant intention and action. It may be best suited to masking the limitations of unicursal or minimally branching structures: Patiency and the promise of agency can be used to guide the VR participant towards or along designers' desired paths while gently (or forcibly!) steering them away from dead-ends or false options. Hence the etymological reference to 'navigable rivers' seems germane. The stock analogy for interactive story structures is train tracks: Critics speak of feeling 'railroaded' towards certain actions or outcomes, usually bemoaning a lack of agency.

I prefer to analogise VR experiences to drifting calmly downstream. Rivers travel in one direction, and—like real life—one cannot go wherever or do whatever one pleases whenever one wants. Instead, one is buffeted by the flow of the watercourse; a patient to the waterway's agential anabranches and braids, at liberty to choose one's own casual itinerary within the offshoots and tributaries' perfectly enjoyable confines. In keeping with the word's linguistic roots as connotative of navigable rivers, patiency can be thought of as like an aquatic current that ranges in intensity from a gentle eddy to a raging rapid, depending on how sternly the VR designer needs to guide the participant.

8 Conclusion

> I must be cruel, only to be kind.
>
> – *Hamlet*, Act III, Scene IV

8.1 Guiding the Participant with Patiency

This monograph opened by suggesting that a key consideration in the design of VR experiences is seeing that the participant follows an intended experiential arc. I noted that others have referred to the stratagems by which this can be achieved as 'scripting the interactor'. I asked, '**how can the participant be guided in VR experiences?**', and posited that an under-explored avenue for shaping participant experience and behaviour in VR begins with eliciting of feelings of *patiency*—the opposite of a sense of agency—to cue participants to draw certain inferences, experience certain affects, and steer them away from or lure them toward certain sites of interest at particular points in time.

Though patiency was sketched in Chapter 1 (Section 1.2), it was not fully defined until Chapter 7 (Section 7.2). If we reiterate the thrust of each chapter, it will become clearer how the focus of each builds upon that of the last to develop a skeletal theory of guiding the VR participant through the application of patiency.

Let's trace a red thread by recapping the main points in a 'standard self-paraphrasing summary' (Aarseth 1997, p. 182).

8.1.1 Formal Preparations

Chapter 1 set the stage by claiming that contrary to what's assumed in the literature, not all VR experiences are dramatic or narrative. Some are comparable to light and sound installations, others are like entering someone's stream of consciousness, and yet others are unclassifiable. VR experiences' heterogeneity was

suggested to be an issue for standard approaches to 'scripting the interactor', since recommendations on how to embed clues, cues, and prompts amid virtual environments often assume that a work will include generic or stock situations, or boast an ensemble of characters and an easily-graspable premise or plot (Laurel 1991/2013; Bates 1992a; 1992b; Murray 1997/2016a; Jenkins 2004), which is often not the case.

I framed the problem by suggesting that relying on formulaic episodes of simulated social interaction drawn from a Western collective consciousness—that is, scripting the participant by recycling familiar genre tropes and archetypes—may be equal parts exclusory and creatively constricting. I suggested that it's apt to begin by throwing out the preoccupation with classical unities or 'well-formed' parts and wholes, which scarcely reflect the concerns of present-day VR creators (cf. Laurel 1986; 1991/2013; Mateas 2001; Mateas and Stern 2005). I proposed that it's wise to instead appeal to things that *all* participants possess: A body, sense organs, powers of attention, perception, and inference; emotion, an ability to act, and an instinctual aversion to being acted upon negatively.

Chapter 2 developed a model to describe how participants may feel positioned in relation to the virtual–diegetic world(s) projected by a given VR experience. Building on existing scholarship (Aarseth 1997; Ryan 2001/2015; 2006; Klevjer 2006; 2012; Vella 2015), I defined three bipolar dimensions—Existence, Influence, and Identity—that together describe, at a given moment in time, whether a VR participant feels **Internal** or **External** to the work's represented world(s), **Active** or **Passive** in relation to virtual events' unfolding, and whether they feel like their usual **Self** or some more or less well-defined **Other** while 'inside' the work. The model is dynamic in that it describes participants' ever-evolving perceptions of a VR experience—not facts about a work itself. This is because creators may deliberately withhold or obfuscate information to play with participant expectations; to pique interest and sustain engagement. 'Am I *meant* to be here?'; 'Did *I* do that…?'; 'Am I supposed to be *me*?'. It's not always clear.

With the language of participant positioning in place, it became possible to claim that VR artworks are best equipped to elicit feelings of patiency when the participant is positioned as **Internal** and **Active**. This increases the likelihood that they'll feel a part of the represented world, and so raises the chances they'll feel as if agents, objects, or other aspects the virtual environment *may act upon them*. In terms of setting up opportunities to offer agency and elicit patiency, it's best to avoid having the participant feel like an ineffectual invisible witness for whom

the stakes are necessarily lower. It may also be beneficial, as Anstey and Pape suggest (2002), to position the participant as their usual **Self** rather than burdening them with the role of some **Other** character with whom they may not identify.

Chapter 3 synthesised a framework for understanding how events are represented in VR at two levels of abstraction: The monstrative level, which speaks of things that are directly perceptible, and the narrative level, which is especially evident when events are 'cut up' and re-ordered; information withheld for maximal impact and intrigue. To build this framework on a stable foundation, it was necessary to revisit *Republic* and *Poetics*' prima facie conflicting definitions of diegesis and mimesis. I hope to have shown that it's quite likely Aristotle's account has been misconstrued in contemporary narratology. A blended mode that mixes mimetic and diegetic elements is not set up by Plato *or* Aristotle as subordinate to 'pure' imitation, and so it seems odd that theories are still treated as needing to belong to either a mimetic or a diegetic camp. We acknowledge that works can embody a 'mixed' mode; that representations can variably 'show' and 'tell', so why not embrace a hybrid representational ontology, terminology, and conceptual toolkit, too?

Combining Gaudreault's (1988/2009) concept of mimetic monstration with the formal aspects of Bordwell's theory of film narration (*fabula* and *syuzhet*), I suggested that monstration involves representing objects, agents, events, and environments using virtual staging ('blocking'), scenography, diegetic audio, and mise-en-scène. Narration, meanwhile, entails manipulating how the VR participant gains access to monstrative moments in and through time and virtual space by means of ellipses, scene changes, intertitles, and extradiegetic audio such as voiceover narration, which generally produces a more complex, multithreaded temporality than purely monstrative representations. But complexity does not always equal 'better'. Monstrative representation and the unbroken temporality typical of drama is seemingly best suited to VR experiences that position the participant as **Internal** and **Active**. Film-like experiences that centre on the trials and tribulations of other agents can more convincingly employ the tools of narration, though usually at the cost of relegating the participant to the role of an **External** and **Passive** observer.

8.1.2 Functional Considerations

Chapter 4 marked a turn towards VR's embodied psychological functions. Two differing disciplinary and epistemic approaches to presence and immersion were detailed. I showed that spatial presence is near enough identical with what Slater (2009) and Skarbez (2016) call 'place illusion'. I followed the findings of positivist presence researchers in suggesting that spatial presence is best conceived as a fast, automatic, subpersonal, binary, and gestalt-like 'cognitive feeling' (Slater 2002; Schubert 2009; Hartmann et al. 2015; Hofer et al. 2020; Hartmann and Hofer 2021) of 'being there' (Heeter 1992) via a 'perceptual illusion of non-mediation' (Lombard and Ditton 1997) that is evidenced by a VR participant feeling on 'some level' and to 'some degree' (ISPR 2002) as if the events occurring in front of them are 'really happening' (Hartmann and Hofer 2021).

I then looked to a different body of literature to extrude a definition of immersion. Following humanist theorists (including digital narratologists, game studies scholars, media researchers, and others employing broadly interpretivist perspectives and methods), I conceived immersion as a state of absolute involvement or engrossment in mediated tasks, situations, or environments. Where contemporary VR hardware effectively guarantees spatial presence, I argued that *nothing* can guarantee immersion: It is a fleeting and fragile mental state that is significantly contingent upon whether a VR participant finds a situation *interesting* and ultimately *enjoyable*. Where one's sense of spatial presence in VR is unlikely break unless technical failures occur, immersion can easily be inadvertently shattered by focussing negatively on aspects of the experience.

I linked immersion in VR to what media psychologists call the 'involved' mode in film and TV viewing (Vorderer 1993; Klimmt and Vorderer 2003). However, where involvement presupposes a polar opposite state wherein the media consumer is aware of and attends to aspects of the media object in an 'analytic' and 'distanced' mode, I followed a recent 'dual systems' approach to participant experience in VR (Hofer et al. 2020; Hartmann and Hofer 2021) in suggesting that an awareness of the media object does not dispel involvement or immersion as long as the object of attendance is not cast in too a critical a light. In other words, I suggested that immersion should not by definition exclude a momentary awareness (usually an *appreciation*) of a media experience's artificial nature. Immersion in VR can and does co-occur with momentary flashes of media awareness.

Chapter 5 explored and reframed attention. Its point of departure was Richard Lemarchand's (2012) idea that immersion in games may be reducible to the successful guidance of attention: If player or participant attention can be turned towards one thing after another, continually and continuously, without letting it lapse (that is, without letting the participant's thoughts or intentions stray) then what's achieved is tantamount to immersion. I reviewed the science of attention, which reifies the phenomenon as foremost a function of sensation and perception (a consequence of capacity limitations; of cognitive resources being finite) before looking towards historical treatises. Delving into inductivist proto-psychology of the late 1800s, I highlighted with reference to the introspective approaches of von Helmholtz, James, and Wundt—as well as some 'peculiarly phenomenological' (Seligman 1976, p. 205) comments from Wittgenstein (1953)—that we don't just attend *to* things; we attend *to* things *as* certain things. Teasing out the idea of 'attending-as', I suggested that the influence of top-down cognition (knowledge, beliefs) upon acts of attendance and the appraisals we perform in the very process of perceiving things means it makes sense to claim that there is a finite number of ways we can attend *as* when we attend *to* aspects of VR experiences.

Chapter 6 adapted emotion categories from existing scholarship into corresponding 'frames of experience', which subsume and extend ways of *attending-as* noted in the previous chapter. I pointed out that since the categories identified by Tan, Perron, and Frome aren't *only* relevant to emotional appraisals (but other modes of thought also), they can be discussed as 'frames of experience' without downplaying the importance of either 'hot' bodily affect or emotion proper. I outlined how participants can make appraisals *or* have *non*-evaluative thoughts (that is, perform acts of attendance or arrive at purely constative construals) in the **REPRESENTATION**, **INTERACTION**, **ARTEFACT**, **SOCIAL**, and **SELF** frames. Each of these implies a different awareness of the relationship between oneself (participant), representation, medium, virtual agents, and (where applicable) human-controlled social actors also.

The **REPRESENTATION** frame brings narrative concerns—usually the fortunes of others—to the fore. The **INTERACTION** frame entails attending to virtual actions in terms of their outcomes or alternatives. The **ARTEFACT** frame implies a strong media awareness: It means attending to artwork *qua* artwork. The **SOCIAL** frame supposes that the participant is 'seeing through' the means of mediation (a virtual environment; a stylised avatar, etc.) and attends to another human participant 'on the other side'. And the **SELF** frame is evident when the VR participant

feels as if their physical person is being addressed or threated by some aspect of the virtual environment. As such, the SELF frame speaks most strongly of spatial presence and immersion; of subpersonally perceiving a threat to one's bodily integrity or mental wellbeing, and hence of *patiency*. Outlining the conceptual act theory of emotion—a constructionist alternative to appraisal theories (e.g. Frijda 1986) or basic emotion theories (e.g. Ekman 1992)—I suggested that the distinction between affect and emotion proposed by Barrett (and others) mirrors the difference between the subpersonal and the cognitively penetrable. The conceptual act theory compliments 'hedonic reversals' (e.g. Zillman 1996; 2008; Zuckerman 1979) to help explain how media users can cash out uncomfortably arousing and negatively valenced affective states in terms of positive and indeed desirable affective–emotional experiences like excitement.

Finally, Chapter 7 summarised three views of agency in interactive media before explicating *patiency*, which I believe to form the basis of an answer as to how to guide the participant, direct attention, sustain immersion, and potentially create a balanced, all-round compelling experience in VR.

8.2 Madness with Method In 't

We've nothing to fear from individual VR artworks that aim to shock and excite; only the corporations intent on monopolising the medium. 'Manipulating' an audience for the purposes of artistic expression or entertainment is nothing new, and mustn't be regarded as suspect purely because of the language employed.

8.2.1 Attractions

In 1923, filmmaker and theorist Sergei Eisenstein debuted his concept of attractions (Eisenstein 1923/1974). As evidenced in Chapter 6's epigraph, Eisenstein took the spectator to constitute the 'basic material' of film and theatre: They flock to auditoria to be acted upon, and *acted upon they shall be*—emotionally, intellectually, and (supposedly) ideologically, too. The spectators' embodied minds were Eisenstein's canvas, and he sought to leave the mark of a montage of attractions emblazoned on their psyches with the precision of an engineer. For Eisenstein, an attraction was a 'unit of spectatorial impact' (Bordwell 1985, p. 13) that

played a crucial part in a wider 'system for constructing a performance' (Eisenstein 1923/1974, p. 79). He defined an attraction as 'any aggressive aspect[;] … any element' which, employed judiciously, subjects the perceiving mind to 'sensual or psychological' bumps and thrills (Eisenstein 1923/1974, p. 78).

Attractions were found not only in dramatic events or electrifying performances, but in set and lighting design, sound effects, and in the very assembly; the very *collision* of images that defined Soviet montage theory. An attraction, he writes, 'is based … on an interrelation—on the reaction of the audience' (Eisenstein 1923/1974, pp. 78–79). Applied correctly, an attraction 'would work directly on the spectator's nervous system', producing *effects* in the form of *affects* that skewer the perceptual, the emotional, and the cognitive (Bordwell 1985, p. 14).

Bordwell notes that Eisenstein's theories—no matter how radical their import or enduring their legacy—may strike the modern reader as '[s]crappy, ad hoc, and idiosyncratic' (Bordwell 1985, p. 15). There's hubris in the claim that attractions can be 'experimentally regulated and mathematically calculated' (Eisenstein 1923/1974, p. 78); pretensions of Pavlovian conditioning in the premise that reflexes can be arbitrarily coupled with audiovisual events and subsequently elicited on cue. And the idea that theatrical or cinematic attractions would enlighten the masses or alarm them out of a stupor seems excessively self-confident, even if one does consider it an admirable goal. Yet Eisenstein and the *Proletkult* movement with which he was associated were far from alone in feeling that the theatre of interwar Europe was a bourgeoisie art-form that demanded, at the very least, a most vigorous shaking-up.

8.2.2 Cruelty

Actor, poet, and dramaturge Antonin Artaud developed the notion of a 'Theater of Cruelty' in his manifesto-esque collection of essays, *The Theater and Its Double* (Artaud 1938/1958). There, famously, the words 'virtual' and 'reality' appear together on the printed page for the first time in tandem. For Artaud, theatre had the power to plunge the audience into a *réalité virtuelle* (Artaud 1938, p. 51; 1938/1958, p. 49), which 'wakes us up: nerves and heart' (Artaud 1938/1958, p.

84).[96] The cruelty of which he wrote had not to do with cruelty inflicted by characters upon one another—nor, even, with the cruelty of life, and how dramatic agents deal with it. Rather, Artaud's cruelty—not stemming from sadism or tied to suffering—was about the ability of scenic elements, special effects, and surreal scenarios' violent realisation to '[inspire] us with the fiery magnetism of its images and [act] upon us like a spiritual therapeutics whose touch can never be forgotten' (Artaud 1938/1958, pp. 84–85; Gorelick 2011).

Like Eisenstein and the *Proletkult*, Artaud felt that '[t]he contemporary theater is decadent', lamenting how 'it has lost the feeling on the one hand for seriousness and on the other for laughter; … it has broken away from gravity, from effects that are immediate and painful—in a word, from Danger' (Artaud 1938/1958, p. 42).

Artaud's cruelty 'celebrate[d] the life of the body: Its raw immediacy, its fragility, and its dangerous intensity' (Hillenbrand 2020). I can only hope that my convictions regarding the existence and utility of patiency as complimentary of agency in VR experience design are seen as similarly celebratory, rather than barbarous. I am mindful that in an era when calm, 'wholesome games' are quite understandably in high demand,[97] a call for more patiency in VR art and entertainment could be interpreted as tone-deaf.

We've become so used to exercising agency in interactive media that no matter how eminently enjoyable patiency is in VR rollercoaster rides, haunted houses, run-ins with dinosaurs, aliens, or aquatic predators; interrogations, encounters with sweary seductresses, and unsolicited brain surgeries performed by rogue robots; forceful 'friendships', satirical bombardments by brand logos, and being placed in cages or made to walk the virtual plank, VR consumers and researchers may continue to fixate on *agency*, expecting more freedom; bigger, more expansive (and *expensive*), 'realistic' open worlds brimming with more frequent and

[96] Artaud would likely have loathed the assemblage of technologies we today call virtual reality. He wrote that movies 'murder … us with second-hand reproductions which, filtered through machines, … have maintained us for ten years in an ineffectual torpor, in which all our faculties appear to be foundering' (Artaud 1938, p. 84).

[97] See, for instance, **wholesomegames.com** (accessed 11/10/2021). I am not suggesting that wholesome games are any less important or enjoyable than high-intensity, perhaps conceptually challenging art and entertainment, and would like to echo the curators of **wholesomegames.com**'s sentiment that 'every type of game' (or other art object) 'can—and should—co-exist'.

'meaningful' opportunities to act; to shape the environment on a whim and as they see fit, without resistance or push-back from the lifelike virtual agents that one would otherwise expect to possess an agenda of their own. This would be an unfortunate neglect of what makes VR a unique and interesting artistic medium: The feeling of being acted upon by a virtual representation.

Fig. 8.1: *VR Vaccine* (Cohen 2017)—a medical app designed to captivate and distract children receiving vaccinations. A knightly princess explains to the child that the sensation they're about to feel in their arm (caused by a fire stone!) will protect them from dangerous creatures. Here, of course, the participant has no agency (it's vital that they do not fidget): Patiency may assist in keeping the child transfixed, and hence physically still.

Patiency cannot *replace* agency as VR's default design desideratum since the twin dynamics function *reciprocally*: Patiency is most bracing and efficacious when interwoven with episodes of relatively uncompromised agency. Figure must be set against ground; text must be cast against context.

Where agency encourages exploration and experimentation, patiency guides by beguilement, occasionally directing more forcefully through threat or deception. Where agency flatters and cajoles, patiency seduces and ensnares. They are two sides of the same coin, with the latter still conspicuously under-explored by VR creators and theorists. As the novelty of VR begins to wear off for its earliest adopters, and commentators position VR's own version of attractions as something shallow or anachronistic that should or will be 'move[d] beyond' (Dooley 2018, p. 97 cf. Gunning 1986/2006; Strauven 2006) in favour of more conservatively narrative works, we risk losing sight of patiency's potential as a relatively unprecedented, medium-defining trait.

Academic and creative communities might consider adopting a consistent vocabulary to reflect that being acted upon by lively and animate environments *can*, as I and others have argued, be every bit as enjoyable as oneself being in control.

8.3 Letting Go (Control)

For Eisenstein and Artaud, attractions and cruelty were tools for realising political ends. If patiency in VR is as ideological as their concepts and theories, then it is not, alas, about inspiring a revolution that will topple technocapitalism's pervasive surveillance doctrine. (Our VR data are tracked just like everything else, but perhaps more sinister is the idea that immersive virtual worlds are modern-day bread and circuses.) Rather, patiency is about sensitising us to the dangers of demanding that *we*—not creators—are always in control of our art and entertainment experiences, or of always *wanting* to be in control; of needing endless options; of implicitly expecting game and VR designers and developers to work harder; to 'crunch' for longer; to deliver bigger, better, shinier products just so we can feel less confined and more empowered when we don a headset to temporarily diminish our relationship to the outside world in pursuit of aesthetic enthrallment.

Brenda Laurel, reflecting on VR artworks in 1992, makes pertinent observations about control in relation to the then-new medium. She writes that '"direct manipulation" [of virtual entities] becomes direct sensory encounter, and the pane is blown out of the interface window to reveal on open portal to the imagination' (Laurel 1992, p. 58). She quotes Marshall McLuhan and Harley Parker, who allude to the Romantic sublime (Burke 1758/1997) in asserting that '[a]nything that raises the environment to high intensity, whether it be a storm in nature or violent change resulting from new technology, turns the environment into an object of attention' (McLuhan and Parker 1968, p. 247). Laurel supposes that if high-intensity environments do indeed 'open the door of perception to people otherwise numbed in a non-perceivable situation' (McLuhan and Parker 1968, p. 277), then VR may '[boost] our awareness of conditions that already exist in our culture' (Laurel 1992, p. 58).

The cultural conditions that VR and the logic of patiency could serve to underscore may well be, as Laurel tentatively predicts, a situation in which *'*[*w*]*hat we fear is the loss of control*'.

> 'VR may ultimately function to demonstrate that Control is a toxic philosophy in the contemporary world, not only in terms of culture and art, but also in terms of our relationships with individuals, societies, and environments—and especially in terms of how we define and measure our own freedom and self-esteem.'
>
> (Laurel 1992, pp. 58–59 – my italics)

Laurel's template for how to eliminate issues of control from VR art and entertainment involves letting storytelling devolve into free-form role-play, thereby supposedly subverting 'the author/consumer dichotomy with a model of collaborative co-creation' (Laurel 1992, p. 59). Her and Rachel Strickland's VR artwork, *Placeholder* (1992), takes the form of a lo-fi virtual environment geared towards 'improvisational … adult make-believe' (Murray 2016a, pp. 60, 140). The idea with the piece was for the artists to take a hands-off approach; to let *participants* be in control. But the experience designer(s) and their 'top-down control of the plot' (Ryan 2001, p. 329) never recedes from view completely. Video documentation of *Placeholder* (see Strickland 2011) shows Laurel issuing prompts and suggestions via a microphone looped into the VR system from her directorial vantage point in a control booth overlooking the exhibition space.

Whether it's achieved by means of dramatic choruses, voiceover narration, or the elicitation of patiency from VR participants, it seems the role of representational ringleader, mimetic master of ceremonies, or narrative 'tour guide' is going nowhere fast. And that's fine. Participants may *always* need scripting; *guiding* by clues and cues embedded in the artwork (Seeley 2020). This may one day be the job of an AI drama manager or similar. But, as Ryan muses at the end of *Narrative as Virtual Reality 2* (2015), the technological apex of the hypothetical holodeck lies atop the steepest figurative peak, and shallower slopes in the surrounding landscape surely offer equally compelling ascents.

We must ask less of designers in terms of letting *us* control the action, and instead be receptive to *their* guidance as deferred through the agential proxies of lively environments that do not exist solely to be manipulated, but whose strengths and appeal lie in their ability to act upon us.

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Irrational Exuberance: Prologue. (2016). Ben Vance. PC VR. Space Exploration. Buffalo Vision.
Isle of the Dead. (2018). Benjamin Nuel. PC VR. Painting. ARTE Expérience.
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Kobold. (2018). Max Sacker, Ioulia Isserlis. PC VR. Horror. AnotherWorld.
La Apparizione. (2017). Christian Lemmerz. PC VR. Religious, Horror. Khora Contemporary.
Lavrynthos. (2021). Fabio Rychter, Amir Admoni. PC VR. Fantasy, Comedy. Delirium XR.
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Lone Echo. (2017). Ru Weerasuriya, Dana Jan. PC VR. Sci-Fi, Drama, Action. Oculus Studios.
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Madrid Noir. (2021). James Castillo. PC VR, Standalone VR. Comedy, Drama, Crime Caper, Noir.
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Quanero. (2016). Philipp Reinhardt. PC VR. Sci-Fi, Crime, Mystery. Laserboys3000.
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RE-ANIMATED. (2018). Jakob Kudsk Steensen. PC VR. Nature, Fantasy.
Reaping Rewards. (2017). Matthew Ward. PC VR. Fantasy, Drama. Limitless Ltd.
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Retne. (2017). Deepa Mann-Kler. PC VR. Children's, Fantasy, Comedy. VRNI Ltd., Kainos.
Rexodus: A VR Story Experience. (2016). Mark Steele, Kevin Anderson. PC VR. Sci-Fi, Comic-book. Steelehouse VR Studios.
Richie's Plank Experience. (2016). Toast VR Ltd. PC VR, PlayStation VR, Standalone VR. Simulation, Party. Toast VR Ltd.
Rising. (2018). Marina Abramović. Fine Art, Environmental. Acute Art.
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She's Already Gone. (2017). Yu Hong. PC VR. Biographical, Fantasy.
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Son of Jaguar. (2018). Jorge Gutierrez. PC VR, Standalone VR. Comedy, Animation. Google, Inc.
Songbird. (2018). Lucy Greenwell. Nature, Documentary.

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Switchstance Bay. (2016). Erik Parker. PC VR. Fantasy. Khora Contemporary.
Tempest. (2020). Tender Claws, Piehole. PC VR, PlayStation VR, Standalone VR. Fantasy, Comedy, Cabaret. Tender Claws.
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The Cubicle. (2016). *The Cubicle*. PC VR. Psychological Drama, Short. Pelican Party Studios.
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The Great C. (2017). Steve Miller. PC VR. Sci-Fi, Drama, Action. Secret Location Inc.
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The Invisible Hours. (2017). Rob Yescombe, Raúl Rubio Munárriz. PC VR, PlayStation VR. Drama, Crime, Mystery. Game Trust.
The Lab. (2016). Valve. PC VR. Sci-Fi, Comedy. Valve Corporation.
The Passengers: Her & Him. (2020). Ziad Touma. PC VR. Drama, Social Realism. Les Produits Frais, Couzin Films.
The Rose and I. (2016)(b). Eugene Chung. PC VR. Fantasy, Drama. Penrose Studios, Inc.
The Thing Growing. (1997). Josephine Anstey. CAVE. Fantasy, Comedy. Electronic Visualization Laboratory.
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Thin Line. (2018). Rony Kahana. PC VR. Educational, Drama.
Three Voices. (2016). Tore Knabe. PC VR. Test Scene.
To the Moon. (2018). Laurie Anderson, Hsin-Chien Huang. PC VR. Fantasy, Lyrical, Sci-fi.
Touching a Cactus. (2018). Sarah Rothberg. PC VR. Poetry, Lyrical, Comedy.
Transference. (2018). Benoit Richer. PC VR, PlayStation VR. Horror. Oculus Studios.
TRAUM. (2018). Christian Lemmerz. PC VR. Arthouse, Horror. Khora Contemporary.
Traveling While Black. (2019). Roger Ross Williams. PC VR, Standalone VR. Documentary.
Vacation Simulator. (2019). Owlchemy Labs. PC VR, Standalone VR. Comedy, Simulation.
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Vader Immortal: A Star Wars VR Series – Episode III. (2019). Ben Snow. PC VR, Standalone VR. Sci-Fi, Action. Disney Electronic Content, Inc.
VESTIGE. (2018). Aaron Bradbury. PC VR. Documentary. Other Set.
Violence. (2020). Shola Amoo. PC VR. Philosophical, Choreographic. StoryFutures.
Virtual Virtual Reality. (2017). Tender Claws. PC VR, PlayStation VR, Standalone VR. Comedy, Sci-Fi, Adventure. Tender Claws.
VR Flush. (2018). Brudingo Team. PC VR. Comedy, Sci-Fi. Brudingo Team.
VR Vaccine. n.d. Nando Cohen. Medical, Pain relief (distraction).
VRwandlung. (2018). Mika Johnson. PC VR. Fantasy, Grotesque, Satire. Goethe-Institut.

Westworld Awakening. (2019). Survivos. PC VR. Sci-Fi, Thriller. Oculus Studios.
Wilson's Heart. (2017). Twisted Pixel Games. Horror, Fantasy, Adventure. Oculus Studios.
Wolves in the Walls. (2018). Pete Billington. PC VR, Standalone VR. Fantasy, Drama. Fable Studio, Inc.
Writing the End. (2018). Doug North Cook. PC VR. Drama, Lyrical.
Your Hands Are Feet. (2017). Sarah Rothberg, Amelia Winger-Bearskin. PC VR. Poetry, Lyrical, Comedy.
Zero Days VR. (2017). Yasmin Elayat. PC VR. Documentary. Scatter.

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Anderson, Paul Thomas. 2007. *There Will Be Blood*. Paramount Vantage, Miramax Films.
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