**Feeling with Someone Else’s Body:**

**Self-deception and the Paradox of Immersive Performance**

**Liam Jarvis**

**Royal Holloway, University of London**

**Thesis submitted for the degree of PhD Drama and Theatre**

**May 2016**

**DECLARATION OF AUTHORSHIP**

|  |
| --- |
| I **Liam Jarvis** hereby declare that this thesis and the work presented in it is entirely my own. Where I have consulted the work of others, this is always clearly stated.  Signed: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

**Abstract**

This thesis examines the intersections between immersive performance practices and recent neuroscientific studies in embodiment. The overarching argument is that to reconcile the paradox of the immersed audience’s physical presence in a circumstance beyond their immediate ‘here and now’, a necessary transformation of the spectator must occur. Concomitantly, I will demonstrate that an ontological desire that undergirds immersive experience is the desire to *feel more fully with the body of another* – it is this desire that I will argue has precipitated the integration of neuroscientific body transfer illusions in performance. It is my contention that in the context of the selected hybridised case studies, illusion-inducing approaches are deployed to access a proximate sensory reconstruction of the ineffable first-person experiences of neurological subjects.

This thesis has been divided into two parts. In Part One, the trajectory through the first four chapters is focused on accumulating for the reader the necessary theoretical groundwork. Chapter 1 revisits the enduring philosophical debates in the field of art criticism that have sought to deny the spectator’s presence in the reception of art, with immersive theatre belonging to a counter-tradition that art critic Michael Fried called the ‘theatrical’ work. Chapter 2 provides a literature survey and an examination of how the terms ‘immersive’ and ‘immersion’ have come to be defined in media and theatre scholarship, highlighting that immersion in the ‘theatrical’ work is undergirded by the problematic ontological promise that spectating bodies might ‘enter’ dramatic or simulated situations. In Chapter 3, I will draw on neuroscientific research in embodiment illusions to highlight a potential reconciliation to the paradox of the spectator’s presence inside the elsewhere phenomena of other bodies. In Part Two, I will examine how body transfer illusions have been appropriated qualitatively to immerse audiences inside a first-person experience of different neurological subjects in the applied performances of Sublime & Ridiculous (*In My Shoes*) and BeAnotherLab (*The Machine to be Another*) in Chapter 4, and in an immersive installation by my company Analogue (*Transports*) in Chapter 5. Finally, I will draw together the different threads of my argument in Chapter 6, using Analogue’s *Re-enactments* to test the limits of immersion ‘inside’ the elsewhere phenomena of a fictionalised trauma sufferer’s experience of dissociation, before progressing to a summary of my conclusions.

**Thesis**

Feeling with Someone Else’s Body: Self-deception and the Paradox of Immersive Performance

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**Introduction**

1. Overview

This thesis examines the intersections between immersive performance practices and recent scientific studies in embodiment. The overarching argument is that in order to reconcile the paradox of the immersed audience’s physical presence in a circumstance beyond their immediate ‘here and now’, a necessary transformation of the spectator must occur. Concomitantly, I will demonstrate that an ontological desire that undergirds immersive experience is the desire to *feel more fully with the body of another* – it is this desire that I will argue has precipitated the qualitative integration of scientifically tested body transfer illusions in performance.[[1]](#footnote-2) I intend to examine approaches in my own practice with my company Analogue and those of adjacent practitioners in the field (Sublime & Ridiculous and BeAnotherLab) that seek to mobilise this specific conceptualisation of immersivity. It is my contention that in the context of the selected case studies in Part Two of this thesis, the principal motivation to immerse audiences within the body of another is epistemological in origin; more precisely, to access the ineffable first-person experiences of neurological subjects illusorily through the deployment of wearable technologies and interaction protocols derived from open-source experimental psychology and neuroscience. The ontological immersive desire to ‘be another body’ and its particular expression through the use of empirically tested body transfer illusions in performance have received little scholarly attention to date.

In this ‘Introduction’, I will first identify the foundations upon which I am formulating this conceptualisation of immersive ontology by highlighting the paradox of the spectator’s presence in immersive theatre. I will briefly address the fact that practitioners have sought strategies to reconcile the incongruity of the spectating body’s diminished proximity to different kinds of ‘elsewhere’ phenomena. I will then proceed to establish neuroscientific body transfer illusions as one approach toward a reconciliation of this paradox. Consequently, it will be important to indicate the breadth of ways in which knowledge from neuroscience and cognitive studies is currently being applied in theatre scholarship and the kinds of burgeoning performance practices that this knowledge has engendered. I will then conclude my ‘Introduction’ by summarising the trajectory of my argument through the thesis as a whole, before providing a comprehensive breakdown of the contents of each chapter.

2. Introducing the Problem: The Paradox of ‘Presence’ in Immersive Theatre

Emergent trends in immersive performance have been couched in theoretical discourses that position the whole of a spectating body and its perceptual faculties as the locus of meaning-making. This holistic understanding of bodily reception is attributable to the fact that *soi disant* ‘immersive theatre’ performances frequently attempt to generate high-fidelity sensory impressions in the body of the participating audience through stimulating different combinations of visual, auditory, kinesthetic, tactile and olfactory feedback modalities. The centrality of the audience’s body has led to broader ontological claims that have been made on behalf of immersive theatre and its attendant promise that the ‘haptically incorporated’ spectator (Machon, ‘(Syn)aesthetics and Immersive Theatre’ 207) might experience different phenomena ‘more fully’ (Trueman, ‘Immersive Theatre: Take Us to the Edge, but Don't Throw Us In’). These are claims that may, or may not, be sustainable when subjected to rigorous critical scrutiny. The kinds of ‘phenomena’ to which I refer have been highly diverse, with immersive performances casting theatre audiences as refugees,[[2]](#footnote-3) survivors of an apocalyptic event,[[3]](#footnote-4) a trapeze act,[[4]](#footnote-5) a date,[[5]](#footnote-6) attendees at a swingers party,[[6]](#footnote-7) re-enactors,[[7]](#footnote-8) thieves,[[8]](#footnote-9) players,[[9]](#footnote-10) users,[[10]](#footnote-11) voters,[[11]](#footnote-12) passengers,[[12]](#footnote-13) voyeurs,[[13]](#footnote-14) and without significant recourse to the ethical implications, as Jewish prisoners at the ‘Auschwitz-Birkenau’ concentration camp.[[14]](#footnote-15) These are just a few examples of the kind of ‘immersant’ that I have performed over the duration of this research project. The promise of immersive theatre understood via the reconceptualization of the spectator is that it might function as a threshold experience designed to transport an unrehearsed audience not only mentally, but physically inside a particular spatio-temporal circumstance or subjunctive world via its likeness. However, notions of illusorily ‘entering’ a dramatic universe have always been a problematic proposition. Keir Elam in *The Semiotics of Theatre and Drama* (1980) cited philosopher Nicholas Rescher to substantiate his argument that, ‘Access to all possible worlds – including the dramatic – is, naturally, conceptual and *not* physical, since ‘one must “begin from where one is”, and WE are placed within this actual world of ours’ (Rescher 1975, p. 92)’ (Elam 97) [italicised for emphasis].[[15]](#footnote-16) The significant problem of realising the spectator’s physical incorporation inside a drama is predicated on a paradox; the audience’s presence in the ‘here and now’ of the theatrical circumstance is, in itself, the obstacle to their being in the ‘there and then’ of a dramatic situation. As Elam contends, ‘counterfactual worlds’ are only ‘actual’ for their imagined inhabitants, and thus the audience can never genuinely experience their ‘condition’, since it would involve a transformation of the ‘here’ of our physical context into a remote and hypothetical ‘there’ (Elam 97-98). The only exceptions Elam acknowledges are conditions through which an alternative state of affairs is perceived as more immediately real than the actual, such as ‘oneiric (‘dream world’), hallucinogenic (other-worldly ‘trips’) and psychotic (e.g. schizophrenic) experiences’ (98). These caveats via which an individual might become fully transported inside a counterfactual world are notably anomalies of perception produced by the body itself (or through its contact with foreign substances), and not by art experiences. Thus, Elam hints at the obvious limitations of any mode of theatre practice that overstates its claim toward our physical immersion ‘inside’ a distant elsewhere.

Before proceeding any further, I should acknowledge that there are examples of immersive practices that implicate the ‘audience-participant’ within a live encounter, whilst not specifically inviting them to enter a counterfactual world or become someone other than themselves; for example, Adrian Howells’ one-to-one performances that engender what Deirdre Heddon and Dominic Johnson have referred to in *It’s All Allowed: The Performances of Adrian Howells* (2016) as ‘situations of ‘accelerated friendship’’ (10) through engaging participants in intimate acts of bathing,[[16]](#footnote-17) holding,[[17]](#footnote-18) or the washing of hair or feet.[[18]](#footnote-19) This and other related modes of immersive work fall outside of the scope of this thesis, which is more specifically concerned with a particular sub-set of immersive performances that deploy body transfer illusions to take up the position of a virtual other and, in doing so, introduce entirely new sets of concerns that require focused analysis.

3. Towards Reconciling the Problem of the Spectator’s Presence ‘elsewhere’

The more cognizant the immersed audience is of the particularity of their own body, or the ‘resistant materialities of embodiment’ as N. Katherine Hayles defines it in *How We Became Posthuman* (1999: 245), the more insistently it resists the promise that one’s flesh might cross the threshold and ‘enter’ the simulacrum. The cloaking or masking of the participating audience has been one such strategy that practitioners have used to reconcile this problem. Punchdrunk have masked their spectators in numerous instances of their practice. For example, in *The Drowned Man: A Hollywood Fable* (2013), masked audiences enter a disused postal sorting office in Paddington that has been transformed scenographically into 1960s ‘Temple Studios’, Hollywood, with the further promise that they might enter the dramatic universe of Georg Büchner’s *Woyzeck* (1879), from which the piece takes inspiration.[[19]](#footnote-20) These strategies toward the audience’s concealment have problematised scholarly claims that ‘bodies are prioritised’ in immersive theatre (Machon, ‘(Syn)aesthetics and Immersive Theatre’ 207), since the audience is staged at the centre of the work only to recede from the perception of others to the status of being at best anonymised (though never entirely since audience members wear their own clothing), or at worst ‘part of the scenery’. Furthermore, the promise of transporting the audience elsewhere (beyond their immediate ‘here’) necessitates a transformation of the spectator that is typically associated with the performer; as well as being ‘themselves’, immersion ‘inside’ the conceptual space of drama necessitates their becoming someone else.

The acknowledged presence of the immersed audience that necessitates their becoming other is the crux of this thesis. Furthermore, it is a theatrical problem that I have encountered in my own work as a practitioner. In 2011, I co-created a devised performance with my company Analogue entitled *2401 Objects*, examining the life and death of the famous amnesic patient, Henry Molaison (or ‘Patient HM’). Henry underwent experimental neurosurgery in 1953 as a measure to contain his intractable epilepsy, but as a result of the removal of approximately two-thirds of his hippocampus, parahippocampal gyrus and amygdala, he experienced severe retrograde and anterograde amnesia throughout his lifetime.[[20]](#footnote-21) *2401 Objects* was inspired by a scientific procedure after Henry’s death in which his brain was histologically sectioned into 2,401 70 micron thin slices on 2 December 2009. The dissection, conducted by Dr. Jacopo Annese and his team at The Brain Observatory (University of California), was streamed live on the internet to an audience of over 400,000 viewers both to ‘permit scientific scrutiny and to foster public engagement’ (Annese 3).[[21]](#footnote-22) While *2401 Objects* was staged in theatre auditoriums and was not designated as ‘immersive theatre’, there is one particular moment in the work that corresponds with the illusory transformation of the spectator that I have identified as characteristic of immersive practices; an actor who stands in for Dr. Jacopo Annese brings up the lights on the audience and requests that they hold out their hands in front of them. He says, ‘imagine that these are my hands. They are used to doing a lot of detailed work, you trust them’ (Barker 60). He then invites the audience to place ‘his’ hands on their heads, locating for them where the anatomical structure of their hippocampi resides. This is a complex request; beyond entering a subjunctive world or a historical event, the invitation in this moment is for the audience to examine their body with the skilled hands of the neuroanatomist, imaginatively relocating themselves to Jacopo’s perspective. In turn, the spectator becomes momentarily both the subject and object of ‘scientific’ enquiry. The intention, beyond mapping the location of anatomical regions in the audience’s brain, is towards empathy. While there is no unanimity around the precise meaning of ‘empathy’, in this context I use the term as it is predominantly understood in science as ‘perspective-taking’, or as theatre scholar Bruce McConachie defines it as a ‘kind of mind-reading that allows one person to step into the shoes of another and experience that person’s world from her or his point of view’ (McConachie, *Theatre & Mind* 15). But how might we know another’s experience when certain kinds of knowing necessitate possessing a particular kind of body? For example, the unique experiences of neurological subjects such as Henry Molaison? Beyond representing the narratives of science onstage (as in *2401 Objects*),[[22]](#footnote-23) this strand of questioning has shifted my research in the direction of methodologies that attempt to reconstruct the first-person sensate experiences of neurological subjects for audiences. My interest in this thesis, beyond the avowedly ‘escapist’ immersive practices of companies such as Punchdrunk, concerns emergent applied techniques that are oriented on engendering empathic relationships between a body that knows an experience, and the body that cannot know without occupying its unique embodied point of view.[[23]](#footnote-24) My interest is in emergent methodologies through which practitioners might recreate perceptual phenomena and modes of being for which our own bodies can provide no correlate (and thus, instances when our imagination is delimited by possessing the body that we ‘own’). It is this interest, coupled with the necessary transformation of the spectator that I have identified as a feature of the immersive work that has prompted me to conceptualise the ontological desire that undergirds immersive practices in more radical terms: namely, the desire to feel more fully *with the body of another*.

4. Emergent Modes of Spectatorship: Body Transfer Illusions

The practical case studies that I have selected for critical exegesis in both my own practice and adjacent practices in Part Two correspond explicitly with the notion of ‘immersion’ that I am advancing. In particular, I am focusing on artists that deploy wearable technologies (e.g. head-mounted displays (HMDs), headphones etc.), telepresence and body transfer illusions derived from open-source neuroscientific embodiment experiments as a strategy to extend perception beyond the boundaries of the participating body and ‘inside’ other virtual bodies. The feeling of collapsed distance between one’s physical appendages and a virtual or extracorporeal counterpart is measured in psychology in terms of ‘proprioceptive drift’; this refers to the extent to which one’s tactile sensations are mislocalised (e.g. a change in one’s perceived location of one’s real hand towards a rubber hand).[[24]](#footnote-25) In science, drift measurements are recorded as a means of rating the intensity of a body-ownership illusion.[[25]](#footnote-26)

The inclusion of immersive technologies, which introduce varying degrees of sensory deprivation and concealment of the participating body, correlate to some extent with the cloaking/masking of the audience highlighted in the exemplar of immersive theatre I have previously cited (Punchdrunk’s masked performances). Furthermore, the instating of a mediatised body image or avatar in place of one’s actual body has some correspondence with the astronomical derivation of the word ‘immersion’ that connotes the concealment or eclipsing of a celestial ‘body’.[[26]](#footnote-27) However, I would argue that the core aim of immersivity in the practices I will examine in Part Two is to extend perception beyond the boundaries of the body, not simply as a strategy for ‘prioritising’ bodies *tout court*. The aim of body transfer experiments when introduced in applied performance contexts is frequently to elicit empathy with others, generating new knowledge that might subsequently have real-world applications (e.g. towards training, rehabilitation, communication to improve patient care etc.).

I should clarify that there are two particular respects with which the selected immersive case studies in Part Two intersect with the neuroscientific paradigm. Firstly, they repurpose neuroscientific experiments in body ownership to produce new modes of spectatorship, constituting precisely the kind of ‘transformation’ that I have suggested must occur via which the immersed audience becomes another.[[27]](#footnote-28) Secondly, these techniques are subsequently creatively adapted and applied by artists to reconstruct the remote embodied experiences of neurological subjects for audience members from a first-person vantage point. Crucially, ‘immersion’ in this context has an epistemological function as a communication ‘tool’ via which one might access knowledges that occupy a particular vantage point. Beyond the notion that one might ‘enter’ a dramatic situation, the promise via body transfer illusions is that one might access the sensate world as the neurological subject’s mind-body constructs it. These hybridised practices not only borrow illusionistic techniques from neuroscience (which, in turn, draw on technologies such as VR that are more commonly associated with video game culture),[[28]](#footnote-29) but subsequently implement them as an applied empathy-building practice in arts and healthcare contexts (to name a few). Returning to Elam’s aforementioned claim as to the problem of physically entering dramatic space, neurological conditions such as phantom limb pain have demonstrated that one need not be delusional or ‘psychotic’ to believe in the reality of a fact that is visibly and consciously known to be ‘counterfactual’. For example, phantom limb pain may be felt in a missing hand, irrespective of one’s conscious awareness that the limb is absent. Body image illusions such as Vilayanur S. Ramachandran’s ‘mirror therapy’ (discussed in 3.4.1) have been used to ‘resurrect’ a limb and deceive the brain into thinking that the chronic sensation of cramp is being exercised by the patient. Correspondingly, body image illusions have been re-appropriated in immersive performance practices to deceive the participant’s brain into ‘owning’ the body of different kinds of others. Despite conscious awareness of being inside an illusion, neuroscientific experiments have used different measuring techniques such as skin conductance responses (SCR) to test a subject’s emotional and sympathetic responses, demonstrating the efficacy of illusions that elicit a feeling of ownership over a virtual body (as I will elucidate in Chapter 3).

It is important before progressing any further to acknowledge that this research project is rooted in polysemic terms such as ‘illusion’ and ‘illusory’, and the multiple meanings of these words require meticulous disentangling. The word ‘illusion’ is derived from the Latin verb *illudere*, originally meaning ‘to mock’ and subsequently ‘to deceive’ (Lindberg). In common usage, the word ‘illusion’ is something that is ‘misinterpreted’ or ‘wrongly perceived’ by the senses, a ‘deceptive appearance or impression’ or a ‘false idea or belief’ (Lindberg). The word ‘illusory’ means ‘based on illusion’, or ‘not real’ (‘illusory’). While the body transfer illusions that are central to the investigation of this thesis might be understood as a self-deceptive act elicited in an audience member by using controlled methods to produce the feeling of owning either another body or an external humanoid appendage (e.g. a rubber hand), I would contend that the meaning of ‘not real’ entrenched in the word ‘illusory’ in this context is particularly problematic. Knowledge concerning how a body constructs its physical sense of selfhood has advanced significantly through the study of cognitive, psychiatric and neurological conditions that are known to impair an individual’s sense of ‘owning’ their body (e.g. damage to the parietal lobe or insula).[[29]](#footnote-30) Such conditions can result in neglect or denial of ownership over specific body parts or the entire body, while other conditions extend an individual’s sense of bodily selfhood into the spaces beyond the body (such as phantom limb paralysis). While the diverse perceptual experiences of different neurological subjects might be collectively considered as something defined by anomalousness (or non-normative modes of perceptual experience), it would be ethically problematic for any physician to dismiss a legitimate complaint of pain felt in an amputated limb, for example, on the grounds that the pain is ‘not real’. The ‘illusion’ that the body itself produces of pain in a missing limb can be experienced as excruciatingly real. But beyond neurological conditions, body transfer ‘illusions’ artificially and temporarily produce an altered sense of bodily selfhood in a participant, and the deployment of the apparatus of virtual reality produces paradoxical effects; at the conscious level, a body transfer illusion is understood as ‘illusory’ and perceived by the participant as ‘not real’. However, at the autonomic level, provided that the experiment adheres to specific criteria that are requisite to engender a body transfer illusion (surveyed in 3.4.3), scientific evidence overwhelmingly suggests that the virtual body is accepted at the non-conscious level within the order of the real.[[30]](#footnote-31) The projected physical sensation produced of feeling with either an external humanoid object (e.g. rubber hand) or a virtual appendage is as though it were integrated as part of the participant’s own body schema. Therefore my use of the word ‘illusory’ in the context of performance techniques derived from experimental embodiment should not strictly imply ‘not real’, since the autonomic self of the participating body does not distinguish a body transfer illusion as ‘false’.[[31]](#footnote-32)

Illusorily ‘owning’ the body of another is a notion which ascribes to a further paradoxical logic; through monistic conceptions of self, we ‘*are* our brains/bodies’ (‘embodied minds’) and one’s experiences are contingent on the kind of body one possesses. The widespread departure from Cartesian dualism in branches of cognitive science such as embodied cognition, which confirms the indivisibility of mind from body, renders the unique embodied experiences of neurological subjects all the more remote and inaccessible. And yet, at the same time, new knowledge as to how the brain-body locates itself *within* a body has increasingly demonstrated the plasticity of one’s sense of self-attribution. Thus, while the actualisation of the science-fiction trope of transference of mind or ‘body-swapping’ has become increasingly untenable, illusions of the body schema might be understood as an allegorical strategy via which to construct the sensation of projecting our perception beyond the boundary of the skin.

While I do not intend to offer a substantial historical survey of intersections between science and theatre spectatorship in this thesis,[[32]](#footnote-33) I should identify that unlike antecedent approaches such as late 19th century Naturalism in which the lives of characters are ‘laid out like an experiment from which the audience draw their own conclusions’ (Waters 44),[[33]](#footnote-34) the immersive works I am analysing do not seek to situate the audience in a position that correlates with the critical detachment of the naturalist. Characters are not rendered as the objects of ‘scientific’ observation. In contrast, it is a desire to reconstruct the inner world of the subject that is prioritised, as the spectators see ‘with their eyes’ and inhabit their virtual body-as-avatar. Consequently, I am proposing something quite different to the renaissance of Naturalism that I will evidence is resurfacing in the research of other theatre scholars in section 5 of this ‘Introduction’. My interest in approaches toward virtual re-embodiment corresponds with claims on the outskirts of the neuroscientific paradigm, such as Oliver Sacks’s contention that the comprehension of the realities of patients cannot occur through observation alone: ‘In addition to the objective approach of the scientist […] we must employ an intersubjective approach too, leaping, as Foucault writes, “into the interior of morbid consciousness, [trying] to see the pathological world with the eyes of the patient himself”’ (Oliver Sacks, *An Anthropologist on Mars: Seven Paradoxical Tales* (1995), xvi-xvii). I argue that body transfer illusions are both an effective means of mobilising an ‘intersubjective approach’ and are consistent with the notion of immersive ontology that I am propounding as feeling more fully *with the body of another*.[[34]](#footnote-35)

5. Neuroscience, Cognitive Studies and Theatre Scholarship

Having established a connection between immersive ontology and neuroscientific body transfer illusions, it is important before outlining the trajectory of this thesis as a whole to first establish some of the ways in which knowledge from the neuroscientific paradigm and the broader field of cognitive science has been applied in theatre scholarship. Bruce A. McConachie and F. Elizabeth Hart’s co-edited book *Performance and Cognition: Theatre Studies and the Cognitive Turn* (2006), encourages theatre and performance scholars to ‘incorporate many of the insights of cognitive science into their work and to begin considering all of their research projects from the perspective of cognitive studies’ (ix). ‘Cognitive studies’ as the term is used here refers to the overlapping fields of psychology, linguistics, neuroscience and other disciplines that conduct ‘empirically based tests to advance our knowledge of the mind/brain’ (ix). McConachie and Hart use cognitive studies to challenge theoretical approaches that are widely used within theatre scholarship (e.g. Saussurean semiotics, Lacanian psychoanalysis etc.), going so far as to propose its application as a framework that might ‘heal’ institutional divisions between ‘theatre’ and ‘performance’. Thus, hard science is deployed as a unifying solution to a ‘problem’ in the humanities: namely, a paradigmatic rift in the field that Hart and McConachie’s discourse notably defines in medicalised terms (e.g. as in need of ‘healing’). The rationale for using cognitive science for epistemological justification or to discover current accepted truths about the nature of drama, acting and spectating (the categories into which the book is divided) is rooted in the discipline’s empiricism and ‘self-correcting procedures’ (ix-x); ‘self-correction’ being an idea that accords with philosopher of science Karl Popper's notion of ‘falsificationism’, which aims toward falsifying a hypothesis rather than objectively proving it to be true.[[35]](#footnote-36) Accordingly, the application of cognitive tools of analysis to theatre practices is accompanied by the significant caveat that even that which has been ‘empirically tested’ is always subject to revision by new scientific evidence.

Theatre scholar Nicola Shaughnessy usefully traces the evolution of embodied cognition and its potential intersections with performance studies in the edited volume, *Affective Performance and Cognitive Science* (2013). She states that the cognitive revolution in the 1970s, propelled by innovations in technology such as artificial intelligence, had directed scientific researchers’ attention towards computational models of the mind that were thought to best explain cognition in terms of ‘information processing and symbol manipulation’ (5). However, a second wave of cognitive science research, namely the interdisciplinary field of embodied cognition, emerged from phenomenology, biology, cognitive psychology, and cognitive linguistics. Embodied cognition problematised computational mind-body dualism by positing that the mind is embodied and situated. Shaughnessy argues that this signalled a reorientation of focus on the ‘physical, sensory and neurological processes connecting action and perception’, and an examination of how our ‘interactions with the environments we explore and experience create the pathways for developing consciousness, language and memory’ (5). The contributions collated in Shaughnessy’s book are framed in respect of this second wave of cognitive science, with scholars applying scientific research to dance practices, textual analysis, performer training and affect in theatre spectatorship.[[36]](#footnote-37)

Following declarations of a ‘cognitive turn’ in theatre scholarship, a cognitive studies perspective has been applied to a highly diverse range of theatre and performance practices. In the field of performer training, Rhonda Blair’s *The Actor, Image, and Action: Acting and Cognitive Neuroscience* (2008) examines how new developments in cognitive neuroscience might be applied in a ‘“new generation” approach to help the actor, in Konstantin Stanislavky’s words, reach “unconscious creativeness through conscious technique” (Stanislavsky 1936: 50)’ (xii). Blair acknowledges the debt of Stanislavsky’s antecedent investigations into the scientific research of Théodule Ribot, William James and Carl Lange (xi), to seek out science’s ‘utility in the service of tapping into the mystery of acting’ (xi) – a task that she continues in light of contemporary science to both understand the actor’s process and develop practical techniques. In regards to the actor’s task, Blair asserts that an increasing ability to manipulate ‘who we are at the mysterious point at which mind arises out of the body, e.g. through surgery or drugs’ raises important questions about the nature of ‘self’, and by association what the concept of ‘character’ might mean (xii-xiii). Corresponding with this provocation, I will progress to make the case that body transfer illusions can enable artists and audiences to project a sense of phenomenal ‘self’, and incorporate the body image of others as one’s own. Similarly, John Lutterbie’s *Toward a General Theory of Acting: Cognitive Science and Performance* (2011) re-examines the acting methodologies of Western practitioners from Konstantin Stanislavsky to Jacques Lecoq specifically through the lens of dynamical systems theory.[[37]](#footnote-38) Peter Meineck’s article ‘The Neuroscience of the Tragic Mask’ (2011) in *Arion: A Journal of Humanities and the Classics* draws on research in mirror neurons and cognitive studies in emotion to investigate the function of the mask in performance and its affect on the spectator.[[38]](#footnote-39) In *Theatre/Ecology/Cognition: Theorizing Performer-Object Interaction in Grotowski, Kantor, and Meyerhold* (2012), Teemu Paavolainen applies the theory of ‘affordances’,[[39]](#footnote-40) image schemas,[[40]](#footnote-41) and other cognitive processes to examine the methodologies of Jerzy Grotowski, Tadeusz Kantor and Vsevolod Meyerhold, rejecting subject over object approaches in favour of an ecological grounding of cognition.

In regards to theatre directing, Katie Mitchell elucidates in *The Director’s Craft* (2009) that her research concerning scientific influences on Stanislavsky as part of a NESTA Fellowship has impacted on her working methodologies. Revisiting the research of William James on the biology of emotions in his seminal essay, ‘What is an Emotion?’ (1884),[[41]](#footnote-42) Mitchell re-examines James’s theory (commonly termed ‘James-Lange theory’) in view of neuroscientist Antonio Damasio’s *The Feeling of What Happens: Body, Emotion and the Making of Consciousness* (2000). Damasio makes the case that brain-imaging techniques have reaffirmed and extended James’s idea that an emotion is a ‘physical change’: more specifically, the ‘half-second delay between stimulus and consciousness’ (Mitchell 231). Through these neuroscientific insights, Mitchell claims that her relationship to the audience ‘radically changed’ by thinking about emotions physiologically rather than psychologically. Whether directing an actor to replicate an emotion from the ‘inside’ (via affective memory or emotional recall),[[42]](#footnote-43) or from the ‘outside’ via a clinical reconstruction of what the body does when an emotion is elicited, for Mitchell it is no longer essential for an actor ‘to feel the emotions’, only for the audience to feel them (232).[[43]](#footnote-44) This conclusion coincides with my own interest in foregrounding the spectating body as a stage-space to reconstruct the perceptual experiences of others. This aim has substantially reconfigured the relationship between ‘performer’ and ‘audience’ in the case studies explored in Chapters 4 and 5. Neurobiology, for Mitchell, equips directors and actors with knowledge that might aid authentic representations and the ‘accurate embodiment and transmission of human emotions’ (231), ostensibly towards a Naturalism for our times. But unlike Mitchell’s contention that one can only ‘read’ what is ‘happening *inside* someone by what they see on the *outside*’ (232), the neuroscientific embodiment techniques that I explore in Part Two attempt to bridge this epistemic divide, using body illusions of different orders to trigger a feeling of immersion within, and ownership over, other virtual bodies.

There has also been a burgeoning interest in applying scientific knowledge in Shakespeare studies. Amy Cook in *Shakespearean Neuroplay: Reinvigorating the Study of Dramatic Texts and Performance through Cognitive Science* (2010), treats the character of Hamlet and incumbent actors that body the role as a test subject to which one might apply the cognitive linguistic theory of conceptual blending as a tool of analysis.[[44]](#footnote-45) In *Evolving Hamlet: Seventeenth-Century English Tragedy and the Ethics of Natural Selection* (2011), Angus Fletcher uses *Hamlet*, *Othello*, and *Macbeth*, among other Shakespearean play texts to address the ethical problems raised by the Darwinian discovery that we are ‘intentional beings in a nonintentional world’ (xii). Evelyn B. Tribble draws upon the cognitive sciences and philosophy in *Cognition in the Globe: Attention and Memory in Shakespeare's Theatre* (2011) to answer the historical question of how early modern playing companies in the Elizabethan era might have performed the complex cognitive task of presenting up to six different plays a week. In *Trusting Performance: A Cognitive Approach to Embodiment in Drama* (2011), Naomi Rokotnitz analyses the canonical texts of William Shakespeare, Tom Stoppard, Timberlake Wertenbaker and Moisés Kaufman, drawing on paradigms instantiated by our biological architecture to argue that knowledge acquisition is dependent on the ability to learn from and trust our bodies. Other commentators have deployed cognitive theory as a revisionist approach to understanding medieval theatre history; in *Performance, Cognitive Theory, and Devotional Culture: Sensual Piety in Late Medieval York* (2010), Jill Stevenson re-examines performance practices using conceptual blending theory to explore the layperson's physical encounter with live religious performances in late medieval York.

Regarding my stated focus in this thesis on the transformation of the immersed participant to reconcile the spectator’s presence in an ‘elsewhere’ circumstance, it is important to acknowledge the dearth of scholarship focusing on theatre spectatorship and reception that has turned to cognitive science to provide new tools of analysis. Bruce McConachie’s *Engaging Audiences: A Cognitive Approach to Spectating in the Theatre* (2008) uses cognitive neuroscience to examine audience dynamics such as conscious attention, mental concepts, empathy, emotion, group dynamics and culture in theatre spectatorship. McConachie pursues an argument towards new orientations for audience studies and more scientifically ‘reliable’ approaches. For example, he problematises the idea inherited from semiotics that the audience experience of a performance is a version of ‘reading’ (3) on the grounds that scientific evidence has suggested significant differences between ‘readers making sense of sign on a printed page and the most nonsymbolic activity of spectator cognition’ (3). Theatre reception, McConachie argues, is irreducible to linguistics and sign-reading, much as for ‘second wave’ cognitive scientists, human cognition is irreducible to computational processes in the head.[[45]](#footnote-46) I would elaborate on McConachie’s point by arguing that the invitation in the immersive work to put oneself physically in place of another renders the other body further irreducible to the status of a ‘sign’. Stephen Di Benedetto’s *The Provocation of the Senses in Contemporary Theatre* (2010) examines spectatorship in postdramatic,[[46]](#footnote-47) participatory and immersive performance practices through the lens of neurology, cognitive science and phenomenology. Benedetto’s core claim is that it is beneficial to understand the physiological basis of theatre practice to ‘affect human behaviour’ (ix). He argues that neuroscience has confirmed that the brain is ‘plastic’ and that the sensations it experiences ‘modify how it perceives the world’ (x) which in turn, he suggests, has illuminated theatre’s potential to ‘change our experience of the world and therefore […] change our ability to perceive the world in a new way’ (x). Martin Welton in *Feeling Theatre* (2012) argues that procedures of ‘making sense’ are shaped by our ecological perception, drawing on James J. Gibson’s notion of ‘affordances’ in an attempt to articulate meaning in theatre in ‘more dynamic and relational terms than those of a disembodied surveillance by a separated cogito’ (11). I would suggest that Welton’s recognition of the full perceptual faculties of the spectating body in theatre scholarship accords with the agenda of embodied cognition, which has extended its examination of cognition to consider dynamic interactions between a cognizer’s brain, body and environment.

It is important to recognise that scholars such as Welton have noted some resistance in applying positivistic scientific knowledge to analyse performance. Welton stipulates a caveat that he does not wish to accrue to his thoughts ‘some intellectual cachet by association with the rigours of science’ (3), making the reader mindful of the potential inequities attributed to different paradigms of knowing. Indeed, outside of theatre scholarship, scientific studies have similarly prompted concern about the perceptions of applying neuroscientific knowledge. Deena Skolnick Weisberg et al’s ‘The Seductive Allure of Neuroscience Explanations’ (2008), published in the *Journal of Cognitive Neuroscience,* evidences that, to the layperson, explanations of psychological phenomena produced more public interest when they contained neuroscience information, even in instances when that information was acknowledged to be irrelevant to the logic of the explanation. This study compellingly reveals an uncritical acceptance of neuroscientific explanations among its specific sample group of participants, reifying the notion that there exists a perceived top-down hierarchy of knowledge. In contrast, critics of ‘neuromania’ such as Raymond Tallis, in *Aping Mankind: Neuromania, Darwinitis and the Misrepresentation of Humanity* (2014), have argued against the monistic position that affords neuroscience primacy as a domain of knowing (via the pervasive notion that ‘we are our brains’), challenging scientism, reductionism and the belief that humans can be understood only in biological terms. These counter-arguments represent an important cautionary tale that one should not deploy or accept scientific evidence unquestioningly, especially from the vantage point of a non-scientific discipline. Consequently, my interactions with the neuroscientific paradigm and my underlying motivations in drawing on new knowledge to generate new artistic forms and approaches, will require further scrutiny as I proceed to illustrate the potential qualitative applications of body transfer illusions derived from science in Chapter 3.

This brief survey has evidenced prevalent trends in how the diverse analytical tools from cognitive science have been applied within the discipline of theatre and performance scholarship. To summarise, key areas of investigation have included performer training (demonstrably, from the examples cited, as a revision of pre-existing techniques towards a new Naturalism), to provide analytical insights into canonical texts, historical practices, ancient performance traditions (e.g. mask, medieval performance), or to examine cognition and affect in different acts of spectatorship. Furthermore, as I have suggested, discourses identifying a ‘cognitive turn’ are frequently accompanied by an overarching epistemological agenda that proposes cognitive studies as a ‘replacement’ for existing theoretical frameworks in the humanities. This is an argument that this thesis does not seek to pursue. I depart with commentators such as Hart and McConachie in this respect on the grounds that their argument reaffirms a top-down hierarchy of knowing that privileges the hard sciences and uses its tools of analysis primarily as a means of theoretically validating artistic practices, rather than systemising new methodological approaches or proposing new theatrical forms through which scientific knowledge might be critiqued, mobilised or expressed. As Bert O. States insightfully argued in *Great Reckonings In Little Rooms: On the Phenomenology of Theater* (1985), ‘any critical perspective is doomed to be narrow. It must be itself with a vengeance if it is to realize its potential for illumination’ (7). Promulgation of a ‘cognitive turn’ invites participation in its project’s particular narrowness in order to productively illuminate new aspects of theatre and performance which have, until recently, been underexplored. For this reason, I would contend that it is an area of research that is not without significant merit.[[47]](#footnote-48) However, my interest is not to narrow the possibilities of exploratory theatre-making further by rejecting other analytical tools from pursuing their respective projects. Beyond McConachie’s somewhat banal contention in *Engaging Audiences* that it is never a bad idea ‘to get some scientific confirmation for common sense’ (8) (‘banal’ in the respect that the application of science by this logic is only to confirm what we think we already know), my interest is rather in exploring through what methods of practice one might simulate sense-making that is entirely uncommon.[[48]](#footnote-49) My interest is in reframing immersive practices as a set of associated strategies that attempt to reconstruct the ineffable first-person realities of neurological subjects for others. This thesis is best positioned as an extension of discourses around affect and spectatorship, investigating the paradox of immersive ontology and subsequently tracing attempts toward reconciling this theatrical problem through neuroscientific embodiment protocols, via which one can illusorily ‘own’ the body of someone else. As I will suggest, the ‘hacking’ of embodiment illusions is aimed at evolving new applied approaches through which an audience might better understand the other.[[49]](#footnote-50) This specific interstice between the ‘immersive’ and the ‘neuroscientific’ is nascent in performance-making and, concurrently, it is significantly under-represented in theatre scholarship. Necessarily, I should highlight that my argument, like other examples that incorporate empirically tested insights from science, are aligned to some extent with rationalist and progress-seeking strains of discourse around theatre practice. I am aware that this is in contrast to a long-standing tradition of theatre avant-gardists, such as Antonin Artaud, who designated the term ‘science hasardeuse’ (‘fortuitous science’) to dismiss the paradigm as either logical or objectively true. However, as I have previously suggested via Karl Popper’s dictum, ‘falsified’ scientific evidence is not a question of that which is ‘objectively true’. The ‘truths’ that are of interest to my enquiry are the subjective perceptual experiences of others. I seek to examine the possibilities and far-reaching applications of emergent techniques in immersive spectatorship, which creatively draw on knowledge that has evidenced that selfhood is not hard-wired, but dynamic and contingent on the interplay between different sensory modalities.

I will now offer a brief summary of my argument, orienting for the reader my intellectual pathway through the thesis as a whole, before progressing to an in-depth chapter-by-chapter breakdown.

6. Summary of the Argument

This thesis has been divided into two parts. In Part One, the trajectory through the first three chapters is focused on accumulating for the reader the necessary theoretical foundations for my argument. I will examine the ontological concerns introduced by the acknowledged physical presence of the spectator in the artwork (in relation to sculpture/paintings, immersive theatre and immersive media forms), before investigating the different ways in which artists have reconciled the paradox of immersive theatre which concerns the spectator’s physical presence inside ‘elsewhere’ phenomena in Part Two. I will first revisit the enduring philosophical debates that have sought to deny the spectator’s presence in the reception of art in Chapter 1, subsequently positioning immersive performance forms of the kind I will discuss in Part Two of this thesis as part of an enduring opposing tradition that propagates what art critic Michael Fried had termed the ‘theatrical condition’. I will then examine how the term ‘immersive’ has come to be defined and what features might designate an ‘immersive theatre’, highlighting the problematic ontological promise that dramatic or simulated situations might be physically ‘entered’ in Chapter 2. Beyond physically accessing a dramatic situation, I will argue that the promise via the immersive work discussed in Part Two of this thesis is to cross an epistemological barrier, or more specifically, the subjective character of the world as a neurological subject’s mind-body constructs it. Thus, the immersive practices I will analyse in Part Two use different techniques to mobilise the desire to *feel with the body of the other*. In Chapter 3, I will identify that the immersive desire to be other bodies and to know the bodily experiences of neurological subjects is manifested as a tripartite problem that is *narratological*, *philosophical* and *physical* in origin. I will progress to survey research in body ownership in neuroscience and experimental psychology which has evidenced the shifting boundaries of bodily selfhood (much as the post-Friedian ‘theatrical’ artwork has shifted the boundary to incorporate spectating bodies). Finally, I will highlight how body transfer illusions provide one specific reconciliation to the paradox of the spectator’s being other bodies. In Part Two, I will examine how these different illusionistic techniques and processes have been used qualitatively to immerse audiences inside a first-person experience of different neurological subjects in the applied practices of Sublime & Ridiculous and BeAnotherLab in Chapter 4, and in an immersive installation by Analogue in Chapter 5 with the real-world application of enhancing empathy, communication and care. Finally, I will draw together the different threads of my argument in Chapter 6, returning to an example of theatre performance by Analogue entitled *Re-enactments* in order to test the limitations of immersivity as I have conceptualised it. I will consider how one might become immersed ‘inside’ the elsewhere phenomena of a fictionalised trauma sufferer’s experience of dissociation, before progressing to a summary in my ‘Conclusion’. Having provided this brief summation of the trajectory of the thesis as a whole, I will now offer a more comprehensive intellectual roadmap, outlining precisely what cognitive workload each chapter is undertaking and how it connects to my overall argument that advances the notion of immersive methodologies that attempt to operationalise the ontology of *feeling more fully with the body of another*.

7. Chapter Breakdown

Following my proposal in this ‘Introduction’ that embedded in immersive theatre is the problematic ontological promise that the spectator might physically enter the simulacrum, in ‘Chapter 1: The ‘Theatrical Condition’’ I will revisit an associated debate in the field of art criticism – the field from which a ‘fourth wall’ was conceptually erected, or at least reinforced, to deny the material presence of spectating bodies.[[50]](#footnote-51) This metaphorical partition has provided the clearest expression that accessing the dramatic is ‘conceptual’, and not ‘physical’. The immersive practices that I will scrutinise in Part Two of this thesis are synonymous with what art critic and historian Michael Fried dismissed as the ‘theatrical condition’, which is characterised by the extension of the ‘frame’ of the artwork to incorporate spectating bodies and a shifting emphasis in reception from observation to ‘experience’. Therefore, it will be important before advancing to examine what features constitute ‘immersive theatre’ in Chapter 2, to first understand the persistent philosophical concerns that undergird criticisms of the ‘theatrical’, and by association, the immersive artwork. I will revisit Fried’s anti-theatrical polemic in *Art and Objecthood* (1967) in which he critiqued Minimalist sculptures on the basis of their ‘theatricality’ – the defining characteristic of which is an increasing emphasis on the spectator’s experience ‘in a situation’ with the art object (1998: 153) and an erosion of the parameters between art forms. The theatricality that Fried perceived in Minimalism had far-reaching implications beyond this art movement, seismically shifting analysis in a way he did not intend by interrogating the ‘subject-object’ relationship. As I will demonstrate, Fried later proposed ‘absorption’ as the antonym of ‘theatricality’, which he defined as the compositional strategies used by the artist to deny the presence of the ‘beholder’: a concept that he later applied to 18th century French paintings in *Absorption and Theatricality: Painting and Beholder in the Age of Diderot* (1980). Conversely, I will argue that the ascendant ‘theatrical’ interest in the spectator’s body as ‘part of the artwork’ provides a crucial precondition for the kinds of ‘immersive’ practices that I will analyse in Part Two, and from which the paradox of the spectator’s desired presence inside elsewhere phenomena arises. I will contend that the Diderotian tradition, whilst not unconcerned with immersion in art, locates ‘immersion’ only in its definition as an act of ‘deep mental involvement’, and not as an act that engages the whole body.[[51]](#footnote-52) In contrast, the conception of immersion that I will develop, following a more comprehensive cross-disciplinary survey of the term’s usage in Chapter 2, entails whole bodily involvement in an act of spectatorship. In the chapters that follow, I will offer an interpretation of immersive performance that is radically opposed to Fried’s position, but entirely consonant with the ‘theatrical condition’ in its drive to envelop the spectating body. I will push Fried’s idea further by arguing that immersivity in the case studies explored in Part Two of the thesis represent an ontological desire not just to be acknowledged by an artwork, but to become another subject ‘inside’ of it. Crucially, Chapter 1 pursues the argument that the ‘theatrical condition’ is closely associated with the notion of becoming physically immersed in an artwork; furthermore, it is a notion that opens up space for new open-ended and hybridised performance forms that transform the spectator and shift the focus from what an artwork ‘says’, to what it ‘does’.

Having identified this corollary between the ‘theatrical condition’ and immersivity, in ‘Chapter 2: ‘Immersive’ and ‘Immersion’: A Literature Review of Etymologies and Definitions’, I will explore for precisely what kinds of theatre practices have the adjective ‘immersive’ and the noun ‘immersion’ become containers? Do these terms describe a taxonomy or genre, a format, a mode of spectatorship (e.g. characterised by ‘active’ participation, individual experience etc.), or a strategy to place audiences inside experiences that are beyond representation? Since the hybridised practices that I examine in Part Two of this thesis integrate wearable technologies such as VR video goggles in performance,[[52]](#footnote-53) it will be necessary to broaden the scope of this survey of terms to include conceptions of ‘immersive’ ontology arrived at via theoretical discourses in media studies. Therefore, I will conduct a cross-disciplinary survey scrutinising conceptualisations of ‘immersive’ and ‘immersion’, and the particular characteristics that these words ascribe to spectatorship in relation to different mediums. I will survey etymologies and definitions advanced by scholars in theatre practice focusing on the research of Josephine Machon, Rosemary Klich, Edward Scheer, Gareth White, Sophie Nield and Nicholas Ridout, and in virtual art and immersive media drawing on commentators such as Oliver Grau, Alison Griffiths and Frank Popper. Having scoped these interdisciplinary meanings, I will then illustrate common usage of these terms, demonstrating that ‘immersive’ derives from the technological paradigm, and consonant with these origins my focus in this thesis will concern instances of theatre practice that utilise technology to immerse the body of the audience member inside other simulated bodies – delimiting the kinds of immersive practices that will be the focus of examination in Chapters 4 and 5. Finally, from this survey I will clarify my own usage of key terms before critically interrogating the status of the spectating body within immersive practices. With the incorporation of technologies in the theatre event that seek to blur the line between the physical and a simulated world, is immersivity in theatre practice a question of transcending or ‘prioritising’ the spectating body? The desire to transport the spectator physically ‘inside’ different phenomena (the specific ‘phenomena’ that will emerge as my core concern in Part Two of this thesis being the virtualised bodies of others), introduces a significant theatrical problem to be reconciled: via what techniques might the theatre-maker illusorily convey a spectator’s presence ‘elsewhere’?

In ‘Chapter 3: Body-swapping: Self-attribution and Body Transfer Illusions’, I will lay the groundwork to address this theatrical problem through an analysis of exemplars of practice in Part Two. I will argue that shifting boundaries between artwork/spectator in the ‘theatrical’ immersive work have coincided with shifting boundaries of selfhood via studies in neuroscientific embodiment and experimental psychology. Prior to surveying scientific research on self-attribution and body ownership, I will first establish that the leitmotif of ‘body-swapping’ is correspondent with immersivity as I have conceptualised it *as feeling with the body of another*. I will expound that the desire to mobilise a ‘body-swap’ has surfaced as a tripartite problem that is *narratological*, *philosophical* and *physical*. In fictional literature and subsequent media, the plot event of the ‘body-swap’ is a recurrent leitmotif that has haunted the literary imagination throughout history. I will briefly examine how the body-swap has functioned in storytelling, surveying different representations and identifying common themes. I will argue that bodily exchange is something that literature has only been able to imagine as a conceptual and not physical act (much like Diderotian/Friedian ‘anti-theatrical’ art). I will then progress to the *philosophical* problem of knowing other bodies. English philosopher G. E. Moore famously used his hands as a site of epistemological ‘certainty’ for his ‘common-sense’ proposition in *Proof of an External World* (1939). I will test this bodily epistemology by drawing on Thomas Nagel’s thought experiment in the philosophy of mind in his essay 'What Is It Like To Be a Bat?' (1974), to interrogate the ‘subjective character of experience’ from which I will argue Moore’s hands cannot be disentangled.[[53]](#footnote-54) According to Nagel’s argument, there are facts that are ‘beyond the reach’ of those who do not possess particular kinds of bodies (e.g. to *know* the experience of a bat necessitates having the perceptive faculties *of* a bat). As I will suggest, we might substitute the example of the ‘bat’ in Nagel’s thought experiment for other kinds of human bodies that are equally remote and unknowable. For example, how might a person *know* the experience of a subject living with anterograde amnesia (a problem explored in Analogue’s immersive headphone piece, *Superlatively, Actually Awake*, discussed in Chapter 5)? And yet, while the direct subjective experience of other bodies is unknowable, the attempt to know is crucial – as neuroscientist Vilayanur S. Ramachandran has emphasised in *Phantoms in the Brain* (1998), within the medical profession ‘it is the physician’s duty always to ask himself, “What does it *feel like* to be in the patient’s shoes?”. “What if I were him?”’ (7).[[54]](#footnote-55) Finally, I will suggest that this desire to bridge the epistemic divide between the embodied experiences of neurological patients and those around them presents a *physical* problem, one that is in correspondence with the physical problem of immersivity’s ontological promise of ‘entering’ a drama (which, in turn, necessitates the immersant’s transformation). I will pursue a trajectory that examines how bodily certainties have been challenged in the field of experimental neuroscientific research, firstly via research in proprioception and in the treatment of phantom limb pain through Vilayanur S. Ramachandran’s invention of mirror therapy. I will evidence that this knowledge formed the foundations for subsequent research which further suggested the plasticity of one’s sense of self-attribution through artificially inducing the incorporation of external inanimate objects as part of the bodily self (focusing on Matthew Botvinick & Jonathan Cohen’s rubber hand illusion) and projecting one’s whole-body perception into the virtual body of another (focusing on Valeria I. Petkova and Henrik Ehrsson et al’s experimental use of virtual reality HMD’s to induce ‘whole body’ illusions). Having surveyed these demonstrations of the malleability of one’s sense of bodily selfhood, I will then extend my thinking to consider the methodological implications of this knowledge for emergent science-inspired performance practices.

The provocation by Oliver Sacks that I previously cited in which he identifies the importance of employing an ‘intersubjective approach’ to see ‘with the eyes of the patient’ (Sacks 1995: xvi-xvii), hints at the limits of scientific observation alone in understanding the experience of neurological subjects. The implication from Sacks is that observational approaches and methodological tools available within the neuroscientific field are inadequate in recreating the experience of the world as a neurological subject’s brain ‘constructs’ it – a point that I would argue corresponds with the limitations of attempting to represent the neurological subject’s inner world onstage; external observation is synonymous with both the Naturalist’s vantage point, and the default spectatorial position of the Naturalist stage. Conversely, the wider project of immersive theatre is inherently experiential; it promises that one might illusorily access the ‘elsewhere’ phenomena of other bodies to some extent, since one cannot participate in a dramatic circumstance without becoming another in the fiction. Correspondingly, neuroscientific embodiment illusions have increasingly suggested that selfhood is not hard-wired, generating new methods to extend one’s perception ‘inside’ other bodies. I will argue that studies in body transfer illusions are an area where immersive ontology conceptualised as *feeling with the body of another* and neuroscience productively intersect. I will identify in Part Two that it is at this interdisciplinary interstice that artists such as Sublime & Ridiculous, BeAnotherLab and Analogue are generating empathy-building tools using wearable technologies and re-appropriating embodiment protocols for qualitative use to better understand the lived experiences of neurological subjects (‘empathy’, as I have suggested, being a question of ‘perspective-taking’). In this way, artists working in the tradition of the ‘theatrical condition’ are mobilising the conception of immersive ontology that I am advancing as *feeling with the body of another*.

In Part Two of the thesis, I will propose that first-person ‘theatrical’ practices such as *In My Shoes by* Sublime & Ridiculous, *The Machine To Be Another* by BeAnotherLab (Chapter 4) and *Transports* by Analogue (Chapter 5) attempt to reconcile the problem of being other bodies by creatively deploying the scientifically tested embodiment techniques discussed in Chapter 3 that illusorily mobilise a body-change in the spectator. These case studies represent applied performance practices that have been presented in a variety of contexts with the aim of bridging different kinds of divides and engendering particular social impacts for different audience demographics; the overarching motivation of immersion in these works is to create empathy with different kinds of others.

In Chapter 4, I will analyse the parallel practices of Sublime & Ridiculous’s (S&R) *In My Shoes* series of interactive documentary performances and BeAnotherLab’s (BAL) performative telepresence experiences, *The Machine To Be Another* and the *Gender Swap*. These case studies deploy protocols from embodiment experiments (examined in Chapter 3), using immersive virtual reality (IVR) and multisensory stimulation as a methodology to attempt to fulfil the immersive ontology I have advanced. S&R utilise these protocols to replicate the embodied experiences of traumatic brain injury patients (TBI). I will examine the company’s techniques which are implemented both as a mode of immersive reception in performance, but also as an ‘alternative communications device’ used to facilitate individuals in relating their experiences to others via a creative process that is modelled on ‘person centred planning’ (PCP) in healthcare. Correspondingly, I will evidence that BAL’s open-source art project, *The Machine To Be Another* (*TMTBA*), is an IVR platform developed to allow different audiences to ‘body-change’ or ‘body-swap’ with others and cultivate ‘self-understanding, empathy and tolerance’ (‘The Machine to Be Another - Artistic Experiment’). *TMTBA*, much like S&R’s *In My Shoes*, is being applied in both performance contexts and as a ‘tool’ to promote empathy across borderlands of race, gender, intergenerational trauma etc., and in the healthcare sector as a resource to aid scientific research in pain tolerance and rehabilitation. In both S&R and BAL’s applied practices, immersion is not simply a question of enabling physical presence inside non-physical worlds (i.e. ‘entering’ a drama). In contrast, it is an experience through which to incorporate the remediated other as part of the bodily self towards multiple real-world benefits that may arise through greater empathic understanding; perspective-taking in the context of these practices representing something more bodily than McConachie’s description of ‘mind-reading’ implies. The popular leitmotif of empathy as ‘walking in another’s shoes’ is mobilised through reconstructed experiences that are rendered visceral for the participant. In my analysis, I will draw on my own embodied experience of being an immersant in S&R’s performance *Waking In Slough*, documented audience responses and personal interviews with the artists to demonstrate how these practitioners use technology to construct the circumstances for the audience’s body to self-deceive and experience one’s physical self as other (connecting this idea to the neuroscientific research surveyed in Chapter 3).[[55]](#footnote-56) I will use these case studies to evidence the way in which body transfer illusions are being creatively re-appropriated to prompt positive social impacts, and to empower neurological patients (and other subjects) to create for audiences an access point to knowledges that necessitate occupying their unique and potentially isolating experiences (thus, attempting to address the kind of epistemic problems that I have identified via Sacks and Nagel).

In Chapter 5, I will investigate the research, development and reception of a pilot project co-ordinated by my company Analogue entitled *Transports*. *Transports* is an interactive installation that enables individual audience members to participate in a first-person simulation of a fictionalised subject living with young-onset Parkinson’s disease (YOPD), created in consultation with behavioural neuropsychologist Professor Narender Ramnani, the British Neuroscience Association and volunteers at the charity Parkinson’s UK. The installation constructs for the immersant the illusion that a virtual hand represented onscreen belongs to the participant as a ‘double’ of their own. It achieves this affect by distributing pre-recorded point-of-view video footage to a hand-held monitor, binaural sound to a set of headphones and the kinaesthetic sensation of tremor to the immersant’s right hand using a wearable oscillating glove and bespoke tactile props. The immersant, who is cast as the ‘best man’ at a wedding reception, observes their onscreen hand display the symptom of tremor as the physical sensation is concurrently felt in their own hand. They must then perform the task of holding the text of a speech still enough to be able to deliver its contents to a room full of ‘wedding guests’. I will argue that the technology in this case study functions as both an intermediary between a virtual hand and the participant’s hand, and an intervention that disrupts the immersant’s ability to perform a motor skill. Following in the ‘theatrical’ tradition of the case studies examined in Chapter 4, I will demonstrate that the inexpensive body illusion within this installation affords audiences the opportunity to feel how another’s interactions with the environment are altered by symptoms associated with YOPD. The temporary destabilising of important integrations of sensory information in the audience’s body is a strategy to make accessible to them the remote physical experiences of a particular kind of body. In this chapter, I will analyse *Transports*’ R&D process to evaluate the qualitative outcomes of the installation which was tested in four presentational contexts with different learning outcomes; at an arts festival, a science public engagement event, with volunteers at Parkinson’s UK, and in an educational context with undergraduate Psychology students to test the work’s efficacy as a pedagogic tool for those with a professional interest in working with YOPD patients. Cumulatively, I will extend the argument I have made via the case studies cited in Chapter 4 towards the use of body illusions to mobilise immersivity conceptualised as the desire to *feel with the body of another*. Furthermore, I will expound on the applications that these sets of approaches have for story-sharing; transitioning the spectator’s understanding through their physical participation.

I will gather the different strands of my argument in Chapter 6, returning to an example of theatre performance by Analogue entitled *Re-enactments*, as a way of thinking through the limits of immersivity as I have defined it in relation to reconstructing certain kinds of perceptual experiences. *Re-enactments* is a multi-stranded audio performance created during an artist-in-residence fellowship at the scientific institute, Hanse-Wissenschaftskolleg (HWK) in Germany in 2012. In the performance, unrehearsed audience members receive pre-recorded commands distributed via headphones to navigate a film set and perform simple tasks. The narrating voice that guides the immersants belongs to a fictionalised trauma victim who is living with the symptoms of depersonalisation, a dissociative condition via which one’s body feels ‘unreal’. The conceit of the performance is that the narrator has enlisted the audience as a group of ‘re-enactors’ to re-stage events from his past so that he might ‘enter’ a simulacrum of his memories and feel ‘real’ again, as he did prior to his accident. Thus, immersive participation not only concerns the audience’s mode of engagement as ‘part of the artwork’ in *Re-enactments’* ‘theatrical’ form (in the tradition of the ‘theatrical condition’), but it is also conceptualised at the dramatic level as the narrator’s objective (i.e. becoming immersed ‘inside’ his body). ‘Re-enactments’ are conceived as a methodological framework through which he might re-enter the environment, his pre-traumatised body and consequently feel like he is participating in the world again. In an inversion of the immersive promise that I have identified of a spectator *feeling with the body of another* (towards an epistemic goal), *Re-enactments’* audience are invited to stage a character that desires to feel the physical world vicariously through their performing bodies. A key problem with which the work is engaged is the question of how an audience can become immersed within the subjective experience of a fictionalised other’s dissociation when the condition is characterised precisely by a lack of feeling inside one’s own body? Consequently, might an artistic reconstruction of a dissociative experience expose the limits of immersive participation? I will conclude my thesis by drawing on Analogue’s *Re-enactments* in 6.2 as an example of practice through which to test the limitations of the ontology I have advanced. Finally, I will gather the different strands of my argument by extracting the key points from each chapter in section 6.3, in order to identify both the contribution that this thesis is making to knowledge in an emergent field of practice and fertile areas of future research for which this intellectual enquiry has laid the groundwork.

**Chapter 1 - The ‘Theatrical Condition’**

1.1 Introduction

The success, even the survival, of the arts has come increasingly to depend on their ability to defeat theatre. This is perhaps nowhere more evident than within theatre itself, where the need to defeat what I have been calling theatre has chiefly made itself felt as the need to establish a drastically different relation to its audience. Michael Fried, *Art and Objecthood* (139)

My focus in this chapter concerns the anti-theatrical discussions that emerged from art theory and criticism in the 1960s in reaction to a closing proximity between artwork and spectator, the in-between spaces of ‘interdisciplinary’ or ‘anti-/*quasi*-disciplinary’ art-making and an increasing convergence between the domains of fine art and theatre.[[56]](#footnote-57) Crucial to these discussions are the enduring philosophical discourses that have sought to deny the ‘beholder’s’ presence in the reception of art; in this context, ‘theatrical’ artworks are the target of criticism for acknowledging spectating bodies. I will first examine the range of meanings that the term ‘theatricality’ has accrued, before progressing to an investigation of ‘anti-theatricality’ and in particular, art critic and historian Michael Fried’s anti-theatrical discourse. Fried’s hostile oppositional stance to the perceived ‘theatricality’ of Minimal art (most notably in *Art and Objecthood*) operated in the Diderotian anti-theatrical tradition. Furthermore, beyond Minimalism I will argue that the immersive works I will analyse in Part Two are synonymous with the ‘theatrical condition’, and by association a pervasive shift towards ‘experience creation’ in the arts which concerns the incorporation of the body of the spectator within the conceptual ‘frame’ of the work. It is the acknowledged presence of the spectator in the theatrical artwork that provides a necessary precondition to the ontological paradox of the immersive practices with which this thesis is engaged: namely, the incongruity of the participant’s physical presence inside ‘elsewhere’ phenomena and correspondingly, illusionistic strategies towards reconciling this paradox by transforming the spectator into another. It will be necessary, before progressing to extract precise definitions of ‘immersive’/‘immersion’ and the defining features of an ‘immersive theatre’ in Chapter 2, to investigate the concerns that undergird the Diderotian tradition; in particular, its rejection of the ‘theatrical’ in favour of what Fried termed ‘absorption’; a concept that he applied to the composition of 18th century French paintings (in *Absorption and Theatricality: Painting and Beholder in the Age of Diderot*). The significance of ‘absorption’ to this discussion is that it is analogous to a specific notion of ‘immersive’ reception that only concerns mental processes while denying the body of the spectator. This chapter will provide the critical foundations to advance to a consideration of the seismic shift in contemporary analysis from what an artwork ‘says’ to what it ‘does’. Concomitantly, this represented a key development towards art as experiential, operational and ‘immersive’, insofar as the word pertains to the physical incorporation of the spectator (as in the case studies examined in Part Two of this thesis). I will subsequently argue in Chapter 3, that the ascendency of the ‘theatrical’ is in parallel with the development of a ‘second wave’ of cognitive science and research in embodiment that has shifted the focus of scientific enquiry from symbolic processes occurring within the skull to interactions between mind, body and environment. These shifting boundaries in art and science have signalled an interest in intersecting areas of enquiry, creating opportunities for new collaborations that share the parallel interest in simultaneously extending beyond, and returning to, the body.

1.2 ‘Theatricality’ and ‘Anti-theatricality’

Before progressing to a survey of Michael Fried’s polemic on the relationship between theatricality and art, I will first need to establish the terms in use here, since ‘theatricality’ is a polysemic word with multiple usages. In the book *Theatricality* (2003), Tracy C. Davis and Thomas Postlewait suggest that the idea of ‘theatricality’ has acquired a ‘protean flexibility’ that, whilst derived from the practice of theatre, extends in its application to many other aspects of human life. Davis and Postlewait suggest that the range of meanings that can be derived from the term are broad enough to encompass the following areas; ‘a specific type of performance style’, ‘all the semiotic codes of theatrical representation’, ‘the definitive condition or attitude for postmodern art and thought’, an idea that ‘achieved its distinguishing features in the birth of modernism’, ‘a mode of representation [...] characterized by histrionic actions, manners, and devices’ (a *practice*), an ‘interpretative model’ (or theoretical concept), and an ‘aesthetic and a philosophical system’ (1). These diverse meanings and sometimes contradictory uses of the word ‘theatricality’ render its application highly complex, and Davis and Postlewait’s book, rather than seeking to limit the possible meanings, instead offers a historical survey and theoretical analysis of the associative implications and agendas that the term has served. This survey also includes concepts that go by the name ‘theatricality’ today that were termed differently in the past.[[57]](#footnote-58) As I will go on to discuss, it is the parameters that Michael Fried applies to the term and the implications for the presence of spectating bodies that provides a crucial precondition to the kinds of art practices that I will be examining in Part Two.

It is logical to assume that ‘anti-theatricality’, with its antonymous associations with ‘theatricality’, must necessarily share in this polysemy. Having identified that ‘theatricality’ has many different manifestations, its antonym must be contingent on the specific kind of ‘theatricality’ that it seeks to oppose. In *The Anti-theatrical Prejudice* (1981), Jonas Barish offered a comprehensive study into the hostility that the ‘theatre’ and the ‘theatrical’ have provoked throughout history, a phenomenon that he convincingly argued is ‘worldwide’ in its pervasiveness. Barish illustrates this point with numerous examples. He considers, within everyday expressions of language, terms that borrow from the theatre which have a tendency towards the pejorative in a diversity of European languages (i.e. ‘acting, play acting, playing up to, putting on an act, putting on a performance, making a scene, making a spectacle of oneself, playing to the gallery’) (1). He references Plato’s hostility toward impersonation in *Republic*, and suggests that the prejudice is evidenced beyond the West, in India for example, where actors were comprised of ‘despised castes and social outcasts’, and in Indochina where acting was considered a ‘vile profession’ (2). Davis and Postlewait suggest that the marginalisation of the actor can partly be attributed to the perceived threat that they present to the order and standards of a particular community on the basis of their craft in making mimesis credible. Crucially, the particular immersive modes of performance that are the focus of my research in Part Two, re-position the audience member as an unrehearsed spectator-character; therefore, they are not just recipients of a deceitful mimetic act (as the Platonic tradition might understand it), but are positioned inside the machinery of mimetic production. Simultaneously, while performing tasks in the theatrical situation, the self-deception of ‘owning’ another’s body is engendered through the immersant’s placement inside a body transfer illusion (in regards to the practices examined in Chapters 4 and 5). This illusionistic architecture renders immersants simultaneously ‘in on the act’, while feeling physically as if ‘inside’ the impossible elsewhere of another’s body. The audience participates in a wilful act of perceptual self-deception which, far from being removed from ‘truth’, is offered as a vehicle to access the recreated inaccessible truths of another’s sensate experiences.

In his ‘Introduction’, Barish goes on to suggest that since the prejudice towards theatricality is of nearly ‘universal dimension’, attracting the attention of ‘insignificant criticasters’ and ‘giants like Plato, Saint Augustine, Rousseau, and Nietzsche’ alike, it is a subject that requires closer inspection. Barish makes the case that if, beyond prejudice, anti-theatricality is an ‘aberration’, it is one that persists, meaning that it is perhaps more than a prejudice but something that is fundamentally intrinsic to us as a species; ‘Looked at more attentively, [the anti-theatrical prejudice] comes to appear a kind of ontological malaise, a *condition* inseparable from our beings, which we can no more discard than we can shed our skins’ (2). Whilst theatre has continued to survive its critics, anti-theatrical discourses are an enduring philosophical concern, and an entry point into the discussion of the ongoing tensions between the ‘theatrical’ and the ‘anti-theatrical’ must first acknowledge both the historical and persistent nature of these debates that Barish’s argument points toward.

In a more recent publication, *Against Theatre: Creative Destructions on the Modernist Stage* (2007), Alan Ackerman and Martin Puchner collate a number of essays that beneficially contribute to the discussion, focusing on radical rejections of the theatre in modern drama. In their ‘Introduction’, they seek to complicate the binary between ‘theatre’ and ‘anti-theatre’, suggesting instead that they are not ‘simply opposed to one another but multiply intertwined’ (12). Drawing the reader’s attention to the diversity and multiplicity of anti-theatricalisms that have emerged,[[58]](#footnote-59) Ackerman and Puchner significantly advance the debate by suggesting that rather than isolating different attacks on the theatre as exemplifiers of an ‘ingrained prejudice’, we should rather focus on a number of contingent factors; what understanding of ‘theatre’ underpins its respective anti-theatrical counterpart? What ‘values’ motivate the attacks? And from what ‘discipline’ are these attacks launched? It will be beneficial to revisit these questions in relation to Michael Fried’s anti-theatrical polemic shortly (which I am reframing as an attack on a particular conception of the ‘immersive’ artwork). Ackerman and Puchner suggest that expressions of anti-theatricality have manifested themselves in a variety of forms, and they go on to argue that ‘each anti-theatricalism tends to construct its own horror fantasy of the theatre, its own version of the inherent limits of theatrical representation, so that we can know each form of anti-theatricalism by the phantasm of the theatre it has created’ (12). This understanding of the relational historical dynamic between different ‘anti-theatres’ and the ‘theatre’ to which they are opposed is a central tenet of their book, posing a challenge to the seemingly ahistorical nature of ‘anti-theatricalism’ with the idea that any general attack on ‘theatre’ is embedded in the critique of a historically *specific* theatre.

Davis and Postlewait similarly suggest that anti-theatricalisms are targeted at different underlying concepts for which the word ‘theatricality’ has become a container, and mimesisrepresents one such example. The Platonic tradition’s particular anti-theatrical concern is rooted in a critique of theatre’s production of mimesis, positioning theatre as a counterfeit practice twice removed from the real (and as I have noted, actors have been a particular target of this anti-theatrical critique). ‘Theatricality’, in this example, describes the gap between reality and its representation. However, other attacks on theatricality such as Michael Fried’s critique, which is my primary focus here, do not share the same concerns as the Platonic tradition. Instead, they are rooted more specifically in the spectatorial relationship between the ‘beholder’ and the art object, arguing that a work of art (be it the art of theatre or the visual arts) should resist a consciousness of being beheld. For Fried, the artwork should remain a ‘closed system’ that transcends the situation in which it is experienced. By this logic, a beholder’s involvement is necessarily imaginative, and *not* physical or delimited to the ‘here and now’ of their body’s situation. Immersive theatres, as I have argued in my ‘Introduction’, complicate this position as a result of their promise to physically incorporate spectators within both the theatrical circumstance and a dramatic elsewhere - the immersive promise of interiority, as I am defining it, is to enter a subjunctive realm as *another body*. But significantly, a necessary precondition to this promise is the artwork’s acknowledgement of the ‘being there’ of the beholding body.

1.3 Friedian Anti-theatricality

The quotation that prefixes this chapter is taken from art critic Michael Fried’s seminal essay ‘Art and Objecthood’(1967), in which Fried famously criticised Minimal Art (or what he termed ‘literalist’ art), for its inherent ‘theatricality’.[[59]](#footnote-60) Fried’s particular ‘anti-theatrical’ concerns are distinct, and the specific ‘theatre’ in his discourse is characterised as a phenomenon that is a threat to both the arts and to the practice of theatre itself. In opposition to the theatrical ‘phantasm’ that Fried’s writing conceives of, he actively championed what he considered to be the anti-theatrical modernist paintings and sculptures of abstract artists such as Frank Stella, Morris Louis, Kenneth Noland, Jules Olitski and Anthony Caro. At this point, it is my intention firstly to offer a brief analysis of Fried’s ‘Art and Objecthood’ with a view to precisely locating what conception of the ‘theatre’ his criticisms construct and oppose (proposing that post-millennial notions of ‘immersive theatre’ serve as an ideal antagonist), and subsequently to interrogate the ‘values’ that underpin his attack from the discipline of contemporary art criticism in the 1960s. I will then go on to consider Fried’s later writing on the subject of ‘theatricality’, noting further developments and revisions in his thinking in *Absorption and Theatricality: Painting and Beholder in the Age of Diderot* (1980), as well as relevant texts both adjacent and in response to Fried’s anti-theatrical polemic. Importantly, it is Fried’s notion of the ‘theatrical condition’ that will be carried forwards into my survey of definitions and etymologies of ‘immersive’/’immersion’ in Chapter 2. The case studies in Part Two represent a branch of immersive works that I am arguing are complicit with the ‘theatrical condition’.

Firstly, it is worth noting that Fried’s argument that theatre needed to ‘defeat’ itself by creating drastically different relations to its audience, must be understood in the historical context of the radical emergent performance practices at the time he was writing in the late 1960s, such as the Fluxus Happenings[[60]](#footnote-61) and evolution of performance art.[[61]](#footnote-62) The latter followed in the tradition of antecedent avant-garde practices, such as the publicly staged absurd performances and ‘ready-made’ assemblages of the post-World War I Dadaists, the theories of Antonin Artaud, the neo-avant-garde works of John Cage and Merce Cunningham,[[62]](#footnote-63) and the *Nouveau réalisme* performances of artists such as Yves Klein, to name just a few seminal examples. Janelle Reinelt argues that ‘performance’ as a taxonomy at this time became associated with ‘anti-theatre’, used to signify a rejection of both mimetic representation[[63]](#footnote-64) and the authority of the written script.[[64]](#footnote-65) As mentioned in my ‘Introduction’, it is this bifurcation between ‘theatre’ and ‘performance’ that Hart and McConachie propose that cognitive science might ‘heal’, irrespective of the historical developments that have precipitated these paradigmatic shifts. However, I would suggest that ‘theatre’ has never simply existed as a physical and conceptual space for mimetic representation, and experimentation in complicating the performer/audience binary and extending the theatrical frame from the stage into the theatre auditorium and beyond had occurred even earlier. For example, Futurist Filippo Tommaso Marinetti, encouraged dissident practices to challenge and re-evaluate the experience of art in everyday life, proposing the transformation of bourgeois Parisian theatre audiences into involuntary performers in his manifesto ‘The Variety Theatre’ (1913).[[65]](#footnote-66) Historically, theatre, anti-theatre and meta-theatrical practices have continually explored vastly different relations with the audience (significantly pre-dating Fried’s 1967 polemic), exploring and collapsing the distinctions between artifice and reality, and performer and audience. Therefore I would argue that the ‘theatricality’ that Fried refers to is a far more enduring concern than his argument in ‘Art and Objecthood’ acknowledges.

In ‘Art and Objecthood’, Fried defines Minimalist art in negative terms for being both ‘theatrical’ and ‘ideological’ (148). He suggests that beyond mere preferences of taste, the work belongs to a ‘general and pervasive *condition*’ (149) [italicised for emphasis]. The terms that Fried uses to express the theatrical artwork are strikingly close to that of Jonas Barish concerning anti-theatricality, which is similarly defined as a ‘condition’. This affirms that the foundations of this debate are ontological in origin, and akin to my interest in this thesis in the complex spectatorial ‘being there’ of immersive practices. Art historian Frances Colpitt suggests in *Minimal Art: The Critical Perspective* (1990) that prior to ‘Art and Objecthood’, earlier references to ‘theatre’ in the criticism of Minimal art were ‘confined to the appearance of the installation rather than the spectator’s relationship to that installation’ (89). Earlier criticisms took the form of identifying the Minimalist’s sculptural objects as staged theatrics or theatrical ‘props’. However, the ‘theatricality’ that Fried perceived in the works of the minimalists radically shifted analysis in a way he did not intend by interrogating the subject-object relationship.

Fried’s pejorative definition of ‘theatre’ or the ‘theatrical’ is perhaps most succinctly explicated through his analysis of American sculptor Tony Smith’s (1912-1980) description of a car ride that he took with his students on the unfinished New Jersey Turnpike at night time. He uses the following anecdote from Smith to illustrate the crux of the problematic he observes in the theatricalisation of art:

The road and much of the landscape was artificial, and yet it couldn’t be called a work of art. On the other hand, it did something for me that art had never done. At first I didn’t know what it was, but its effect was to liberate me from many of the views I had had about art. It seemed that there had been a reality there that had not had an expression in art. The experience on the road was something mapped out but not socially recognised. I thought to myself, it ought to be clear that’s the end of art. Most painting looks pretty pictorial after that. There is no way you can frame it, you just have to experience it. (Fried, *Art and Objecthood*, 158)

Fried argues that Smith’s account of his experience on the turnpike demonstrates theatre’s hostility to the arts. Significantly, for Fried it is the absence of the art object, substituted for an ‘experience’ in a situation, that represents the most significant threat. What takes the place of the art object here is termed by Fried as ‘the theatricality of objecthood’ (160). Similarly, in relation to the sculptures of the Minimalist artists, Fried states that the theatricality of the work is rooted in its concern with the circumstances in which the spectator encounters the sculpture. Whereas previously what was to be had from art was located ‘strictly within’ it, the experience of literalist work is rather that of ‘an object *in a situation* - one that, virtually by definition, includes the beholder’ (125). Fried’s argument could be seen as a resistance to the closing proximity between sculptural object and the beholding bodies viewing the work (or indeed, between art and life), and the increasing propensity towards participatory forms. One problem Fried claims is exacerbated by the ‘inclusiveness’ of the beholder’s situation, is that ‘everything he observes counts as part of that situation and hence is felt to bear in some way that remains undefined on his experience of the object’ (166). For Fried, the more effective a ‘setting’, the more superfluous the art object becomes.[[66]](#footnote-67)

Smith’s experience on the turnpike and, I would argue, subsequent site-sympathetic/generic/specific and immersive theatre forms,[[67]](#footnote-68) serve to epitomise Fried’s concern, since the focus rarely concerns pre-formulated art ‘objects’, but re-appropriated environments to be explored and ‘experienced’ – for Smith, his experience was interpreted as a replacement for art (and notably, Smith and Fried shared the conclusion that ‘theatrical’ developments represented the ‘end of art’).[[68]](#footnote-69) Fried’s pre-disposition as an art critic was toward ‘ocular’ relations between the artwork and the beholder that necessitate critical distance: a fixed binary between subject-object to ensure exteriority from the artwork. In contrast, immersive works are predicated on the possibility of permitting access to different kinds of interiorities as I will demonstrate in Chapter 2. The ‘experiential’ collapses stable relations between art/beholder, art/world, work/context. This signals a further complexity in what Fried meant by ‘theatre’. In *Theatricality as a Medium* (2004), Samuel Weber’s ‘Introduction’ states that the term ‘theater’ has the same etymology as the term ‘theory’, from the Greek word *thea*, designating ‘a place from which to observe or to see’ (3). Weber goes on to suggest that the ‘valorization of sight over the other senses [...] often results from the desire to secure a position, from a distance that ostensibly permits one to view the object in its entirety while remaining at a safe remove from it. This desire for exteriority and control has always felt both threatened by and attracted to a certain conception of theater’ (3). Understood in this way, Fried’s ocular desire for exteriority from the artwork is entirely complicit both with certain notions of ‘theatre’ (e.g. Naturalist fourth-wall drama) and the word ‘theatre’s’ etymological origins - although theatre has always involved more than just seeing. And yet what he pejoratively critiques as ‘theatrical’ is more closely aligned with experiential theatre forms that do not seek to distance or deny the beholder. Notably, for Fried the act of ‘beholding’ prioritises the visual sense and yet the word ‘behold’ pertains to the notion of 'looking' only in English, originating from the old English *bihaldan*, from *bi* meaning 'thoroughly' and *haldan*, meaning 'to hold' (‘behold’). Parallel Germanic words rather carry the sense of 'maintaining’ or ‘retaining' something (‘behold’). Thus to ‘behold’ as in to ‘thoroughly hold’, to ‘retain’ or to grasp the artwork, is a notion that is dispensed with (except in a strictly metaphorical sense). Congruously, the notion of an artwork as a ‘tool’ is inconceivable via Fried’s discourse – but antithetically, the ‘theatrical’ art practices examined in Chapters 4 and 5 are termed by the artists as ‘communication devices’ or ‘tools’ with an applied use-value.

Fried’s claim that theatre and theatricality were at ‘war’ with art, is succinctly broken down into three specific propositions; firstly, that the theatre has an audience and exists for its audience in a way other art forms do not. Fried terms this criticism as the theatrical artwork’s *incompleteness*. ‘Incomplete’ in the sense that it is the very presence of the beholder that brings about the completion of the work; ‘literalist work depends on the beholder, is incomplete without him, it has been waiting for him. And once he is in the room the work refuses, obstinately, to let him alone – which is to say, it refuses to stop confronting him, distracting him, isolating him’ (163). Secondly, that theatre is a corrupting phenomenon and that ‘art degenerates as it approaches the condition of theater’ (164). This criticism is rooted in theatre’s *synthesis*. The attack on the grounds of synthesis relates to theatre’s composition as a disparate set of activities that he suggests create the ‘illusion’ that there are no boundaries between different art forms. Clear distinctions are replaced by ‘the illusion that the barriers between the arts are in the process of crumbling [...] and that the arts themselves are at last sliding towards some kind of final, implosive, highly desirable synthesis’ (164).[[69]](#footnote-70) Fried contested that the individual arts had ‘never been more explicitly concerned with the conventions that constitute their respective essences’ (164). Third and finally, Fried suggested that the quality of a work is only measurable within the individual arts, and theatre by its nature is in-between art forms. This criticism is on the basis of *quality* and *value*. Fried argued that the concepts of ‘quality’ and ‘value’ are ‘meaningful, or wholly meaningful, only within the individual arts; what lies between the arts is theater’ (164). The commonality between these three propositions is that they are all concerned with boundary disputes. Fried occupies an essentialist position, rejecting the incomplete or ‘open’ work,[[70]](#footnote-71) interdisciplinary enquiry and the incommensurable, respectively. But the theatrical case studies I will analyse in Part Two operate precisely in the tradition of the ‘theatrical condition’, since the practices are ‘incomplete’ without the presence of the spectating body (and while all theatre necessitates a present audience, a body illusion is impracticable without a participating body), ‘synthesised’ in generating illusions that erode boundaries (between body/external world and different subjectivities) and ‘in-between’ art forms (arising from research interests that supersede concerns about upholding received paradigmatic parameters e.g. the interest in finding new approaches to empathise with neurological patients). Territorial distinctions of art as a separate and separable domain of practice have been widely abandoned by artists in favour of interdisciplinary approaches to art and performance-making – immersive practices, as I will suggest in Chapter Two, are characterised by hybridity, intermediality and ‘threshold’ experiences.[[71]](#footnote-72)

Decades beyond Fried’s essay, the contemporary art practices of the 1990’s necessitated the emergence of new kinds of critical tools to re-assess notions of ‘quality’ and ‘value’ within an increasingly theatricalised and cross-disciplinary art scene. Critical theories were reconfigured to meet the challenge of evaluating participatory artworks, signalling that commentators in the field of art criticism had made significant concessions towards the pervasive condition of ‘theatricality’. One influential example is Nicolas Bourriaud’s notion of *Relational Aesthetics* (2002), which he describes as an ‘aesthetic theory’ formulated around the importance of ‘judging artworks on the basis of the inter-human relations which they represent, produce or prompt’ (112).[[72]](#footnote-73) In other words, Bourriaud proposes a lens through which we might assess constructed models of sociability arranged by the artist; a development that I would argue sees art theory becoming much more closely aligned with performance studies and anthropology, much as the centrality of bodies in immersive performance and the undergirding promise that one might become *another body* intersect with neurological studies in how bodily selfhood is constructed.

Having established the core tenets of Fried’s anti-theatrical argument which, as I have suggested, can be understood as antagonistic to a particularised notion of ‘theatre’, I will now expound the notion he advances of ‘absorption’ as the antonym of theatricality. This will enable me to crystallise an important distinction between immersion in an artwork conceived as a ‘mental act’, as opposed to ‘theatrical’ immersion which entails whole-body involvement.

1.4 ‘Absorption’

Fried’s later writings are in dialogue with the foundations that he established for thinking about ‘theatre’ and its relationship with art in ‘Art and Objecthood’. In *Absorption and Theatricality: Painting and Beholder in the Age of Diderot* (1980), Fried revisits ‘theatricality’ and the relationship between the artwork and the beholder, this time offering a revision of the way in which 18th century French painting and criticism can be understood. His ‘Introduction’ succinctly sets out the book’s core aim; namely, to offer a focused interpretation of the evolution of painting in France between the early and mid-1750s (with the advent of painters such as Joseph-Marie Vien and Jean-Baptiste Greuze) and 1781 (the year David Bélisaire was exhibited at the *Salon*) (1).[[73]](#footnote-74) In his first chapter, ‘The Primacy of Absorption’, Fried outlines his objective to demonstrate the ‘controlling importance, in some of the most significant French paintings of the early and mid-1750’s, of a single configuration of concerns’, or what Fried refers to as the ‘master configuration’ (7). Fried asserts that these concerns find expression in paintings that span a wide range of subject matters and genres and connect painters that may have previously been considered to be disparate or unrelated.[[74]](#footnote-75) The connecting ‘master configuration’ that links these painters is ‘absorption’, or rather what Fried describes as a ‘common preoccupation with absorptive themes, structures and effects’ (35). Fried uses this preoccupation to analyse the works of four painters that he describes as among the most important of their generation (35); Jean-Baptiste-Siméon Chardin (1699-1779), Carle Van Loo (1705-1765), Joseph-Marie Vien (1716-1809) and Jean-Baptiste Greuze (1725-1805). Since ‘absorption’ (like ‘theatricality’) in Fried’s lexicon is embedded in ontological concerns regarding presence in the act of reception and not taxonomies of artistic style, form or medium, Fried’s discussion of painting has significant relevance to issues of ‘being there’ in immersive theatre spectatorship, as I will clarify.

In relation to Diderot’s *Essais sur la peinture* (first published in 1796),[[75]](#footnote-76) Fried introduces a useful metaphor to clarify what is meant by *absorption* in painting; ‘a figure entirely engrossed or absorbed in an action, activity, or state of mind and therefore oblivious to the beholder’s presence may be described as *alone* relative to the beholder’ (100).[[76]](#footnote-77) From this we can discern that ‘absorption’ in Fried’s discourse refers to all the related compositional strategies employed by the artist within the mise-en-scene to deny (or at least not acknowledge) the existence of the beholder that is viewing the painting. As beholders, we look at the private actions of figures depicted that are seemingly unaware that they are the subjects of our gaze. Some of the absorptive activities and states that are offered to exemplify Fried’s point range from the depictions of ‘reading’ and ‘meditation’ (in Chardin’s *Un Philosophe occupe de sa lecture* in 1753), ‘preaching’ (in Carle Van Loo’s *St. Augustin prêchant devant Valere*, *Evêque d’Hippone* in 1755), ‘sleeping’ (in Vien’s *Ermite endormie* in 1753, Greuze’s *Un Enfant qui s’est endormi sur son livre* in 1755, and *La Tricoteuse endormie* in 1759) and absorption in ‘prayer’ (Van Loo’s *St. Charles Borromée prêt á porter le Viatique aux maladies* in 1753). This preoccupation with absorption was evident within both the figurative paintings themselves and their respective criticisms, which would frequently assign a value judgment on the basis of how successfully particular absorptive states and activities had been depicted to exclude the viewer. Fried provides a historical context for the emergence of ‘the primacy of absorption’, which he argues was a reaction against the decorative paintings of the Rococo (that began circa 1747) and a return to the sculpture of the ancients and the paintings of canonical 16th and 17th century masters. The defining feature of this work, for Fried, is the creation of a world that is ‘self-sufficient’, ‘autonomous’, a ‘closed system’ that was ‘blind’ to the world of the beholder, capturing the spectator’s gaze through what he describes as ‘a virtual trance of imaginative involvement’ (‘Introduction’, *Art and Objecthood*, 48).

According to Fried, ‘absorption’ is the antithesis of theatricality (48). Fried argues that his opposition to the ‘theatrical’ is an enduring position commensurate with that of Diderot, who similarly avowed himself to be an ‘anti-theatrical’ critic.[[77]](#footnote-78) Articulated in simpler terms than ‘Art and Objecthood’, Fried later defined ‘theatricality’ as ‘playing to an audience’ which he suggests emerged as the ‘worst of all faults’ in art (‘An Introduction to my Art Criticism’, *Art and Objecthood*, 48); the criticism of ‘playing to an audience’ is consistent with the kind of anti-theatrical expressions that I previously identified via Jonas Barish’s discourse (e.g. ‘playing up to’, ‘putting on an act’ etc.). Conversely, the absorptive artwork ‘treated the beholder as if he were not there’ (‘Introduction’, *Absorption and Theatricality: Painting and Beholder in the Age of Diderot*, 5).[[78]](#footnote-79) Fried argues that this dramatic conception of painting rested on what Diderot classified as the ‘supreme fiction’ of the beholder’s ‘nonexistence’, and that the fiction may be thought of as a sort of ‘metaphysical illusion anterior to and necessary for dramatic illusion’ (108).[[79]](#footnote-80)

In Diderot’s critical commentaries on painting, his distaste for theatre was evidenced by his use of the term *le* *théâtral* (the theatrical) - a pejorative expression ‘implying consciousness of being beheld, as synonymous with falseness’ (*Absorption* 100). Diderot’s treatises on the theatre, *Entretiens sur le Fils naturel* (1757) and the *Discours de la poésie dramatique* (1758), called for ‘the development of a new stage dramaturgy that would find in painting, or in certain exemplary paintings, the inspiration for a more convincing representation of action than any provided by the theater of his time’ (*Absorption* 77). Diderot believed that the theatre practitioners, composers and actors should look to painting’s refusal of the beholder’s existence, and take it as inspiration towards more authentic representations of a subject. As Diderot suggests in *Discours*, ‘think no more of the beholder than if he did not exist. Imagine, at the edge of the stage, a high wall that separates you from the orchestra. Act as if the curtain never rose’ (*Absorption* 95). This statement is, of course, an early description of what came to be understood as the ‘fourth wall’ with the proliferation of theatrical realism in 19th century theatre, and its partitioning imaginary boundary between the fictional work and its audience. But as Fried suggests, rather than limiting our understanding of Diderot’s arguments offered in *Entretiens* and *Discours* simply as a call for stage ‘realism’, it may be more accurate to say that these treatises argued more generally ‘for the illusion that the audience did not exist, that it was not really there or at the very least had not been taken into account’ (*Absorption* 96).[[80]](#footnote-81) Correspondingly, Diderot urged playwrights of his time to abandon superficial contrivances and *coups de théâtre* (‘surprising turns of plot, reversals, revelations’) in favour of *tableaux* (‘visually satisfying, essentially silent, seemingly accidental groupings of figures’, (*Absorption* 78)). Diderot argued toward reconceiving the theatre spectator as a ‘beholder’ before a canvas, abandoning *le* *théâtral* and aspiring toward the superior ‘condition’ of *le naïf* (the naive).[[81]](#footnote-82) The absorptive work, much like the Friedian/Diderotian critical lens, ignores the spectating body and its contextual circumstance in the act of beholding towards the objective of ‘authentic’ dramatic representations.

The metaphysical illusion of absorption as a precondition to dramatic illusion generates an inevitable paradox, since paintings are created to be beheld. Fried suggests that this paradox ‘directs attention to the problematic character not only of the painting-beholder relationship but of something still more fundamental – the *object*-beholder (one is tempted to say object-“subject”) relationship which the painting-beholder relationship epitomises’ (104). Fried goes on to offer an insightful and seemingly contradictory account of a writing technique employed by Diderot that he uses to exemplify his own ontological position on the subject-object relationship. Fried discusses Diderot’s ‘infrequent but nevertheless far from arbitrary use of the fiction of *physically entering* a painting or group of paintings he is reviewing’; a fiction that Fried acknowledges is ‘conspicuously at odds with the doctrine of the radical exclusion of the beholder that I have argued his writings expound’ (118).[[82]](#footnote-83) This introduces an obvious problematic into Fried’s notion of absorption (which, as I have suggested, affirms the viewer’s exteriority to the artwork). Fried makes sense of Diderot’s imaginary walks inside the frame of the landscape paintings he observed on a few different counts. In part, he ascribes it to the necessity to enliven his reviews for the reader. More significantly, Fried suggests that the critic’s choice to employ this fiction rested on whether the painting ‘compelled the beholder to imagine’. But most crucially of all, Fried reconciles the contradiction by stating that according to this fiction, ‘the beholder *is removed from in front of the painting* just as surely as if his presence were negated or neutralized, indeed just as surely as if he did not exist’ (131). In Fried’s polemic, a beholder can mentally ‘enter’ a painting as a portal to an imagined experience (forgetting their material reality), but the painting/sculpture sharing the beholder’s physical circumstance represents a threat to art. According to this criteria Diderot can wander imaginatively through 18th century paintings without disapprobation, but Tony Smith’s experience driving through the incomplete artificial landscapes of 1960s America represented unacceptable ‘theatricality’.

As I will identify in Chapter 2, Fried’s notion of being imaginatively transported to the ‘elsewhere’ phenomena of a painted landscape accords with one particular conception of ‘immersion’ as an act of ‘deep mental involvement’. However, spectatorship in the immersive practices that I will analyse in Part Two attempt to mobilise the promise of physically entering a virtual reconstruction of another’s bodily experience. I would argue that the desire to place audiences inside the bodies of others requires entirely different kinds of illusionistic architectures. On the one hand, as I have identified in this chapter, the immersive practices that I will examine are radically opposed to Fried’s critique of the ‘theatrical’ and are congruous with the ‘theatrical condition’ by acknowledging and drawing on all of the body’s perceptive faculties. However, Fried’s argument requires pushing further since immersivity in the case studies explored in Part Two represents an ontological desire not just to be acknowledged by an artwork, but to become another subject ‘inside’ of the work, and concurrently to *feel with the body of another*. This would be closer to the notion of being acknowledged not as a ‘beholder’, but as if another subject inside the ‘painting’, thus overcoming Fried’s charge of the theatrical work’s ‘literalism’ by transcending one’s immediate circumstances. But this ontological promise that the spectating body might be physically (and not just imaginatively) ‘elsewhere’ introduces a significant new set of problems. The body is acknowledged and physically incorporated, but simultaneously must be transcended to reconcile the incongruity of one’s own bodily presence inside a distant elsewhere. In Part Two of this thesis, the selected case studies invite immersants to undertake the dual task of maintaining a fiction while simultaneously being in reception of their own act of performance. Self-deceptive body illusions and telepresence techniques represent some of the approaches towards reconciling this spectatorial simultaneity. The very notion of one’s physical absorption inside elsewhere phenomena leans on the implementation of scientifically tested embodiment techniques that were not readily available to the artist during the time of either Diderot or Fried’s discourse (as I will suggest in reference to neuroscientific embodiment in Chapter 3).

Fried’s prioritisation of the viewer’s ocular sense in his writing prompted counter-arguments from critics that viewed his position as a denial of the spectating body.[[83]](#footnote-84) Art critic Rosalind Krauss in ‘Theories of Art After Minimalism and Pop’ (1987), critiqued Fried’s purely ‘optical’ emphasis in the reading of abstract painting that implied the viewer was decorporealised; ‘Floating in front of the work as pure optical ray’.[[84]](#footnote-85) In an essay entitled ‘Live art in art history: a paradox?’, Amelia Jones observes that ‘Until the 1990s, the discipline of art history, as developed in Europe and North America from the 19th century onward, refused to acknowledge the crucial role of the body in the production and reception of works of art’ (Davis, *The Cambridge Companion to Performance Studies*,151). Fried’s cultural tradition of art history and criticism is consistent with the bias Jones identifies. And yet, as Jones legitimately acknowledges, Fried’s vehement attacks (as well as those of other art critics such as Clement Greenberg) on these new theatrical modes of artistic production arguably ‘opened the work to the body’ (155).[[85]](#footnote-86) It is in this sense that ‘theatricality’ has been foundational to the growing prevalence of immersive works, and almost fifty years after ‘Art and Objecthood’, theatricality has become ubiquitous in art. As Nicolas Bourriaud had observed in the ‘relational’ artwork, the beholder now ‘contributes his [or her] whole body, complete with its history and behaviour, and no longer an abstract physical presence’ (Bourriaud 59).[[86]](#footnote-87) It is with these developments and an increasing recognition of the bodily processes involved in both performance and reception of an artwork that discourses have shifted focus from what an artwork ‘says’ to what it ‘does’. This shift has, in turn, opened up space for new multidisciplinary modes of practice and new paradigms for thinking about art and its physiological affects. Fried’s field of art history has been renegotiated and remodelled with the cross-disciplinary application of rapid advancements in knowledge generated from neuroscience much as theatre history is being revised in light of scientific discovery, as previously noted in my ‘Introduction’. One example is the emergence of ‘neuroarthistory’, a term coined by John Onians in *Neuroarthistory: From Aristotle and Pliny to Baxandall and Zeki* (2007) to describe a process involving the study of artists and thinkers throughout history as ‘neural subjects’. This is not an art theory, but an approach with the primary goal of using ‘neuroscientific knowledge to answer any of the questions that an art historian may wish to ask’ (17).[[87]](#footnote-88)

Beyond scientific enquiry formulating new critical approaches to art history, knowledge from the biological sciences is also playing a crucial role in developing new methodologies in live performance practices and new approaches to spectatorship. Onians cites evidence that suggests that neurons in the brain develop new connections not just in growth from infancy, but also through ‘experiences’; … ‘[neurons’] connectivity continues to change under the influence of experience [...] The brain, we learned, is in a state of constant transformation, that it is endowed with great ‘plasticity’’ (2-3). In light of this knowledge, art becomes engaged in a process of active transformation of its spectator rather than a ‘closed circuit’ that is always-already ‘complete’. Following this understanding that ‘experience’ plays a significant part in shaping our brains, the immersive practices that are my focus in Part Two are exemplars of artworks that are dynamic, transformational and part of the ubiquitous shift in art-making towards ‘experience creation’.

Before progressing to evidence a connection between ‘theatrical’ art which has ‘opened the work to the body’, and scientific studies in embodiment which have broadened the field of analysis to include interactions between the mind, body and environment in Chapter 3, first it is my intention to conduct a literature review of how the terms ‘immersive’ and ‘immersion’ have come to be defined. What features have characterised an ‘immersive theatre’ in scholarship, and given my focus on ‘intermedial’ performance practices in Part Two, how does the immersive ontological promise of technologies such as VR intersect with the desire physically to enter an artwork and be another body?

**Chapter 2: ‘Immersive’ and ‘Immersion’: A Literature Review of Etymologies and Definitions**

2.1 Introduction

Having established a corollary between Fried’s specific notion of the ‘theatrical condition’ and ‘immersive’ artwork when conceived of as a physical, and not just a mentally ‘absorptive’ spectatorial act, this chapter will question what kinds of artistic practices have the adjective ‘immersive’ and the noun ‘immersion’ become a container for? Do these words describe a taxonomy or genre, a format/medium, a mode of spectatorship characterised by ‘active’ participation, ‘interactivity’, individual experience, multi-sensorial reception or the associated methodological strategies used by practitioners to mobilise the problematic ontological promise that the spectator might ‘enter’ dramatic or virtual space?

In advance of examining the ‘theatrical’ practices of Sublime & Ridiculous, BeAnotherLab and Analogue in Part Two, which incorporate the spectating body in combination with wearable technologies in applied performance contexts, it will be important to survey the etymologies and meanings that have been designated to the terms ‘immersive’ and ‘immersion’ in theatre and media scholarship. My particular focus in this chapter is firstly to determine the different concepts to which the terms ‘immersive’ and ‘immersion’ refer; secondly, to clarify the ontological concerns that different commentators have identified as attendant to immersive spectatorship in theatre and virtual reality practices; and finally, to establish precisely which definitions will be carried forwards in this thesis. I argue that the intermedial immersive forms in Chapters 4 and 5 necessitate the extrapolation of meanings that arise in-between these research fields (as identified in Chapter 1, via Fried’s polemic ‘in-between’ artistic practices are a defining feature of the ‘theatrical’ work). I will begin by investigating the discourses of commentators in theatre scholarship in section 2.2, focusing on the research of Josephine Machon, Rosemary Klich, Edward Scheer, Gareth White, Sophie Nield and Nicholas Ridout. I will then proceed to scope further definitions of these terms as they pertain to virtual reality (VR) and immersive media in section 2.3, surveying the discourse of media theorists such as Alison Griffiths, Oliver Grau, Frank Popper, Jay David Bolter, Richard Grusin, Janet H. Murray and Gabriella Giannachi.[[88]](#footnote-89) Finally, I will develop a synthesised cross-disciplinary understanding of ‘immersive’ as the word relates to the case studies analysed in Part Two, clarifying which concepts will be carried forwards in my ‘Conclusion’ in section 2.4.

The rationale for surveying conceptualisations of immersivity in the context of media scholarship is to highlight a parallel between the problematic promise I have indicated in my ‘Introduction’ of the spectator physically ‘entering’ a dramatic situation in immersive theatre, and an enduring desire in the technological paradigm that has contributed to the evolution of spectator enveloping mediums (e.g. VR): namely, a preoccupation with enabling the ‘user’ to ‘enter’ either the ‘image’, the ‘computer’ or ‘information’ (a notion that has some correspondence with Diderot’s imagined walks inside the simulacrum of landscape paintings). It is important to trace these ontological correspondences and critically examine the sustainability of claims towards the kinds of access that both ‘immersive’ theatres and technologies promise the audience passage. Subsequently, I will develop an interdisciplinary comprehension of the philosophical concerns that undergird the desire of immersive theatre, immersive media, and by association ‘immersive’ intermedial practices discussed in Chapters 4 and 5. I will argue that something more complex is taking place in the immersive case studies in Part Two than the ‘prioritising’ of spectating bodies *tout court* – ‘immersive’ rather becomes connected to a paradox. The acknowledged participating body is concealed as a strategy to extend the perceived boundaries of the immersed self to incorporate the other. Concurrently, a notion of immersivity will emerge that is oriented on illusion-generating approaches to precipitate empathic learning, creating a sensory impression of a crossing of the unbridgeable divide between one’s body and that of a neurological subject. I will then demonstrate in Chapter 3 how this specific conceptualisation of ‘immersive’ reconciles with embodied cognition and neuroscientific embodiment protocols which have evidenced the possibility of extending the boundaries of the phenomenal self.

2.2 ‘Immersive’ in Theatre Scholarship

In Josephine Machon’s *Immersive Theatres: Intimacy and Immediacy in Contemporary Performance* (2013), she offers a survey of the theory, history and practice of immersive theatre. In her ‘Introduction’, she argues that beyond the use of the word ‘immersive’ as an adjective, there exists an increasingly prevalent trend in applying the term to suggest a ‘genre’ of theatre (21). Whilst Machon attempts to locate some defining features that might be ascribed to ‘immersive theatres’, she acknowledges that immersive practices are ultimately ‘heterogeneous’ in form (hence her use of the plural ‘theatres’). This point is reaffirmed by the formal diversity of case studies that she includes within her survey, which range from the large-scale ‘free-roaming’ site-responsive performances of theatre companies such as dreamthinkspeak, to the intimate performance forms of artists such as Lundahl & Seitl and il pixel rosso (the former deploy audio-instructions via headphones and ‘whiteout’ goggles, while the latter use head-mounted video displays).

In *Multimedia Theatre* (2012), Rosemary Klich and Edward Scheer argue that, in the context of performances that incorporate technologies, ‘immersion’ can pertain to ‘experiences that are both mental and physical’ (127). They differentiate two specific types of immersion; ‘cognitive’ and ‘sensory’. Cognitive immersion is defined as an ‘effect established through the presence of a fictional reality’, whereas sensory immersion ‘can be created through the corporeal and material dimension of performance’ (132). For Klich and Scheer, the former entails the ‘dislocation’ of materiality in ‘imagined space’, whereas the latter ‘forges the material and virtual to create an embodied experience of pattern and presence within real space’ (132). But this neat demarcation between cognitive and sensory immersion is problematised by the immersive practices discussed in Part Two of this thesis, precisely because the immersant’s sense of bodily selfhood is incorporative of a virtual body as part of the body schema; via embodiment illusions, the virtual is experienced *as* material.

Beyond surveying immersive theatres as an independent domain of diverse but associated practices, Gareth White contextualises immersive performance within the broader field of participatory theatre forms in *Audience Participation in Theatre: Aesthetics of the Invitation* (2013), in which he states that at the time of writing, ‘fashions for ‘immersive’ theatre and ‘one-to-one’ theatre are in the ascendant’ (2). White states that immersive performances have a tendency to ‘make use of spatial and architectural interventions, and to ask spectators to involve themselves physically in tracking down or pursuing the performance’ (2). Additionally, he proposes that sometimes the spectator may ‘speak or act in dialogue with the performers or the performance environment, or to make choices that structure their experience’ (2). The description of immersive as a ‘fashion’ implies a style or procedure via which something is done; and yet by contrast, immersive theatre(s) via Machon’s definition represents a plurality of theatre forms. White’s apostrophizing of the word ‘immersive’ implies some scepticism as to the reliability of the word’s value as a descriptor – a point that is substantiated by the fact that elsewhere he has described the word as ‘faulty’ (2012: 233) in regards to the phenomena that it describes, as I will go on to elucidate. Significantly, both commentators strongly hint at the challenge for the theatre scholar in offering fixed definitions of an ‘immersive theatre’. In accordance with Machon’s identification of the diverse character of immersive theatres, I would argue that the use of the word ‘immersive’ to indicate a specific ‘genre’ of practice is unsustainable. Machon conflates the meanings of ‘immersive’ and ‘immersion’ to develop a performance taxonomy that is inclusive of a diversity of forms that ‘exploit all that is experiential in performance’ (22). Following my examination of Fried in Chapter 1, I have contextualised the ‘experiential’ in art making as an inherently ‘theatrical’ legacy. In contrast, it is my task in this chapter to disentangle pluralistic notions of ‘immersive theatres’ by leaning towards work that deploys digital technologies in the performance event, which must be recognised as aesthetically distinct from other immersive forms. Furthermore, given my interest in interrogating a highly particularised subset of hybrid ‘immersive’ practices in Part Two that are indebted to ‘theatrical art’, immersive media and knowledge from the neuroscientific paradigm (which complicate Klich and Scheer’s taxonomies of ‘cognitive’ and ‘sensory’ immersion),[[89]](#footnote-90) it will be crucial to extract a much more precise definition of the term ‘immersive’ before advancing to Chapter 3. My specific interest within this chapter is in establishing the ontologies of the intermedial immersive work. Having identified a corollary between ‘theatrical’ acknowledgment and immersive performance, what does the word ‘immersive’ imply in regards to the ‘being there’ of the spectator?

2.3 Common Usage of ‘Immersive’ and ‘Immersion’: Etymologies and Definitions

The common usage meaning of the adjective ‘immersive’ is defined as ‘(Of a computer display or system) generating a three-dimensional image which appears to surround the user’ (‘Immersive’, *Oxford Dictionaries*). Notably, this definition singularly connects the word ‘immersive’ to the technological paradigm, corresponding with virtual reality (VR) or immersive multimedia which artificially enable the physical presence of the ‘user’ in computer-simulated environments. By contrast, the noun ‘immersion’ is accompanied by more diverse and historically situated meanings. These include the ‘action of immersing someone or something in a liquid’, ‘baptism by immersing a person bodily (but not necessarily completely) in water’,[[90]](#footnote-91) ‘deep mental involvement in something’, a ‘method of teaching a foreign language by the exclusive use of that language’, and in astronomy the ‘disappearance of a celestial body in the shadow of or behind another’ (‘Immersion’). This suggests that unlike the singular VR connotations of the word ‘immersive’, ‘immersion’ has no unified meaning and is connected respectively to concepts as varied as cleansing, religious ritual, mental involvement, language learning and a cosmic event. For my purposes, immersion understood as ‘deep mental involvement’ is problematic, since it would be impossible via this definition to productively delimit the kinds of practices that might provide the basis for a focused enquiry. Beyond theatre practice, any activity that demands deep mental involvement might be considered as something in which one might become ‘immersed’ (e.g. reading, playing chess etc.). Furthermore, through this definition *all* theatre practices might be said to ‘immerse’ the spectator, including ‘absorptive’ works that deny the presence of the audience, when as I have established in Chapter 1 my interest is in ‘immersive’ when understood as part of a ‘theatrical’ lineage. In the interest of maintaining a clear focus, my concern in this thesis is the spectator’s physical immersion in an experience, corresponding with the notion of being ‘surrounded’ or ‘dipping into’, and concomitantly, examining the underlying promise of what the immersed body might access. This meaning, which I intend to carry forwards into the chapters that follow, is consistent with the etymological origin of the word ‘immersion’ which stems from the late 15th century from the Latin word *immersio*(*n-*) and from the verb *immergere* ('dip into') (‘Immersion’). The notion rooted in the word’s origins of ‘dipping into’ relates to all of the aforementioned definitions of ‘immersion’ with the exception of the last. The astronomical use of the word rather connotes a ‘disappearance’ or the eclipsing of a celestial ‘body’ behind another – significantly, it is the one meaning of ‘immersion’ that implies concealment through the intervention of an external agent, and notably a meaning that is omitted from Machon’s own survey of definitions in her ‘Introduction’ in *Immersive Theatres* (2013: 21-49). This specific meaning will be pursued in this thesis, as it has resonances with all of the immersive practices that I will examine in Part Two. My selected case studies introduce varying degrees of sensory deprivation (e.g. HMD’s, headphones etc.) to obscure aspects of both the participant’s locale and their participating body (in Chapter 4 and 5) ‘behind’ a virtual body image that is rendered visible from the first-person vantage point of another.

2.4 Conceptualising Immersed Bodies in Theatre

In Machon’s chapter ‘(Syn)aesthetics and Immersive Theatre’ in *Affective Performance and Cognitive Science* (2013) edited by Nicola Shaughnessy, she identifies some of the defining qualities of immersive performance, arguing that bodies are ‘prioritised in this world; performing and perceiving bodies; the latter belonging to the audience members whose direct insertion in and interaction with the world shapes the outcomes of the event’ (207).[[91]](#footnote-92) Notably, of the ‘performing’ and ‘perceiving’ bodies that Machon cites, it is the latter that is positioned as the ‘audience’. However, as I will illustrate with examples in Part Two, the immersive practices with which my analysis is engaged cast the audience member as *both* performer and perceiver. The immersed spectator is audience to themselves (cast as another) from within their unrehearsed act of performance. In this respect, a distinguishing feature of the immersive works in Part Two is the removal of a fixed binary between spectating-performing roles that might ensure a viewing position that is exterior from the artwork. ‘Exteriority’, as I have noted in Chapter 1, is historically secured by the ‘absorptive’ artist’s use of metaphysical illusions (e.g. a fourth-wall or absorptive compositional strategies). Concomitantly, sight is not valorised over the other senses in these immersive works which place the experiencing body at the centre of the live event. The selected immersive case studies problematise the Friedian prioritisation of ocular relations in spectatorship, disallowing both the possibility of occupying a critical position that is at a safe remove, and a situation from which one can view an artwork in its entirety. Machon similarly argues that immersive theatres are characteristically ‘polysensorial’, stating that ‘crucial to immersive practice is the fact that there is no focus on one particular sense, rather a play within the realm of the senses’ (Shaughnessy 2013: 207). It is on these grounds that she argues that immersive theatres are ‘quintessentially (syn)aesthetic in that they manipulate the explicit recreation of sensation through the visual, physical, verbal, aural, tactile, haptic, and olfactory means within the real-time, site-responsive experience of the event (via scents, textures, sounds and so on)’ (208). The compound word ‘(syn)aesthetic’ is more comprehensively expounded by Machon in *(Syn)aesthetics: Redefining Visceral Performance* (2009), in which she states that it derives from the etymology of the word ‘synaesthesia’ which originates from ‘the Greek *syn* meaning ‘together’ and *aisthesis* meaning ‘sensation’ or ‘perception’’ (13), and its medical derivation as ‘a neurological condition where a fusing of sensations occurs when one sense is stimulated which automatically and simultaneously causes a stimulation in another of the senses’ (13). Thus ‘(syn)aesthetics’ is a word that ‘encompasses both a fused sensory perceptual experience and a fused sensate approach to artistic practice and analysis’ (14). The implication of defining immersive theatre as ‘quintessentially (syn)aesthetic’ is that it produces a particular understanding of the immersed participant by reaffirming what the author refers to as the ‘‘fused’ experience of the human body’ which is an ‘holistic entity – physiological, intellectual, emotional – thus prioritizing a connection of body and mind within experience’ (2009: 14). Immersive theatres, by this logic, conceive of audience members that are comprised of ‘embodied minds’, a notion that aligns immersive practices with second wave cognitive science’s interest in tripartite interactions between the brain, body and environment. This proposition emphasises the importance of the experiencing body in artistic reception, an idea that Machon situates among antecedent discourses such as Friedrich Nietzsche’s idea that art is an ‘organic function’ (*The Will to Power* 1968: 426-8) that reinvigorates the ‘mind *as* body’ (Machon 2009: 22), and Maurice Merleau-Ponty’s approach to embodied perception in *Phenomenology of Perception* (1945) which ‘destroys the subject/object dichotomy and asserts the human body as a continuum of the natural world and of sensual experience’ (Machon 2009: 23). Carrying forwards Fried’s notion of the ‘theatrical’ artwork from the previous chapter, I would suggest that there are some very direct corollaries with Machon’s description of immersive theatres. For example, the inclusion of the spectating body within the conceptual frame of the work, hybridity and ‘impure’ admixtures of artistic form, shifting enquiry towards what an artwork ‘does’ (the lineage Machon traces between Nietzsche’s idea of art as ‘organic function’ and immersive theatres, significantly reorients the emphasis on an artwork’s affects) and the prioritisation of the whole body and its sensate experience in a situation. However, I would argue that the claim that bodies are ‘prioritised’ in immersive theatres requires more sustained critical scrutiny. I will briefly examine this contention in light of the theatrical problems that other theatre scholars have identified as indivisible from the spectator’s physical presence ‘inside’ immersive performance.

2.5 The Immersed Body as a ‘Theatrical’ Problem

Machon states that the immersive event must establish a unique ‘‘in-its-own-world’-ness, which is created through an adept exploration of space, scenography, sound and duration within interdisciplinary (or hybridised) practice’ (207). The ‘world’ that she is describing goes beyond the ‘world of the play’ which operates only at the dramatic level. In contrast, the world of immersive practices encompass the imaginative realm as well as the theatrical situation of the audience-participant who is ‘haptically incorporated’ into the experience (207). As I have suggested in my ‘Introduction’, it is at this intersection between the imaginative realm and the incorporated body of the audience that the paradox of immersive theatre is manifested as a theatrical problem, at least in instances where the promise of ‘entering’ the dramatic is intimated as a possibility. Accessing the ‘dramatic’ via Elam/Rescher’s discourse (see page 15) is ‘conceptual and *not* physical’, much as becoming ‘absorbed’ in a painting via Fried/Diderot’s art criticism as discussed in Chapter 1 entails a strictly imaginative passage ‘inside’ the artwork (e.g. Diderot’s imagined walks inside a painting), and not physical access. These arguments rather imply that the acknowledged presence of spectating bodies is incongruous to the inauguration of dramatic illusion. This idea is brought into sharp relief in Sophie Nield’s article entitled ‘The Rise of the Character Named Spectator’ (2008) in *Contemporary Theatre Review*, in which she examines the problem of the unrehearsed spectator’s presence ‘inside’ the dramatic universe of an immersive performance. She reflects on a peculiar encounter in the Southwark Playhouse bar with a ‘monk’ who addresses her as another inside the dramatic universe of theologian Peter Abelard’s ‘12th century France’ in Goat and Monkey’s *Reverence: A Tale of Abelard and Heloise* (2007).[[92]](#footnote-93) In response to this exchange Nield questions: ‘as I stood there in my not-mediaeval clothes with my not-mediaeval bright green handbag, it occurred to me - who on earth is this monk supposed to think I am?’ (2008: 531).[[93]](#footnote-94) The point that I would extract from the representational issue that Nield identifies is that to enter into a dialogue with the ‘monk’, the spectator must necessarily undergo an ambiguous transformation. Through the acknowledgement of the spectator (a foundational principle of the ‘theatrical’ artwork), Nield is addressed as another in the drama without possessing any advance knowledge as to her character; foundational knowledge that the actor would typically acquire through a rehearsal process. Theatre Director Mike Alfreds argued in *A Shared Experience: The Actor as Story-teller* (1980) that ‘transformation’ is a crucial component of theatre practice; more specifically, ‘the performer becoming someone else in situations and places other than his [or her] actual “here-and-now”’ (4). The theatre audience witnesses this transformation in the presence of the actor, whose act expresses to an audience, “I am both me, here, now and someone else in some other place and time” (4). For Alfreds, it is the audience’s awareness of this duality that is the ‘essence of theatre’ (4). However, as Nield’s example illuminates, immersive theatre practices commonly (though with exceptions) relocate the duality of the actor-character onto the unrehearsed audience-participant.[[94]](#footnote-95) The promise that via immersive performance a participant might experience Abelard’s historical elsewhere situation ‘more fully’ (Trueman, 2010), paradoxically requires a distancing from one’s sense of self in the theatrical situation. The complex promise is that one might reduce one’s proximity to a dramatic (and historical) circumstance while situated ‘inside’ the mechanics of theatrical representation, occupying the dual position of audience-character. I would argue that Nield’s anecdote problematises the idea that bodies are ‘prioritised’ in this example of immersive theatre, since the very presence of the spectating body and its accoutrements resists the dramatic illusion that it might be efficaciously transported to 12th century France. As I suggested in my ‘Introduction’, techniques introduced to cloak the audience’s physical appearance have been one approach to reconcile the problem of the audience’s physical immersion ‘elsewhere’. In Gareth White’s chapter ‘Odd Anonymized Needs: Punchdrunk’s Masked Spectator’,[[95]](#footnote-96) he argues that the strategy of masking the immersed spectator in Punchdrunk’s *Faust*, ‘hides the public persona rather than putting it on display, so that the individual is placed in the performance, and yet remains absent from it to those watching’ (224). The audience member ‘enters’ the high fidelity decorated interiors of a scenographically transformed site (which is dressed as an ‘other-world’ location) while simultaneously receding into the background via the gaze of other audience members (224). White concludes that the peculiarity of this technique resides in the immersed spectator’s relationship to distance - we are brought both exceptionally close to the aesthetic objects of the theatre, while the mask instates distance and produces the ‘disembodied feel of the gaze’ (224), rendering audiences as ‘incoherent, anonymous, and exaggeratedly absent’ (226). The partial concealment of the audience towards the possibility of reconciling the problem that Nield identifies of one’s being other and elsewhere (though not addressing her concern as to the audience’s lack of a rehearsed identity) sits uneasily alongside Machon’s statement that bodies are ‘prioritised’ in immersive theatre.

While not addressing immersive theatre explicitly, Nicholas Ridout, in *Stage Fright, Animals and Other Theatrical Problems* (2006), examines his unease as a spectator when an actor catches his eye and he is unable to situate himself either as a ‘performer’ with a shared duty to maintain the fiction, or as an invisible spectator (in the Diderotian realist tradition). He notes, ‘someone is making claims on me and it’s not entirely clear who […] Is it Samuel West or is it Richard II? When the ethical claim of the face-to-face encounter is deployed in this way, I feel I am entitled to know’ (2006: 87). Whereas Sophie Nield had examined the fissure arising from her impromptu designation of spectator-as-character, Ridout explores the production of uncertainty in an exchange that he is not readily able to assign to either the theatrical circumstances of the performance or the dramatic ‘world-of-the-play’.[[96]](#footnote-97) Notably, in the immersive telepresence performance experiments I examine in Chapter 4, the claim that is made on the audience is both complex and unambiguous – the spectator is acknowledged as another while virtually assuming a new mediatised body image. This request necessitates a different kind of ‘masking’ that conceals the participating body, specifically to generate the illusion of disowning or replacing the actual body. HMD’s/screens are used to substitute direct ‘face-to-face’ encounters as a mediatised strategy to occupy another’s point-of-view (simultaneously concealing the *site* of performance from the *sight* of the immersed participant). In the case studies in Part Two (in Chapter 4 and 5), spectatorship is no longer ‘face-to-face’ – it rather invites the audience to take up a position *behind* the face of the other. The audience’s body is ‘remediated’, whilst experiencing the cognitive dissonance of knowing that no actual transformation has occurred.[[97]](#footnote-98) I would argue that the audience’s conscious awareness of being ‘themselves’ while simultaneously feeling as if they are another retains the ‘essence of theatre’ (4) that Alfreds had previously identified, but the transformational act is transposed to the immersed participant as performer-perceiver.

Of further interest in my survey as to the ontologies that an ‘immersive’ theatre introduces into spectatorship, Gareth White, in his essay ‘On Immersive Theatre’, published in *Theatre Research International* (2012), critically pursues a theatrical problem in regards to the different kinds of ‘interiors’ that immersive performance might license the spectator ‘entry’ into. He suggests that the word ‘immersion’ implies ‘access to the inside of the performance’, and questions in response to his own spectatorial experiences in Shunt and Punchdrunk’s large-scale immersive performances, ‘what kinds of insides might the term [immersion] refer to?’ (221). In particular, he refers anecdotally to a one-to-one encounter in Punchdrunk’s *Tunnel 228*:

If we, as excitable spectators, stop to think of what the inside of a piece of drama is, we will realize that it is not a place of substance, but the set of surfaces that provokes depths of feeling in us as audience [sic]. Though the experience of this one-to-one was exciting, and added nuances to my impressions of the work as a whole, the inside it brought me to was the inside of the production of the drama rather than the inside of the drama itself. The question remains as to what else, if anything, might be found on the inside of the work, if such an inside exists. (231)

White’s definition of drama as an insubstantial ‘set of surfaces’ has some correspondence with Elam’s aforementioned designation of drama as ‘conceptual’ or ‘counterfactual’ space. White revisits Martin Heidegger’s essay ‘The Origin of the Work of Art’ (first published in 1950 as *Der Ursprung des Kunstwerkes*), which he argues provides a way of accounting for ‘what is revealed through successful art experiences’ (232) by setting out an ontology in which Art (the capitalisation is to distinguish the concept of ‘Art’ from the ‘art world’) is an event of truth focused on the ’unconcealment’ of things in their essence. Applying this logic to his one-on-one encounter in *Tunnel 228*, he concludes that ‘immersive theatre’ is a ‘faulty term’ to ‘describe the phenomena it currently designates’ (233). The particular ‘phenomena’ that White refers to here include ‘surrounding’ the audience, the production of ‘structured interiors’ for audiences to explore, the addressing of an audience’s bodily presence and its full capacity for ‘sense-making’ (a notion that is consistent with ‘theatrical’ art and Machon’s concept of ‘(syn)aesthetic appreciation’), and offering the promise of ‘further depths just possibly within reach’ (233). Furthermore, White suggests that immersive theatres operate in both a ‘metaphorical’ and ‘non-metaphorical’ respect. In terms of the metaphorical, White draws on George Lakoff and Mark Johnson’s approach in *Philosophy in the Flesh: The Embodied Mind and its Challenge to Western Thought* (1999) to decipher the specific ‘entailments’ or structures of thought that the metaphor ‘Art Is Immersive’ might yield.[[98]](#footnote-99) White argues that this metaphor ‘draws on a concept of the liquidity of experience and the interiority suggested by the container character of artworks’ (227), proposing that the entailments that it produces are: ‘Art Experiences Are Shallow Or Deep’ and subsequently ‘Successful Art Experiences Are Deep’.[[99]](#footnote-100) The author states that this metaphor corresponds with both the way actors speak of ‘getting *into* the role’ (227) [italicised for emphasis], and statements made in regards to the reception of different mediums (e.g. becoming ‘immersed’ in a book or a play). The value that White identifies in applying Lakoff and Johnson’s approach is that it draws focus in his analysis to ‘how we express what we value in phenomena’, and how ways of thinking and speaking are ‘based on foundational schemas which do not, in fact, provide the basis of the phenomena in question, but are the basis of our physical and sensorimotor understanding of our world’ (227). It is the use of interiors that White argues justifies the use of the term ’immersive’ in a way that is non-metaphorical to a limited extent, but he maintains that to be ‘surrounded’ necessitates a distinction between that which surrounds and the subject that is surrounded; ‘we move within the art work, intimately close to it, but still distinct from it’ (228). In this view the work maintains its exteriority from the immersed spectator; here ‘exteriority’ corresponds with the critical distance from the artwork that Fried’s polemic had sought to preserve.

I would contend that although White acknowledges that immersive theatre is a ‘faulty’ term, he avoids the significant task of re-conceptualising ‘immersivity’ in more precise terms. To focus on the spectator’s ‘separation’ and distinction from the immersive work is to avoid a more ontologically radical desire upon which immersion of the kind I will discuss is predicated. The work that I intend to examine seeks to mobilise a conception of immersivity that promises to place the immersed participant ‘inside’ the virtual body of different neurological subjects *without separation*. The case studies discussed in Chapters 4 and 5 problematise the ‘non-metaphorical’ aspect of ‘immersive’ performance that White defines as the ‘use of interiors’, since the works are non-site-responsive and the immediate local environment (or elements of the environment) is obscured. Furthermore, the VR body transfer illusions integrated into the kinds of immersive practice with which this thesis is concerned, typically occur on the borderlines of the real and the metaphorical. For example, are whole-body ownership illusions (empirically tested in the scientific experiments of Henrik Ehrsson and subsequently applied qualitatively in artistic experiences) ‘metaphorical’ or ‘non-metaphorical’ when a subject’s measured sympathetic responses evidence that they feel a profound sense of physical ownership over a virtual body or an external object? (I will pursue this question further in Chapter 3). Correspondingly, the body illusions used in performance that are inspired by this scientific research in Chapter 4 and 5 operate on a similar perceptual threshold when another’s body is knowingly deceived to be incorporated as if one’s own. The technologies in the performance contexts that are my focus are conceived of as a vehicle to extend the ‘self’ of the immersed subject. Beyond the strategy of costuming the spectator, these works elicit the sensation of a shifted boundary to the physical selfhood of the spectator. White’s analysis of foundational schemas underlying ‘immersive’ discourses have limited application in regards to immersive works that operationalise the promise of accessing the ‘ineffable’ using body-change or body-swap illusions. This is precisely because the particular ‘inside’ that the work in Part Two of this thesis promises might be accessed, are knowledges that are bodied. The reconstituted first-person view of another, and receipt of sensory information that correlates with what the participant observes, are core components of a technique through which to reconstruct and communicate experiences that cannot be easily reformulated through description. Put differently, the ‘truth’ that practitioners attempt to reveal through body transfer experiences (or what Heidegger refers to as the ‘moment of strife’) is predicated on a paradox; the deployment of varying degrees of concealment in the theatrical circumstance (of the experiencing body and its local environment etc.) is a strategy to elicit the sensation of temporarily dis-owning the immersed body, while integrating the unique physical experiences of another as part of the immersed self. Through this process of concealment, the desire is to ‘unconceal’ knowledges that are ‘contained’ within different kinds of bodies. In regards to the Heideggerian ‘unconcealment’ that might be attained via art experiences, my interest is in the immersive work that attempts to expose ‘truths’ that are contingent on the kind of body that one possesses. For this reason, my particular conceptualisation of ‘immersion’ concerns the grouping of related methodological strategies deployed by artists to attempt to bridge epistemic divides and mobilise immersive experience as *feeling with the body of another*.

Up to this point I have mapped out the diverse concepts gathered around the terms ‘immersive’ and ‘immersion’ insofar as they relate to theatre practice, indicating precisely which meanings will be pursued in my own usage of these terms: namely, an act of surrounding a participant and of ‘eclipsing’ the participating body behind that of another through illusionistic techniques. By extension, I have examined the ontological concerns that the incorporated body of the spectator introduces into ‘theatrical’ practice, scrutinising the claim that bodies are ‘prioritised’ by identifying a paradox between the immersed participant’s physical presence in actual space, and desirable access to conceptual (or dramatic) space. Bodily access ‘inside’ the dramatic represents an irreconcilable theatrical problem that nonetheless seeks reconciliation within ‘immersive theatres’. At this point I will extend my survey to acknowledge adjacent scholarly discourses focusing on immersive technologies in media theory. The importance of this undertaking is twofold; firstly, as I have indicated, the word ‘immersive’ derives from the technological paradigm, and thus a comprehensive understanding of the word’s meaning necessitates scoping the field from which it originates. Secondly, both the scientific research that I will examine in Chapter 3 (relating to VR neuroscientific embodiment experiments) and the resulting intermedial applied performance practices in Part Two, can be distinguished by the presence of digital technologies. In relation to work that stages not only the participating body but also other mediums, it is vital to develop a critical and historical awareness of the ontologies that are introduced by the incorporated technologies in hybridised practices. What kinds of promises of access are entrenched in notions of the ‘immersive’ in the technological paradigm, and how might these ideas accumulate within the ‘intermedial’ immersive theatre practices analysed in Part Two?

2.6 Immersive Technologies: Genealogies and Ontologies of ‘Immersion’ in Media Theory

I will begin by surveying scholarly debates that analyse what ‘immersion’ has come to define in media theory, briefly acknowledging discourses that have traced the genealogies of immersive media (i.e. media that seek to ‘surround’ the subject) and the ontological concerns that have underpinned these developments. It is important to clarify that my specific interest in Part Two of this thesis concerns artists and theatre-makers that either hack or appropriate existing low-cost consumer digital technologies in order to immerse audience groups in the embodied experience of others in different presentational contexts. However, firstly I will need to outline the broader philosophical narratives that have accompanied the desire to innovate spectator-enveloping mediums in the technological paradigm of progress. I argue that the importance of this undertaking is that my selected hybridised case studies necessarily carry over some of the promises of access embedded in the discourse surrounding digital technologies and antecedent media. Therefore, in this section I intend to investigate what correspondences exist between the promise of the ‘immersive’ in media and theatre. What are the inferences as to what might be ‘entered’, and what implications do they present as to how the presence of immersed bodies are conceptualised?

I should begin by acknowledging that numerous theatre scholars have sought to highlight the historical congruences between theatre and the development of immersive media, such as Steve Dixon in *Digital Performance: A History of New Media in Theater, Dance, Performance Art, and Installation* (2007). Dixon defines media such as virtual reality as an extension of theatre practice, arguing that theatre has ‘always been a virtual reality where actors imaginatively conspire with audiences to conjure a belief’ (363). This aligns the concept of the ‘virtual’ more broadly with phenomena such as dramatic illusion. However, beyond discourses which seek to call attention to the historical relatedness of prevalent concepts in theatre and media, it is crucial to my task in this section to identify the distinct sets of philosophical concerns that are particular to the development of immersive media in relation to the body (much as the ideas that congregate around ‘immersive theatre’ and the kinds of immersed self that they constitute – e.g. ‘(syn)aesthetic’ – have required distillation in the previous section). Subsequently, I will develop a more precise and synthesised understanding of ‘immersion’ as it specifically relates to the practices discussed in Part Two. The selected case studies in the latter half of this thesis incorporate different technologies toward virtual re-embodiment. Correspondingly, ‘virtual reality’ following this chapter will pertain specifically to certain performance practices (in Chapter 4) that deploy the technical apparatus associated with VR (video goggles rather than computer-simulated environments) in combination with multi-sensory stimulation to generate body transfer illusions (which will be comprehensively expounded in Chapter 3). Following Dixon’s point as to the scope of the ‘virtual’, it is of particular importance in this survey to circumvent the erroneous idea that immersive media’s application within an immersive theatre might be understood as nothing more than tautological (i.e. the virtual fulfilling a role in theatre practice that theatre already fulfils). In contrast, Part Two of this thesis will demonstrate that the presence of different immersive media in performance practices brings to bear entirely different sets of meanings, possibilities, displacements (e.g. the displacement of the participating body and of live rehearsed actors in Chapter 5 and 6), and different ways of conceptualising the body of the immersed participant.

2.7 Towards ‘Total’ Immersion

VR artist Char Davies has suggested that the word ‘immersive’ has been appropriated in media theory and practice to mean ‘almost any image that is wider or higher than a standard rectangular frame’ (‘Rethinking VR: Key Concepts and Concerns’). Accordingly, immersivity in media contexts becomes broadly associated with ‘screen culture’ and the ‘expanding frame’. I would suggest that this idea has some correlation with the expanded conceptual frame of the ‘theatrical’ artwork (examined in Chapter 1) which, as I have established, denies spectatorial exteriority or a position that allows its ‘beholder’ to view the whole of the work (being ‘surrounded’ necessarily negates the possibility of seeing the ‘complete’ work). Other media scholars historically trace a trajectory of the ‘immersive’ that includes phenomena that have significantly predated film. In *Shivers Down Your Spine: Cinemas, Museums, and the Immersive View* (2008), Alison Griffiths offers an examination of immersive modes of experiencing visual spectacle in film and museum contexts, plotting a trajectory through the medieval cathedral, the panorama,[[100]](#footnote-101) the planetarium and the IMAX theatre in ‘Part I’ (13-156), and museum spaces since the second half of the 19th century in ‘Part II’ (157-282).[[101]](#footnote-102) Griffiths argues that the fascination with immersion in the context of virtual environments is ‘anything but new’ (80), tracing a technological lineage from Abel Gance’s invention of the ‘Magnascope’ (a three projector system to surround spectators), Fred Waller’s ‘Vitarama’ (1938) (a horizontal projection system to assist fighter pilot training), Walt Disney’s ‘Cicorama’ (1958), the ‘Carousel’ and ‘Panorama’ (360º projection), IMAX 2-D, 3-D, IMAX Dome and OMNIMAX (film projected through a fisheye lens onto a hemispherical screen) (80-81). Notably, ‘immersion’ in these contexts is defined by Griffiths as the sensation of ‘entering a space that immediately identifies itself as somehow separate from the world and that eschews conventional modes of spectatorship in favour of more bodily participation in the experience, including allowing the spectator to move freely around the viewing space’ (2).[[102]](#footnote-103) In Griffiths’ media discourse, ‘immersion’ is equated with evolving techniques in the science of the image that position the audience ‘inside’ the picture, full-body reception in an environment in which the spectator is situated and increased agency which permits the subject to navigate a space freely. The characterisation of immersion as involving ‘more bodily participation’ and an experience that identifies itself as ‘separate from the world’, respectively parallels Josephine Machon’s aforementioned claims regarding the immersive theatre event, which ‘prioritises’ bodies and is identifiable by its unique ‘‘in-its-own-world’-ness. However, as I will suggest, ‘immersion’ as the term has been applied in media theory is not strictly commensurate with the idea that whole-body engagement is privileged in an act of spectatorship (much as reconciling the paradox of a spectator’s presence in ‘elsewhere’ situations problematises the claim of ‘prioritised’ bodies in immersive theatres). Crucially, this has implications for the kinds of ontologies that might be carried over into what I am designating as ‘intermedial’ immersive theatres that stage the body plus wearable technologies.

In *Virtual Art: From Illusion to Immersion* (2003), Oliver Grau examines media in the history of art that generates ‘immersive image spaces’ (6), arguing that such spaces pre-date VR and can be traced back ‘at least as far as the classical world’ (5). He argues that ‘immersion’ is central to understanding the development of media, despite acknowledging that the term is ‘opaque’ and ‘contradictory’ (13). For the purposes of clarity, he introduces a definition of immersion that is ‘mentally absorbing’, ‘a process, a change, a passage from one mental state to another’ that might be characterised by ‘diminishing critical distance to what is shown and increasing emotional involvement in what is happening’ (13). Grau’s refined definition of ‘immersion’ as a passage between ‘mental states’, unlike Griffiths’ bodily emphasis, aligns ‘immersion’ with the aforementioned common usage concept of ‘deep mental involvement’. Hence, Grau departs from my own stated interest in the term when conceived of as a passage that involves full bodily engagement. However, of particular relevance to my survey of the ontological promise of immersive media, Grau relates ‘immersion’ in VR to a calculated moment of ‘totalization’, when ‘the artwork is extinguished as an autonomously perceived aesthetic object for a limited period of time’ (339-340). Similarly, in *From Technological to Virtual Art* (2007), Frank Popper states that immersive images in interactive digital installations that situate the observer in a ‘360-degree space of illusion’ must be understood as ‘extreme variants of image media that on account of their *totality*, offer a completely alternative reality’ (181-182) [italicised for emphasis]. This desire toward ‘totality’ in different media has been linked to sensibilities evolving from Richard Wagner’s notion of the *gesamtkunstwerk* (‘total work of art’) as expressed in his paper *Das Kunstwerk der Zukunft* (*The Artwork of the Future*) (1849). In parallel developments in theatre scholarship, Josephine Machon has similarly sought to trace immersive theatres’ inherited sensibility of ‘totality’ evolving from the *gesamtkunstwerk* and the Modernist period (2013: 29). However, beyond Wagner’s notion of unifying different artistic formal elements,[[103]](#footnote-104) Grau’s conception of ‘totalization’ in regards to immersion in VR relates more precisely to the principle of concealing ‘the appearance of the actual illusion medium by keeping it beneath the perceptive threshold of the observer to maximise the intensity of the messages that are being conveyed’ (340). I would suggest that ‘totalisation’ in Grau’s lexicon is analogous to the astronomical derivation of ‘immersion’ as an act of ‘disappearance’. In this view, ‘immersion’ in VR introduces a paradox in which the medium seeks to bring about its own disappearance. While Grau delimits ‘immersion’ to transitional ‘mental’ states, the underlying desire to position the participant inside the ‘frame’ rather corresponds with the ‘theatrical’ artwork and ‘immersive theatre’ (the latter incorporating spectating bodies while frequently bringing about their concealment). Correspondingly, in Jay David Bolter and Richard Grusin’s *Remediation: Understanding New Media* (1999), they posit that VR ‘operates under the logic of transparency’ (162), offering the promise that the medium’s disappearance might leave the viewer ‘with the reality that is supposed to lie behind and beyond representation’ (162-63). Unlike antecedent mediums such as ‘traditional painting, photography, or film’, in which the viewer remains outside the frame looking in, the contention here is that VR extends upon the promise of the spectator-enveloping (and, I would suggest, inherently ‘theatrical’) image technologies of the 19th century. However, much as Gareth White has argued that claims toward ‘entering’ drama cannot be fulfilled as a physical act (since drama is an insubstantial ‘set of surfaces’ designed to provoke feeling), similarly there is nothing to be found ‘behind’ the image in VR. The ontology of immersion as physically ‘being there’ in regards to both dramatic and simulated universes represents an unfulfillable promise. However, my interest here is in artists that apply body illusions in the attempt to reconcile this ontological promise by perceptually projecting the audience’s proprioceptive sense of self ‘inside’ elsewhere situations and virtual bodies.

I would argue that it is important to clarify that the notion of ‘totalisation’ as a medium erasing itself towards seemingly ‘unmediated’ access to different content is an idea that is incompatible with particularised notions of ‘intermediality’ in contemporary theatre practice. Ágnes Pethő argues in *Cinema and Intermediality: The Passion for the In-between* (2011) that the ‘inter’ that prefixes ‘intermediality’ indicates theorizing that is focused on ‘relationships, rather than structures, on something that “happens” in-between media’ (1). ‘Intermedial theatre’ operates precisely within these ‘in-between’ spaces, the theatre becoming a conceptual and ostensibly postmodern space to deconstruct the effects of different media on the way that meaning is constructed and disseminated. As Freda Chapple and Chiel Kattenbelt argue in *Intermediality in Theatre and Performance* (2006), ‘intermediality is associated with the blurring of generic boundaries […] a self-conscious reflexivity that displays the devices of performance in performance’ (2006: 11). Innumerable and wide-ranging examples of intermedial theatre practice as it is defined here might be cited, from Rimini Protokoll’s ‘reality trend’ documentary works in which live and present ‘experts’ deconstruct other media live onstage (e.g. the critical interrogation of live television news broadcasts in *Breaking News*),[[104]](#footnote-105) to The Wooster Group’s self-aware and fragmentary repurposing of filmed performances to re-enact historical productions of canonical texts (e.g. the reclamation of Richard Burton's ‘Theatrofilm’ of *Hamlet* (1964) and recorded incarnations of other actor-Hamlets that become resurrected and re-presented in The Wooster Group’s *Hamlet*). ‘Intermedial theatre’ in this sense might be understood as a space of ‘unconcealment’ in the Heideggerian sense, where truths emerge in-between the staged mediums, with the live performers entering into a dialogue with, or forensic deconstruction of the realities (or ‘hyperrealities’) that different media introduce into meaning-making.[[105]](#footnote-106) However, the integration of VR in performance practices presents different sets of concerns because the medium (as media scholars have identified) is typically concerned with engendering its own disappearance towards the possibility that one might travel ‘beyond’ representations.[[106]](#footnote-107) The practices in Part Two, while ‘intermedial’ insofar as the performance forms become a site in which different mediums are staged, adopt VR’s logic of transparency (to varying degrees) in combination with the strategy of concealment that I have suggested is a peculiarity in immersive theatres. Within a body transfer illusion in performance, it is the perceptive disappearance of participating bodies that is staged as an illusory reconciliation of the theatrical paradox of *being other bodies*. However, I argue that the interest in these practices is in developing strategies to circumvent the significant problem of acquiring knowledge contained within other bodies.

Having highlighted VR’s paradoxical undergirding logic of ‘total’ immersion and unmediated access (which is desired, rather than actual), it will be necessary to examine how the bodily ‘self’ of the participating subject has been conceptualised in relation to the ontology of virtual media.

2.8 ‘Prioritising’ or Transcending Bodies? ‘Immersion’ in the Virtual

In *Hamlet On the Holodeck* (1997), Janet H. Murray examines the relationship between the computer and narrative form, arguing that computers have three characteristic affordances in particular: ‘immersion’, ‘agency’ and ‘transformation’. In regards to ‘immersion’ in VR, Murray applies the familiar metaphor of submersion in water and correspondingly 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’ (98). Unlike Grau’s emphasis on ‘mental absorption’, Murray aligns immersive spectatorship with whole bodily participation in an experience and, in the context of VR, polysensorial engagement with an artificial environment. She develops her thinking on the topic by suggesting that in any participatory medium, immersion creates new affordances and ‘implies learning to swim, to do the things that the new environment makes possible’ (99). In accordance with the idea of ‘submersion’ inside an ‘other reality’, Oliver Grau argues that with the ‘advent of new techniques for generating, distributing, and presenting images, the computer has transformed the image and now suggests that it is possible to “enter” it. Thus, it has laid foundations for virtual reality as a core medium of the merging “information society”’ (3).[[107]](#footnote-108) Through this understanding, VR attempts to mobilise the promise that audiences might be situated ‘inside’ information. This notion implies something more complex than ‘a passage from one mental state to another’, but rather suggests a passage ‘inside’ the simulated - an ontology that significantly corresponds with the problematic conception via immersive theatre of one’s physical passage inside a ‘dramatic’ world (the relatedness of the ‘virtual’ to the ‘dramatic’ having already been established in regards to Steve Dixon’s previously cited discourse). The promise that the flesh of the spectating body might cross the threshold and enter the simulacrum is an irreconcilable desire that has, nonetheless, sought reconciliation both in VR practices and the philosophy of simulation. In Benjamin Woolley’s quest to locate the origins of virtual reality in *Virtual Worlds: A Journey in Hype and Hyperreality* (1993), while devoting little explicit analysis to the term ‘immersion’, he cites Ivan Sutherland as a key proponent of VR in his influential papers ‘The Ultimate Display’ (1965) and ‘A Head-mounted Three-dimensional Display’ (1968). Sutherland’s ‘ultimate display’ is of relevance to developing an understanding of the ‘immersive’ desires that are entrenched in virtual media, and it has significant resonances with the immersive promise of passage ‘inside’ the ‘computer’ or ‘information’. The ultimate display was imagined as ‘a room within which the computer can control the existence of matter. A chair displayed in such a room would be good enough to sit in. Handcuffs displayed in such a room would be confining, and a bullet displayed in such a room would be fatal’ (qtd. in Woolley, 41). The fantastical imagining of a virtual space that might generate simulation-as-matter (evoking associations with popular science fiction concepts such as the ‘holodeck’),[[108]](#footnote-109) serves as a radical reconciliation of a desirable convergence that numerous subsequent commentators have expressed between the body and ‘information’.[[109]](#footnote-110) For example, in Hans Moravec’s ‘Simulation, Consciousness, Existence’ (1998) in which he reflects on the possibility of living as ‘pure computer simulations in virtual worlds’ (Moravec, par. 4). This idea inverts the promise of the ‘ultimate display’ since the matter of the body itself is transcended, becoming ‘information’. Correspondingly, philosopher Nick Bostrom’s discourse might be situated as part of a similarly gnostic tradition when he forwards three propositions in ‘Are You Living in a Computer Simulation?’ (2003: 243-255) of which he argues at least one is ‘true’. His third proposition is that ‘we are almost certainly living in a computer simulation’ (2012: 243). In Bostrom’s radical view, as a consequence of technological advancements, we may already be ‘inside’ a simulated environment as ‘ancestor-simulations’ produced by ‘posthuman’ descendants - a counterintuitive notion that would truly render VR a peculiar tautology, since in this view our bodies are always already virtual.[[110]](#footnote-111) Evidently, philosophical discourses associated with simulation and the gnostic utopian ideal of ‘leaving the body behind’ connect with related antecedent concepts such as Cartesian mind-body dualism. It is important to note, however, that these discourses that occupy an extreme variation of the ‘immersive’ desire to ‘enter information’ by dispossessing the body are entirely at odds with conceptualisation of the prioritised embodied minds that constitute the immersed participant via Josephine Machon’s ‘(syn)aesthetic’ understanding of immersive theatres. This signals that in developing a cross-disciplinary understanding of the ‘immersive’ promise of ‘entry’, concepts accrued around the term are broad enough to encompass radically oppositional philosophies, including those that ‘prioritise’ and those that troublingly dispense with the body’s ‘insistent materiality’.

In Gabriella Giannachi’sexamination of intersections between theatre, performance and digital arts in *Virtual Theatres: An Introduction* (2004), she advances the notion of the ‘hypersurface’ as the site in which virtual performance takes place. This is defined as the interchange ‘where the real and the virtual meet each other. It is materiality and textuality, real and representation’ (95).[[111]](#footnote-112) Giannachi’s hypersurface is defined as a ‘liminal space’, paralleling Murray’s definition of VR, through which the viewer can ‘enter’ the work of art, to become ‘part of it’ and ‘interact with it’ (95).[[112]](#footnote-113) Thus, while examining performance that incorporates virtual technologies, Giannachi’s evocation of the common trope of ‘entering’ the work is congruent with the promise in immersive theatre practices that one might find oneself transported to another world. However, in Giannachi’s lexicon the illusion of ‘crossing the threshold’ and ‘entering’ the artwork does not equate with ‘immersiveness’. Theatre of the hypersurface, she contends, is ‘not immersive but it simulates immersiveness' (95). Precisely what is meant by ‘immersive’ in Giannachi’s discourse must be discerned through close reading, but perhaps the most compelling interpretation is that while hypersurface theatre doubles the viewer’s presence, situating them simultaneously in the real and the virtual environment, immersivity would mean total subsumption in a simulated environment: ‘entering’ the simulacrum. Immersion through this understanding alludes to phenomena such as simulation theory (via which the flesh is transcended). In Giannachi’s vocabulary, it is hard to conceive of a medium via which the ‘immersive’ could be realisable. Giannachi further suggests that ‘virtual theatre’ has implications for the participating self, since it ‘takes place within a real location and, because of remediatisation, produces dislocation’; therefore, ‘not only does the artwork exist in multiple locations, the viewer too is able to become translocal in that they too are part of the work of art' (11). Consequently, the apparatus of VR multiplies the immersant who is present simultaneously in real and virtual environments since they are participating in both the ‘realm of the image and the sphere of the real, and may modify one through the other' (95). By this logic, none of the examples analysed in Part Two of this thesis are ‘immersive’ in the way that Giannachi designates the term, but they all simulate immersivity and produce a translocal audience member.

Postmodern and feminist media scholars in the 1990s evidenced suspicion of the kind of ‘immersion’ that VR entailed and its corollaries with Cartesian dualism, arguing that a true alternative to Descartes’s rejection of the body is an ‘embodied knowledge’ that virtual reality cannot achieve;[[113]](#footnote-114) a notion that I will seek to challenge through the philosophical problem of knowing the unique embodied knowledge of neurological subjects in Chapter 3. Many commentators have argued against particular discourses that accompanied VR’s development towards ‘forgetting the body’,[[114]](#footnote-115) its ‘replacement’ of the corpus with a ‘body image’,[[115]](#footnote-116) or the body’s technological ‘repression’.[[116]](#footnote-117) The potential threat of detachment that VR introduces between the immersant’s gaze and the body has, for many scholars, resonated dangerously with Cartesian dualism. However, Bolter and Grusin argued that VR had always been ambivalent, both Cartesian and anti-Cartesian: anti-Cartesian in the respect that the desire to experience the world ‘as others do’ is key to many VR practices and, I would add, crucial to the immersive performance forms in Part Two. As these authors suggest, ‘the virtual self repeatedly denies its own identity, its separateness from others and from the world. It does not learn by scientific study in a subject-object relationship, but by “immersion”, which produces empathy and identification’ (251). Notably, ‘separation’ has been identified as the primary feature of what Martin Jay called ‘Cartesian perspectivalism’, which concerns a peculiar but historically prevalent way of seeing in Western culture that prioritises the ocular and affords the Cartesian subject control over space from a single vantage point, enabling the viewer to see the whole picture (which I have demonstrated in Chapter 1 is a Friedian preoccupation with the ‘complete’ artwork).[[117]](#footnote-118) In contrast, Bolter and Grusin suggest that, via VR, perspective becomes the locus of *all* knowledge, because a virtual world is a simulacrum in which there is nothing to be known apart from the senses; there is nothing ‘behind’ the images (249). What is known is only what can be perceived and interacted with, thus ‘knowledge *is* sense perception’ (249). Similarly, Char Davies, in ‘Rethinking VR: Key Concepts and Concerns’ (2003), draws on Maurice Merleau-Ponty’s ‘Eye and Mind’ (1964), citing his contention that: ‘I do not see [space] according to its exterior envelope; I live in it from the inside; I am immersed in it […] the world is all around me, not in front of me’ (qtd. in Baldwin 309). Davies distils from this philosophical discourse the idea that immersion relates to the relinquishing of distance, the ‘frontal gaze’ and of the immersant’s position as a ‘disinterested so-called objective observer surveying a world separate from one's self’ (Davies, par. 17).[[118]](#footnote-119)

The notions of ‘knowledge-as-sense perception’ and relinquishing distance are critical to the use of VR to generate body transfer illusions when applied qualitatively in the arts, but the focus is oriented on collapsing the distance between one’s bodily sense of ‘self’ and the sense perception of others. I would argue that the virtual, insofar as it pertains to the practices in Part Two (Chapter 4), supports the contemporary rejection of the Cartesian self as bodies are ‘remediated’ but not denied; denial of the body, I would suggest, finds greater correspondence between Cartesian dualism and the Friedian ‘absorptive’ artwork that seeks to negate its ‘beholder’. However, the interest in the ‘theatrical’ immersive work is in developing processes and applying different media that attempts to reconstruct and access ‘embodied knowledges’ that are contained within *other* bodies. Extending on Bolter and Grusin’s notion of the ‘virtual self’, I would argue that an immersive theatre that integrates technical apparatus associated with VR connects with the medium’s promise of empathic learning. It is in the desire to generate empathy (‘perspective-taking’) using technology, that the integrity of the self is temporarily compromised – the illusory dissolution of the borders of the immersed body is intended to provide an opportunity to occupy a different position and ‘experience the problems facing others’ (247). Thus, as I will argue in Chapter 3, the porousness of the particular ‘self’ that constitutes the immersed body in the VR paradigm corresponds with the ‘theatrical’ immersive case studies in Part Two. Furthermore, I also intend to draw a parallel with neuroscientific embodiment studies that identify that perception is not demarcated by the skin. While Chapter 1 has argued towards the extended boundary of the ‘theatrical’ artwork, Chapter 3 will parallel these developments with the shifting boundaries of bodily selfhood via studies in body ownership in the scientific paradigm.

2.9 Conclusion

In this chapter, I have established that my particular interest in ‘immersive’ practices is oriented on hybridised intermedial immersive works that follow in the lineage of the ‘theatrical’ artwork. Consequently, acknowledged bodies are a necessary precondition to the case studies that I will examine in Part Two. However, the acknowledged presence of the immersant’s incorporated body produces a theatrical paradox that necessitates reconciliation; the audience member ‘dips into’ a polysensorial experience, and yet the presence of the participating body is simultaneously indispensable to the work and incongruous to dramatic illusion. The promise of bodily access ‘inside’ elsewhere phenomena represents an irreconcilable theatrical problem that nonetheless seeks reconciliation within ‘immersive theatres’. As I have identified, there is a corollary between the ontological promise that one might physically ‘enter’ a dramatic situation via immersive theatre and enter ‘information’, which is foundational to understanding the development of immersive media in the technological paradigm. Whether crossing the threshold ‘inside’ the dramatic (a problematic notion if we accept White’s argument that it is an insubstantial ‘surface’) or ‘beyond’ representation in the virtual (which is similarly problematic since there is nothing ‘behind’ the image), the audience is never entirely subsumed inside the counterfactual (as per Giannachi’s definition of ‘immersive’), but their presence is doubled; they occupy both real and dramatic or virtual space as an audience-character; however, as I will go on to suggest, scientifically-tested body transfer illusions have demonstrated the possibility of projecting the proprioceptive sense of bodily ownership onto extracorporeal objects.

My research interest in the chapters that follow is located precisely in ‘immersion’ in performance, conceived of as the sensation of ‘dipping into’ a virtual body (VB) and, to varying degrees, the concealment of one’s own participating body (analogous to the astronomical derivation of ‘immersion’ as a ‘disappearance’ behind other bodies) to generate the sensation of bodily transference. ‘Immersion’ in this sense connects with the perception of crossing the boundary of one’s own skin and ‘wearing’ the body of the other via an illusionistic transaction. Crucially, however, unlike the Friedian critical lens or Cartesian separation of mind from body, participating bodies are ‘remediated’ and not denied in the subset of practices that are my focus. This represents a strategy to generate illusory ownership over virtual bodies towards empathic learning. As I will establish in Chapter 3, the neuroscientific paradigm has evidenced that VR body transfer illusions problematise binary delineations between the ‘metaphorical’ and ‘non-metaphorical’. The virtual is incorporated as part of the self while the immersant is never unaware of their situation within an illusion. Thus, body transfer presents itself as a potential reconciliation to the problem of being within ‘elsewhere’ phenomena as another.

As I have clarified, ‘intermedial’ as I am applying the term in the context of immersive practices does not orient theatre as a space to deconstruct the effects of media, but stages VR and associated technologies while assimilating to varying degrees the ontologies of ‘transparency’ (inherent to the medium) and concealment (of the participating body). As this survey illustrates, theatre and media scholars have argued that immersive spectatorship presupposes different kinds of participating selves: from the immersant as a ‘(syn)aesthetic’ subject, which focuses our attention on the ‘fused’ perceptual experience of participants as ‘embodied minds’, to radical discourses emerging alongside the virtual, which range from gnostic simulationist or transhumanist claims of transcending bodies to opposing anti-Cartesian notions affirming that the ‘virtual self’ denies separation and precludes the possibility of ‘exteriority’ from the artwork. Having identified these contradictory notions of the immersed self, I have questioned the notion that ‘immersive’ practices ‘prioritise’ bodies *tout court*. It is my contention that while VR body transfer could be understood to imply a desirable Cartesian liberation of mind from body, the necessity of this illusion to access the ineffable is predicated precisely on the notion of mind-*as*-body. Illusionism is deployed as one solution to attempt to access remote bodied knowledges that are otherwise inaccessible. The practices in Part Two incorporate technologies that engender different kinds of body transfer illusions which operate in correspondence with VR’s undergirding promise that one might ‘do as others do’, producing the illusion of being other bodies *without separation*. For this reason, my particular conceptualisation of ‘immersion’ concerns the grouping of related methodological strategies deployed by artists to attempt to bridge epistemic divides and mobilise immersive experience as *feeling with the body of another*.

Following the extension of the conceptual frame in the post-Friedian ‘theatrical’ work to include spectating bodies as part of the art (in Chapter 1), and my clarification in this survey of the specific immersive concepts that will be carried forwards in this thesis, I will now outline a corollary between the extended artwork and the extended self, drawing on knowledge from neuroscientific embodiment experiments. The survey of scientific knowledge that follows will provide the necessary foundations to demonstrate how this knowledge is implemented qualitatively in performance and applied contexts in Part Two.

**Chapter 3 - Body-swapping, Self-attribution and Body Transfer Illusions**

3.1 Introduction

In my ‘Introduction’, I identified neurological studies in body transfer illusions (such as extending a subject’s perception through virtual reality) as a research area where immersive theatre and scientific research in embodiment productively intersect. The deployment of body illusions act as a methodological reconciliation of the paradox of the immersant’s physical presence ‘inside’ elsewhere phenomena. I make this contention specifically in regards to attempts to mobilise the ‘immersive’ ontological desire in performance that I have presented as the core focus of this thesis: namely, immersion as *feeling more fully with the body of another*. In this chapter, I will seek to evidence this performance-science interdisciplinary intersection, before scrutinising relevant exemplars of practice in Part Two. The practices in Chapters 4 and 5 take as their foundations empirically tested illusory embodiment techniques, subsequently applying them qualitatively in arts, healthcare and other contexts. In advance of examining relevant knowledge from the neuroscientific paradigm that has contributed to a greater understanding of selfhood in relation to body ownership and self-attribution, I will first seek to establish that the foundational schema of ‘body-swapping’ in narrative is correspondent with my specific conceptualisation of immersivity through which the participating ‘self’ is transformed into another. In this chapter, I argue that the desire to mobilise an exchange of bodies has surfaced as a tripartite problem that is narratological, philosophical and physical.

In fictional narrative, the plot event of the ‘body-swap’ is a historically recurrent leitmotif that has haunted the literary imagination and has been pervasively reiterated in subsequent media. In section 3.2 (‘The Narratological Problem: Body-swapping in Fiction’), I will briefly examine how the body-swap has functioned in storytelling, surveying different representations and identifying common themes. I propose that the importance of this undertaking is to develop a narratological understanding of how deployments of the body-swap have shaped perceptions around what might be valued by such an exchange. I argue that ‘body-swapping’ is correlative with ‘perspective-taking’ or empathic learning, which are foundational concepts to the rationale for applying VR body transfer illusions in performance to mobilise a virtual bodily exchange – empathic learning, as I have identified in Chapter 2, is commonly associated with the development of VR. I will argue that body-swapping is a phenomenon that literature has only been able to imagine as a conceptual act, much as via the Diderotian/Friedian conception of ‘anti-theatrical’ art, the ‘reading’, ‘viewing’ or ‘beholding’ body is excluded from the very process of empathic learning that the medium represents. As I will demonstrate in this survey, representations of body-swapping render protagonists as doubly transformed, both by their becoming other and the subsequent behavioural modifications that the experience of transformation precipitates when they ‘return to their body’. Consequently, it is my contention that the literary ‘problem’ is connected to the idea that depictions of body-swapping in representational media cannot effectively supersede the status of a ‘plot device’, or mobilise the mode of empathic learning that fictional characters are portrayed to have experienced. Conversely, the performances that integrate body illusions in Part Two are predicated on the immersive ontological promise that one might be placed ‘inside’ the transaction. Therefore, it will be important in the latter part of this chapter to turn to the scientific paradigm to develop an evidential understanding of the physiological affects of body transfer illusions. What is it about the self-deceiving experience of body transfer illusions that makes the promise of one’s bodily transformation greater than other kinds of imagined ‘as if’ experiences, and what are the implications of reformulating these techniques as an immersive mode of theatrical spectatorship?

3.2 The Narratological Problem: Body-swapping in Fiction

‘Body-swapping’ is a common storytelling device in works of fiction in which two people (or organisms) exchange minds or bodies. I situate this narrative trope in the taxonomy of ‘plot device’ as opposed to other means of classification such as ‘sub-genre’ since, as this survey evidences, examples of body-swapping can be located within the narratives of numerous disparate sub-genres including science fiction, romantic comedy, horror and crime thriller, among others. The device of the body-swap could equally be positioned as a *coup de théâtre*, associated with other plot contrivances such as the *deus ex machina* in Greek theatre. However, whereas the *deus ex machina* is an intervention that precipitates the expedient *dénouement* of a play, body-swapping has a dual function. When positioned early in a narrative structure, the body-swap tends to act as the ‘inciting incident’. Subsequently, it is common for a reversal to occur in which the protagonists return to their bodies. It is the reversal that typically functions as a *deus ex machina* (though as I will evidence, reversals do not always occur in stories with a tragic structure). The concept’s deployment in narrative ranges from a plot event to elicit farcical situations (as a result of misrecognitions etc.),[[119]](#footnote-120) to a device to evoke the uncanny in horror (e.g. the coercive apprehension of the body as a ‘host’).[[120]](#footnote-121) Given its diverse deployments, affects and presence within a heterogeneity of sub-genres, it is problematic to characterise the event of the body-swap as particular to any one ‘style’ of storytelling. I will survey specific examples across a continuum of genres to demonstrate this fact. I intend to focus my attention in this survey principally on both ‘body-swapping’ (a two-way exchange between bodies) and ‘body-hopping’ (a one-way transferral from one body to another), since this fictional phenomenon is particularly analogous to the scientific whole body transfer illusions that I will examine in section 3.4 (which are foundational to the case studies that form my critical exegesis in Part Two). Moreover, beyond being an ‘analogue’, I would argue that the ontological ‘immersive’ promise associated with one’s physical participation in an act of simulated bodily exchange in the case studies in Part Two, implies the immersant themselves undergoing a profound physical transformation. Body illusions in immersive performance attempt to mobilise the promise of ‘entering’ the body-swap transaction, when literature and other mediums have necessarily kept the ‘reading’ body exterior to the exchange – ‘reading’, as I have noted via Fried’s discourse in Chapter 1, is a mentally ‘absorptive’ activity/state, in contrast to immersive ‘theatrical’ works that are haptically incorporative of spectating bodies.[[121]](#footnote-122)

Parallel phenomena to body-swapping in works of fiction which I signpost here but do not intend to explore in detail include possessions,[[122]](#footnote-123) transmigration or reincarnation,[[123]](#footnote-124) age transformations,[[124]](#footnote-125) avatars (as the term relates to Hindu culture),[[125]](#footnote-126)impostors,[[126]](#footnote-127) clones,[[127]](#footnote-128) duplicates,[[128]](#footnote-129) and doppelgängers.[[129]](#footnote-130) I should clarify that my survey of the historical dramatic conceit of the body-swap makes reference to works that are cited on the multi-authored online articles ‘Body Swap’ and ‘Body Swap Appearances in Media’ (*Wikipedia*). The former collates a brief list of popular representations of body-swapping in fiction and drama, while the latter provides a more comprehensive chronological list of deployments of the body-swap in novels, short stories, films, television, video games and graphic novels. Additionally, some examples pertaining to film have been sourced on the *Internet Movie Database* (*IMDb*), which includes ‘Body Swap’ as a keyword via which users can search online for relevant films, television programs, and video games.

In literature, an early example of the body-swap can be located in Thomas Anstey Guthrie’s novel (written under the pseudonym ‘F. Anstey’) *Vice Versa:* *A Lesson to Fathers* (first published in 1882).[[130]](#footnote-131) This story depicts businessman Paul Bultitude exchanging bodies with his son Dick after asserting in response to his son’s anxieties about returning to boarding school that adults ‘look back to those hours passed at school as […] the very happiest time of their life!’ (1883: 21). The inciting event of the body-swap is precipitated by supernatural means: namely, a magic stone that grants its possessor one wish. Dick’s wish brings to fruition a carnivalesque ‘world upside-down’ reversal,[[131]](#footnote-132) in which Dick becomes his father and manages his business in the City, while Paul must begin the new term at his son's boarding school. The story is resolved with the restoration of each protagonist to their respective bodies, both having acquired a deeper understanding of the other. *Vice Versa* received an updated retelling in the form of children's novel *Freaky Friday* (1972) by Mary Rodgers, adapted for television in 1995, and for film in 1976 and 2003. In this story, protagonist Annabel Andrews wakes following an argument with her mother the night before, to discover that she is inexplicably inside her mother’s body. A series of misadventures ensue that are resolved with Annabel developing a greater appreciation for her mother’s struggles by performing her different roles (e.g. parenting her younger brother Ben and managing the family affairs). The novel was followed by a sequel entitled *Summer Switch* (1982), in which Annabel’s brother Benjamin body-swaps with his father. From these initial examples, I would identify the recurrent trope that a transaction of minds/bodies in the body-swap narrative is represented to causally produce empathy with the other. Correspondingly, ‘empathy’ is conceptualised within these narratives as an extreme variant of ‘perspective-taking’, in which in addition to imaginatively placing oneself ‘in another’s shoes’ (a proverb that shares obvious resonances with the ‘body-swap’), the other is known by process of profound physical transformation.

In Arthur Conan Doyle’s short story, *The Great Keinplatz Experiment* (1885), the spirits of Professor von Baumgarten and his student, Fritz von Hartmann, inadvertently switch bodies via an experiment using hypnosis that they successfully recreate to bring about a reversal. The examples I have cited thus far demonstrate that the mechanism by which characters’ identities are exchanged in works of fiction is commonly portrayed as magic or supernatural phenomena. However, unlike *Vice Versa*, *Freaky Friday,* and *The Great Keinplatz Experiment,* other examples of the body-swap in fictional literature such as Edgar Fawcett’s science fiction story *Douglas Duane* (1887) are manifested via ostensibly pseudo-scientific methods. The story’s eponymous archetypal ‘mad scientist’, Duane, lures protagonist Floyd Demotte to his laboratory, electrocutes him and hijacks his body via a quasi-electrolytic process to pursue a relationship with Demotte’s wife, Millicent Hadley. Other storytelling forms have employed the body-swap to compel a protagonist to confront historically and culturally specific social injustices; Walter Besant’s *The Doubts of Dives* (1889) features a vicissitudinous plot event in which a wealthy man exchanges bodies with a man living in poverty, instantly reversing their fortunes. The story of *Doctor Huguet* (1891) by Ignatius Donnelly (published under the pseudonym of Edmund Boisgilbert), set in late 19th century South Carolina, explores another kind of social reversal as the titular character, Anthony Huguet, an aristocratic white intellectual, exchanges bodies with a poor black man after a messianic visitation. He subsequently becomes subjected to violent acts of racism first-hand. Thus, body-swapping in these fictional narratives functions to transport characters across the borderlands between the self and the other via personality or spiritual exchanges that traverse the skin, gender lines and other socially or culturally constructed boundaries. In the process, a subject becomes exposed to the associated risks and prejudices that the occupied body endures in its specific spatio-temporal context.

I would argue that there is a corollary between the promise of the body-swap in narrative and the ontology of ‘immersivity’ as I have defined it in Chapter 2, which desires to transgress boundaries between the self and the artwork (as part of a ‘theatrical’ lineage), between the self and the dramatic (promising an impracticable physical ‘entry’ into conceptual space), or between the self and information (a desirable synthesis between the self and virtual space). While ‘immersion’ as I am conceptualising it as the promise of *feeling more fully with the body of another* pursues the notional value that narrative has assigned to the empathic knowledge generated by the plot event of the body-swap, the integration of body transfer illusions within a subset of immersive theatre practices pushes the possibilities of embodied learning further. This is because the ‘theatrical’ work is incorporative of spectating bodies. Consistent with the necessary transformation of the spectator that I have identified as attendant to immersive spectatorship in my ‘Introduction’ (when the spectator is simultaneously cast as another in a dramatic universe), the paradox of their being inside elsewhere phenomena is reconciled by body illusions that construct for the immersant the feeling of possessing a virtual body. For example, art collective BeAnotherLab’s (BAL) ‘Gender Swap’ experiment (whose practice will be explored in detail in Chapter 4) uses low budget Creative Commons licensed VR technology, permitting users to feel that they inhabit the body of a different gender. This ‘immersive’ system is based on knowledge derived from online scientific papers on embodiment from organisations such the Brain, Body and Self Laboratory (Group Ehrsson) at the Karolinska Institutet in Stockholm and Event Lab in Barcelona (‘Research Concept’, *BeAnotherLab* website). The ‘Gender Swap’ experiment involves the application of this system as an immersive ‘tool’ to investigate ‘gender identity, queer theory, feminist technoscience, intimacy and mutual respect’ (‘Gender Swap – Experiment with The Machine to Be Another’). I will progress to survey relevant evidence from the scientific papers that form the methodological foundations for BAL’s applied qualitative arts practice in section 3.4.

Following Fawcett’s *Douglas Duane*, there is a recognisable pattern in works of fiction of the body-swap plot device being coupled with malevolent scientists who exploit body-swapping to realise their nefarious intentions. The body-swap is frequently represented as the mobilisation of the scientist’s self-serving ambition pursued via treacherously experimental, untested, immoral or unethical pseudo-scientific practices. For example, in H. G. Wells’ *The Story of the Late Mr. Elvesham* (1896), medical student Edward George Eden wakes to find that he has swapped bodies against his will with elderly philosopher and ‘profound student of mental science’ (1924: 400), Egbert Elvesham. This follows Eden’s wilful consent to consume a powder that the old man had concocted. Elvesham’s ‘diabolical ingenuity’ (1924: 396) is motivated by a desire to extend his own life by occupying Eden’s body. The body-swap in this instance is a manifestation of the eccentric scientist’s desire to transcend corporeality and cheat his mortality; and this archetype has some correspondence with the character of Victor in Mary Shelley’s novel, *Frankenstein* (1818). Narratively, the plot event of the body-swap sometimes functions as the *peripeteia* of the drama in fiction with a tragic structure – at that moment when the fortunes of a character change irrevocably for the worse. Barry Pain’s *An Exchange of Souls* (1911) is a useful exemplar, in which scientist Dr. Daniel Myas fashions a machine to ‘switch souls’ between bodies. Myas’s reversal of fortune comes when he uses the machine to exchange bodies with his fiancée, Alice Lade. An accident destroys his body leaving him imprisoned inside Lade, rendering the intended transaction tragically incomplete, while Lade’s disembodied soul is left eternally in limbo. Notably, when used in a narrative with a tragic structure, the body-swap frequently either negates the possibility of the intended reversal, enacts the exchange on an unknowing or unwilling party, and/or leaves the protagonist in a detrimental position for having participated in the exchange (e.g. Eden’s inheritance of Egbert Elvesham’s dying body). ‘Body-swapping’ insofar as the concept is mobilised via body illusions in applied immersive performance, as discussed in Part Two, corresponds to a greater degree with extant body-swap narratives that depict the act as a reciprocally beneficial event of empathic learning. However, rather than merely representing positive change in a character, the applied illusionistic body-swap attempts to engender a physical transformation of the participant (a notion that requires more sustained critical scrutiny in Part Two). The exploration of tragic content in immersive performance, which I do not intend to significantly explore in this thesis, necessitates especially careful negotiation when working with unrehearsed ‘audience-characters’. Significantly, the level of responsibility that the immersive artist must demonstrate to the immersant who lends their body to a live experience is not shared by the writer of literature. Inevitably, this is because the writer does not invite others to enact a character, which affords greater freedom in literature over the selection of actions and the narrative structure. In literature the audience’s body is not typically part of the equation in the act of writing, while the anticipated bodies of audiences are essential to the process of immersive theatre-making. Furthermore, as I will go on to demonstrate through my selected case studies, the applied use of body-change illusions by artists aims to have targeted real-world impacts, such as improving communication in healthcare. Therefore the immersive work that I have selected to examine goes beyond the conceptual sphere of narrative, providing a use-value as a ‘tool’ for facilitation in contexts where empathic learning is vitally needed.[[132]](#footnote-133)

Other notable examples of body-swapping in literature include: *Ealing Miracle: A Realistic Story* (1911) by Horace Newte, a fantasy story in which two women exchange personalities; H. B. Drake's *The Remedy* (1925) in which a character with the power of mind-transference returns from the dead, occupying the body of an injured friend; *Turnabout* (1931) by Thorne Smith, in which a husband and wife (Tim and Sally Willows) switch bodies; *Laughing Gas* (1936) by P. G. Wodehouse, in which Reginald Swithin and Joey Cooley inhale laughing gas at a dentist's office to find that they have swapped bodies; *The Shadow Out of Time* (1936) in which narrator Nathaniel Wingate Peaslee exchanges bodies with a Yithian, an extra-terrestrial species that travel through time by inhabiting a host from the intended temporal destination; *The Thing on the Doorstep* (1937) by H. P. Lovecraft, a work of horror fiction in which Ephraim Waite steals and occupies the body of his daughter, Asenath Waite Derby. More recent examples include the following: *The Identity Matrix* by Jack L. Chalker (1982), in which protagonist Victor Gonser is inexplicably transported into the bodies of other people by competing alien factions; *Help! I'm Trapped...* by Todd Strasser, a series of seventeen books published between 1993-2001 in which a group of children apprehend their science teacher’s machine which enables them to switch bodies; *The Tale of the Body Thief* by Anne Rice (1992), in which Raglan James deceives vampire, Lestat de Lioncourt, into trading bodies with no intention of switching back; and finally *Gender Blender* by Blake Nelson (2006), in which Emma and Tom unaccountably switch bodies following a collision on a trampoline.

There are also innumerable examples of body-swapping in film and television. Whilst not an exhaustive list (an IMDb search with the keyword ‘body swap’ generates a list of 131 titles at the time of writing this thesis),[[133]](#footnote-134) some notable examples include: *Freaky Friday* (1976, 1995 and 2003), *18 Again!* (1988)*, Dream a Little Dream* (1989), *A Saintly Switch* (1999), *Boy Meets Girl* (2009), *La machine* (1994), *The Hot Chick* (2002), *It's a Boy Girl Thing* (2006), *Identity Theft* (2009), *The Change-Up* (2011) and *Selfless* (2015). Examples of ‘body hopping’ in television and film include: *Quantum Leap* (1989-1993), in which quantum physicist Dr. Sam Beckett leaps into the bodies of others through time and space; Charlie Kauffman and Spike Jonze’s *Being John Malkovich* (1999), in which a portal gives those who enter direct access as voyeurs to Malkovich’s subjective lived experience for 15 minutes; and *The Matrix Trilogy* (1999-2003), in which agents possess the ability to commandeer the simulated bodies of human’s connected to the Matrix.

In theatre, there are further examples of play texts which include the plot device of the body-swap. In *Prelude to a Kiss* (1988) by Craig Lucas (adapted into a film in 1992), protagonist Peter Hoskins’ wife Rita Boyle exchanges bodies with an old man, testing the depths of his affection for her beyond bodily appearances. Alan Ayckbourn has written several plays that involve characters swapping bodies; in *Body Language* (1990), glamour model Angie Dell and overweight local reporter Jo Knapton are decapitated in a helicopter accident on the grounds of a cosmetic surgery clinic. Following the incident, they regain consciousness to discover that radical Eastern European surgeon Hravic Zyergefoovc has attached Angie’s head to Jo’s body, and vice versa. Zyergefoovc typifies the archetypal representation of the unethical scientist imposing a questionable procedure upon two unknowing subjects.[[134]](#footnote-135) In this instance, body-swapping functions as a plot device to interrogate issues of body image (not unlike Lucas’s *Prelude to a Kiss*), whilst the method of the switch (a head transplant) serves a comedic function as a sight gag. In Ayckbourn's *If I Were You* (2006), unhappily married couple Mal and Jill Rodale wake one day to find that they have inexplicably swapped bodies, leaving Jill to take on Mal’s job as manager of a home-fittings store with aplomb, whilst conversely her unfaithful husband struggles with every aspect of being a woman. In the play’s *dénouement*, the *deus ex machina* of their personalities becoming mysteriously restored precipitates a new equilibrium in which they agree that they cannot ignore the experience of occupying each other’s bodies, agreeing to discuss their future ‘in the morning’ (2011: 200). This last example corresponds with the prevalent idea that the body-swap doubly transforms the participants who are changed when they return to their body having lived through a profound event of empathic learning.

Before progressing to investigate the philosophical problem of knowing knowledge that is embodied by others in section 3.3, and the physical problem of *feeling with the body of another* that seeks reconciliation through perceptual extension inside other bodies in section 3.4, I will first conclude this section by highlighting the problem of body-swapping in literature and examining what commonalities can be extracted from this survey. In narratological terms, as I have identified the ‘body-swap’ typically performs the cardinal function of the ‘inciting incident’.[[135]](#footnote-136) In Gustav Freytag's analysis of dramatic structure, the inciting incident functions teleologically to prompt ‘rising action’ (Jahn 189-190).[[136]](#footnote-137) It is the event that begins a story’s problem. Narratives with a non-tragic structure tend to include a reversal that can function as the *deus ex machina*, prompting a new equilibrium in which the protagonists return to their bodies with an expanded worldview having cultivated a greater appreciation for the other's troubles. However, in literature and other representational media, audiences are not provided with the affordance of being able to participate in the kind of profound embodied learning that is represented. The ‘body-swap’, like the narrative in which this plot event is inserted, belongs only to the conceptual realm. By contrast, body-swapping when conceived of as the deployment of body transfer illusions in ‘immersive’ performance is predicated on a more substantial claim: namely, to activate the ontological desire to cross the threshold of the skin and participate from a position that is ‘inside’ the transformational act. The promise of ‘immersive theatre’ in this specific sense operates under the logic of intensification – to feel another’s experience ‘more fully’. Furthermore, such approaches assume the foundational epistemological premise that one might better know another by accessing the elsewhere phenomena of their remediated body by illusionistic means. In section 3.4, I will examine empirically tested scientific evidence to discern whether such claims are sustainable and to understand more precisely the particular affects of body illusions when appropriated as a mode of theatrical spectatorship.

As I have highlighted, the ‘plot event’ of the body-swap in narrative is precipitated through numerous processes. However, as this survey confirms, bodily transposition is most commonly depicted as a process that is either unexplained (e.g. unknown causes, quirks of the universe), mythical (e.g. via spiritual or divine intervention), magical (e.g. wishes, curses, potions), psychological (e.g. via hypnotic induction), extra-terrestrial (e.g. the act of an advanced alien species), technological (e.g. via inventions, machines, uploading consciousness), medical (e.g. surgical procedures) or scientific/pseudo-scientific (e.g. experiments, chemical concoctions, quasi-electrolytic processes). As I have indicated, it is not insignificant that when the scientific paradigm intersects with, or initiates, the plot event of the ‘body-swap’ in dramatic works of fiction, it is commonly portrayed as either an act of *hubris*, executed without the consent of the participating parties, or an irreversible tragic event that generates the *peripeteia* in stories that have a tragic structure. In very few instances is science represented as having generated the body-swap to initiate a positive change in fiction. When the boundaries of the self are superseded in narrative by scientific means, the transcending of the body is almost always a perilous procedure. However, as I will go on to suggest in Chapters 4 and 5, first-person immersive practices such as *In My Shoes* by Sublime and Ridiculous, *The Machine to Be Another* by BeAnotherLab and *Transports* by Analogue, take as their foundation knowledge from the field of experimental neuroscience and appropriate virtual body transference as a tool to promote empathy among individuals in different social, cultural and ideological contexts. The hybridised performance processes in Part Two, which are a culmination of artist-led collaborative processes and conversations with scientists, serve to challenge these exhausted tropes in storytelling, engaging dialogically with the scientific paradigm rather than apprehending or inventing examples of scientific malpractice to function as a convenient dramatic device. The focal point of my interest in the works in Part Two is the development of immersive platforms to better communicate the experiences of neurological subjects (among others), blending scientific discovery in embodiment illusions with VR’s ontology of experiential learning to affect a positive social change (and producing what Baz Kershaw and Helen Nicholson define as transdisciplinary ‘effects’ – see footnote 52).

Before advancing to the philosophical problem of being other bodies, it is worth unpacking the incongruences and incompatibilities that arise in many of the aforementioned fictional representations of body-swapping in relation to current scientific understanding. In his *Guardian* article ‘Body Swapping: The Science Behind the Switch’ (2014), neuroscientist Dean Burnett analyses the body-swap in fiction towards this aim. He notes that if such a thing as body-swapping were possible (which, outside of virtual illusions, it is not), the consequences would likely be ‘traumatic’. Even in what he describes as ‘body-type to same body-type’ swaps, the mind would occupy ‘a brain it hasn’t developed alongside/from, so the brain has a lot of features that will be unfamiliar’. For example, Burnett posits that there would exist two sets of memories, those physically stored in the brain and memories carried over from the inhabiting other (an idea that rests on an assumption that memories *could* exist independent of the anatomy of particular brain regions). These competing sets of memories would make body-swapping a highly disorienting experience. Furthermore, Burnett suggests that the architecture of the brain would be shaped by its previous owner, thus the incoming consciousness would be located inside a brain that would have certain regions enlarged and more active than its own. Finally, he suggests that ‘the brain maps the body very precisely via the cortical homunculus,[[137]](#footnote-138) so if you’re in a different body then you’re going to have a differently configured cortical homunculus, which could only prove debilitating’ (Burnett, par. 9). However, beyond these concerns which are predicated on the hypothetical possibility of exchanging bodies, it must be acknowledged that body-swapping as a fictional concept is frequently premised upon a dualistic philosophy of mind, in which mind and brain/body are separable (though still interdependent). Embodied cognition, in contrast, assumes a monistic position, contending that the mind is embodied and situated, and thus non-transferable. I have suggested in Chapter 2 that Josephine Machon’s conceptualisation of immersive theatre’s (syn)aesthetic subject correlates with this view by arguing that the immersed spectator is an ‘holistic entity’, constituted by fused sensory perceptual experience (2009: 14). Beyond the fictional conceptualisations of body-swapping inseparable from Cartesian dualism, I argue that immersive performances that incorporate ‘body transfer’ illusions are consistent with monistic and anti-Cartesian understandings of the body-mind. Although they create the illusion of swapping bodies (and thus, it could be argued, a sense of a consciousness independent of one’s own body), paradoxically the illusion is predicated on manipulating one’s own perceptual apparatus through visual and tactile deception, as I will explore in greater detail in 3.4. The motivation to appropriate body transfer illusions to engender a body-change in the immersive practices in Part Two is not connected to a gnostic desire to escape corporeality. In contrast, these strategies are conceptualised as an affordance via which the immersant can self-deceive to *feel with other bodies*. Correspondingly, the body of the immersed spectator becomes the stage-space through which to reconstruct the sensate experience of others.

In the following section (3.3), I will move on from the narratological problem of fictional representations of body-swapping and progress to explore the philosophical problem of knowing experiences contained within other bodies. As an entry point, I will first revisit a truth claim posited by English philosopher George Edward Moore concerning ‘certainty’ and the body. Subsequently, in 3.4, I will address the physical problem of bridging epistemic divides between the embodied experiences of neurological patients and those around them, signposting a potential reconciliation to the problem of being other bodies via body image illusions in the neuroscientific paradigm. The possibility of extending perception to incorporate not only external objects, but also virtual bodies, has served to problematise the certainty that Moore’s hands were used as a demonstration to encapsulate.

3.3 The Philosophical Problem: ‘Certainty’ and the Body

In defence of ‘common sense’, G. E. Moore had set himself the task of providing proof of the existence of external objects (much like Immanuel Kant in *Critique of Pure Reason,* first published in 1781).[[138]](#footnote-139) By ‘external objects’ he meant ‘things whose existence is not dependent upon our experience’ (Baldwin, par. 28). Moore suggested in his lecture delivered at the British Academy that if he could provide proof of such objects, by association he would have also proved the existence of an ‘external world’. Of particular significance to this chapter is the way in which Moore demonstrated this proof by holding up his hands and proclaiming: ‘Here is one hand […] and here is another’ (1993: 166). From this simple sequence of gestures, he concluded that since there are at least two external objects in the world (his right and left hands), this represented proof of the existence of external objects. As Tom Baldwin has noted in regards to Moore’s evidence in an entry on ‘George Edward Moore’ in the *Stanford Encyclopedia of Philosophy*, ‘everything here depends on what is to count as ‘external’, in particular whether Moore's demonstration of the existence of his hands proves the existence of things that are in no way at all dependent upon experience or thought’ (‘Common Sense and Certainty’). Manifestly, the idea that Moore’s hands could be conceived of as independent of his thought or experience is questionable - though perhaps more agreeable is the idea that his hands are external to the bodies of the audience members that received his lecture.[[139]](#footnote-140) Nonetheless, Moore’s common sense truism that he had two hands does not qualify as an analysis of this truism. This type of argument has been subsequently designated as a ‘Moorean fact’, which can be understood as something that we think we know better than any philosophical or seemingly counter-intuitive argument to the contrary. Moore’s ‘here is one hand’ claim provided the basis for further scrutiny in Ludwig Wittgenstein’s *On Certainty* (1969), which examined the place of claims to know in our knowledge. Wittgenstein states that ‘from its *seeming* to me – or to everyone – to be so, it doesn’t follow that it *is* so. What we can ask is whether it can make sense to doubt it’ (2e). I introduce G. E. Moore’s claim here as a point of departure, since I do not intend to significantly intervene in the historical philosophical idealist/anti-idealist debates as to the existence or non-existence of material things. My position throughout this thesis is aligned with Moore in presuming that external objects do exist, but as scientific embodiment research (e.g. the rubber hand illusion) in section 3.4 will demonstrate, even ‘external’ things can be experienced as incorporated as part of the phenomenal self. What is of greater relevance to my discussion is Moore’s use of his body as a site of ‘certainty’. In the philosophy of mind, the epistemology of the body has been examined by commentators such as Thomas Nagel who famously posed the question, 'What Is It Like To Be a Bat?' (1974), as a thought experiment that sought to demonstrate the ‘subjective character of experience’ (2009: 159). Nagel argues that the kind of experiences available to a body are contingent on factors such as the perceptual faculties that it possesses.[[140]](#footnote-141) For example, echolocation is a perceptual apparatus that humans do not possess, which creates significant difficulties for a human to extrapolate what the experience of a bat might be, since our knowledge is restricted by the faculties of our own mind/body.[[141]](#footnote-142) According to this argument, there are facts that are ‘beyond the reach’ (2009: 161) of human concepts and that ‘do not consist in the truth of propositions expressible in a human language’ (2009: 161). This is precisely because they embody a particular point of view. Nagel draws attention to the centrality of the body in knowledge creation, a point that is reflected in his figurative utterance ‘beyond the reach’ and other related metaphors in the English language that give expression to the importance of embodied knowledge (e.g. the inability to ‘grasp’ something, implying a bodily engagement in the apprehension of knowledge). Following my contention that the immersive promise represents a desire to *feel more fully with the body of another*, Nagel’s argument poses a significant problem in knowing an ‘experience’ that belongs to other experiencing bodies. However, I will demonstrate that body transfer illusions might provide one such strategy to attempt to reconcile different human experiencing subjectivities, drawing on the perceptual apparatus of the participating body to create the illusion of being inside another body, as discussed in section 3.4.

Nagel’s thesis progresses to make a distinction between certain physical phenomena such as ‘lightning’ that might be said to have an objective character independent of a human viewpoint (G. E. Moore’s claim inferred that his ‘hands’ belonged to this category), and ‘experience’ which is subjective. Nagel argues that it is ‘difficult to understand what could be meant by the ‘objective’ character of an experience, apart from the particular point of view from which its subject apprehends it. After all, ‘what would be left of what it was like to be a bat if one removed the viewpoint of the bat?’ (443). According to Nagel, it is impossible to disentangle ‘experience’ from a subjective viewpoint.[[142]](#footnote-143) However, experimental psychology and neuroscientific research have suggested that subjects can be perceptually ‘teleported’, temporarily dis-owning the real body and occupying a virtually reconstructed body image. Furthermore, science has demonstrated that the subjective ‘first-person’ point-of-view in combination with other sensory feedback plays a crucial role in constructing a feeling that one ‘owns’ one’s body, as I will expound in section 3.4 below.

Pursuing the philosophical problem that Nagel’s paper raises of knowing other bodies while departing from its interspecific area of his enquiry, I would suggest that the experience of the ‘bat’ could be substituted for other kinds of human experiences that we might consider to have a particularly unique embodied understanding of the world. For example, what is it like to be an epileptic or an anterograde amnesic? In regards to the latter, how might I ‘know’ the experience of moment-to-moment consciousness without the neurological deficits that precipitate that particular mode of ‘being in the world’?[[143]](#footnote-144) Furthermore, as a practitioner engaged in immersive practice, how might I reconstruct an experience from ‘inside’ the vantage point of an amnesic for a subject whose hippocampi remain intact (a question that I pursue through my practice in Chapter 5 in relation to Analogue’s *Superlatively, Actually Awake*)? Nagel’s proposition concerning embodied knowledge could be pushed further, since even if one were to develop the associated memory deficits of an anterograde amnesic, how might one know one’s own amnesia? William Hirstein draws out this epistemic paradox in relation to various different neurological conditions in *Confabulation: Views From Neuroscience, Psychiatry, Psychology, and Philosophy* (2009) when in regards to ‘confabulators’ (those who offer false knowledge reports whilst believing them to be true) he questions:[[144]](#footnote-145)

Why don’t they know that they don’t know? Why doesn’t the Anton’s patient know that he doesn’t know how many fingers the doctor is holding up?[[145]](#footnote-146) Why doesn’t the anosognosic know that his arm is paralyzed?[[146]](#footnote-147) Why doesn’t the split brain patient know that he doesn’t know what stimulus his right hemisphere was exposed to?[[147]](#footnote-148) Why doesn’t the Korsakoff’s patient know that he doesn’t remember what he did yesterday?[[148]](#footnote-149) Why doesn’t the Capgras’ patient know that he is misperceiving his father?’[[149]](#footnote-150) (12)

This would suggest that beyond experiential knowledge that is wholly dependent on having a particular kind of body (e.g. a bat), some bodies through memory or perceptual disorders confabulate precisely because they cannot know their own experiences. For example, a subject with Korsakoff’s syndrome often cannot retain the memory of an experience that happened minutes ago. Neurological conditions such as these have drawn attention to what Vilayanur S. Ramachandran has described as the ‘illusory nature of self’ (*Phantoms in the Brain: Human Nature and the Architecture of the Mind*, xi). I will go on to suggest, in 3.4, that knowledge from neurological conditions that has evidenced the malleability of one’s sense of bodily self, has also been foundational to the possibility of artificially inducing illusory body-swapping in healthy bodies using virtual reality. Scientific embodiment experiments in laboratory contexts have been appropriated in applied performance contexts as qualitative empathy projects via which neurological subjects such as those with symptomatic epilepsy (in Sublime & Ridiculous’ *In My Shoes*) or Young-Onset Parkinson’s disease (in Analogue’s *Transports*) can better reconstruct their own experiences for others, as I will demonstrate in Part Two.

Connected to Nagel’s stated problem of knowing other bodies, there remain significant limits as to what methods practitioners might draw upon to communicate ineffable bodied experiences. Commentators in phenomenology who have explored bodily experience in health and illness, such as Drew Leder, have, in contrast to Moore’s ‘certainty’, rather sought to illuminate the uncertainty of the body. In *The Absent Body* (1990), Leder investigates ways in which our bodies are ‘forgotten, alien, uncontrollable, or obscured’, a concept that Leder acknowledges is indebted to Maurice Merleau-Ponty’s examination in *The Visible and the Invisible* (1968) (a manuscript that was truncated by the author’s sudden death in 1961). He emphasises the body’s ‘disappearance’ from our daily interactions with the world, stating that ‘certain modes of disappearance are essential to the body’s functioning. As ecstatic/recessive being-in-the-world, the lived body is necessarily self-effacing’ (69). Leder’s contention of the ‘self-effacing’ body builds on the philosophical problem that I have identified by foregrounding the extent to which one’s own body can be known when it necessarily conceals many of its vital operations from conscious awareness. Beyond subjects who ‘confabulate’, since their respective conditions mean that they cannot know that they do not know, more broadly the disappearance of aspects of the body from conscious awareness is characteristic of normal and healthy functioning. Though as Leder suggests, it is the body’s tendency toward self-concealment that ‘allows for the possibility of its neglect or deprecation’ (69). Correspondingly, as I have noted via Bolter and Grusin’s media discourse in Chapter 2, VR technology operates under a parallel logic by seeking to bring about its own disappearance or ‘transparency’ towards unmediated ‘immersion’. In one respect, the immersive practices that I am examining in Chapters 4 and 5 use technologies of concealment to reify bodily self-effacement; aligned with the astronomical derivation of ‘immersion’ as an eclipsing of one celestial ‘body’ behind another, the outer appearance of the participating body is eclipsed from itself, and substituted for a mediatised body image. This concealment, however, is an intervention to precipitate the self-deception that the immersant has been transformed and might effectively feel that they have body-swapped with another. The exemplars of practices in Part Two invite audiences to lend their full perceptual faculties to an illusion that creates a sense of embodied ownership over reconstructed experiences that the participating body has not lived through. The immersed body becomes a site of hyper-theatricality in the sense that it is acknowledged (as per the Friedian ‘theatrical’ artwork, as discussed in Chapter 1) and simultaneously invited to be another body via its positioning inside a body illusion, while knowing that no such transformation has occurred – the spectator-performer is doubled through this process.

Before progressing to Part Two of this thesis, I will conclude this chapter by interrogating the *physical* problem that underlies being other bodies or mobilising ‘body-swapping’ as a physical and not just conceptual act. Returning to Wittgenstein’s epistemic question about the status of ‘what seems to be so’ and ‘what is’ and consequently whether it makes sense to ‘doubt’, it would be beneficial for my purposes to further refine the question; does it make sense to doubt one’s hands as a site of ‘certainty’? Congruous with the anecdote from Analogue’s *2401 Objects* that initially prompted this investigation (cited in my ‘Introduction’), in which theatre audiences were asked to examine their skulls with the hands of the neuroanatomist, it is my intention to test the Moorean fact as to the certainty of one’s hand being one’s own. I will examine how bodily certainties have been challenged in the field of experimental neuroscientific research in proprioception and phantom limb pain in section 3.4.1, via the rubber hand illusion (RHI) in 3.4.2, and lastly in VR whole-body transfer illusions in 3.4.3. It is my contention that body transfer illusions, when integrated within a subset of immersive performance practices, operate as a potential illusory reconciliation of the immersive promise of entering the ‘elsewhere’ phenomena of other bodies. Notably, in the selected case studies in Part Two the motivation for these science-inspired methodological approaches is to bridge the divide between the embodied experiences of subjects and those around them. Beyond the myriad iterations of pseudo-scientific ‘body-swapping’ that I have identified in narrative fiction in 3.2, and the philosophical problem of knowing other bodies in section 3.3, what possibilities and concerns arise in theatre spectatorship from a growing corpus of knowledge in the neuroscientific paradigm that has problematised the notion that a sense of self is hard-wired? The experiments that I will be signposting in 3.4 are consistent with the classical approach in psychology of studying illusions to learn more about the processes that underlie human perception. Once I have surveyed the findings within this scientific branch of research, I will go on to argue that neuroscientists and theatre practitioners alike are exploring the possible applications of immersive technologies such as VR in their practice to relocate or extend a subject’s sense of bodily ownership. For example, neuroscience is addressing the issue that amputees often report that they view their prosthetics as ‘tools’ as opposed to feeling that they are a part of their own body - the prosthetics are used but not incorporated. However, research discussed in section 3.4 hints toward possible applications to incorporate prosthetics and transfer the patient’s feeling into an artificial limb. This pragmatic example of blurring a subject-object relationship is a preoccupation that parallels the ideology of the ‘theatrical condition’ in relation to art practices that seek to incorporate spectating bodies, as discussed in Chapter 1. I will argue that findings in scientific embodiment increasingly suggest that G. E. Moore’s claim as to the ‘certainty’ of one’s hands is no longer unassailable and hint at emergent possibilities in addressing the physical problem of bridging the epistemic divide in-between different bodily experiences. Ramachandran goes so far as to suggest that we have entered an ‘era of experimental epistemology […] and cognitive neuropsychiatry’ (*Phantoms in the Brain* 3),[[150]](#footnote-151) exploring how the brain represents knowledge and deciphering the interface of mental and physical disorders of the brain. What I would suggest is needed is an assessment of what new knowledge from the field of experimental neuroscience is revealing about how the body constructs its sense of ‘self’, and how theatre practitioners might methodologically, qualitatively and ethically engage with these findings.

3.4 The Physical Problem: Historic Body Illusions and ‘Proprioception’

The following survey is subdivided into three sections and correspondingly it occupies a greater proportion of the chapter than the previous sections. The rationale for the weighting of this chapter is to enable me to adequately map the terrain of scientific studies in body ownership, tracing an intellectual lineage and amassing for the reader a comprehensive overview of where the VR techniques that have been subsequently applied in the artistic practices in Part Two originate and how they have evolved. In 3.4.1 my focus concerns foundational knowledge derived from patients who experience phantom limb pain. In contrast, the following sections focus on body illusions conducted on healthy human subjects in laboratory contexts, artificially inducing a sense in participating subjects that external humanoid objects (in 3.4.2) or virtual bodies are incorporated as part of the body schema (in 3.4.3). These distinct but related fields of research in embodiment challenge Moorean certainty that one’s hand is one’s own, demonstrating how the body can self-deceive and how one’s sense of self can be altered to incorporate the body image of another. It is my contention that the induction of such illusions affords a potential reconciliation to the physical problem that is attendant on the immersive ontological promise that one might undergo a ‘body-swap’ or *feel with the body of another*.

3.4.1 Proprioception and Phantom Limb Pain

I should first highlight a caveat that body illusions pre-date technologies such as VR (which are deployed in the scientific experiments surveyed in section 3.4.3) by thousands of years. Aristotle’s ‘two-noses’ illusion is an early example of how a subject can deceive one’s own senses to provide the physical sensation of ‘owning’ two noses simply by crossing one’s middle and index finger and touching the bridge of one’s nose, making contact with both fingers (Lawton). In *Illusion in Nature and Art* (1973), Richard L. Gregory suggested that the feeling of owning a supernumerary nose in this simple experiment is due to an incorrect assumption about the positions of the fingers and the regions in contact with the nose. He suggests that ‘referred pain (where pains are located in places distant from the source of the trouble) may be related to this illusion’ (70). Phantom limb pain is an example of ‘referred pain’ that is particularly relevant to the discussion of body ownership, since the sufferer experiences sensations in an absent limb. Through the lens of this condition, the sense of bodily ownership is extended into the empty spaces beyond the body.

Of particular relevance to body ownership are studies in proprioception. It was not until the early 20th century that English neurophysiologist Charles Scott Sherrington introduced the term ‘proprioception’ in his most influential work entitled *The Integrative Action of the Nervous System* in 1906, which relates to our sense of ‘ourselves’. The word derives from the Latin *proprius* meaning 'own' (‘Proprioceptive’) and *receptive* meaning ‘able to receive signals or stimuli’ (‘Receptive’). As Oliver Sacks suggests in his popular science book *The Man Who Mistook His Wife For a Hat* (1985), ‘it is only by courtesy of proprioception, so to speak, that we feel our bodies as proper to us, as our ‘property’, as our own’ (47). In *Reflexes and Motor Integration: Sherrington's Concept of Integrative Action* (1969), Judith P. Swazey revisits Sherrington’s key concepts, noting that he divided the receptors of the body into the ‘surface field’ and the ‘deep field’ (118).[[151]](#footnote-152) ‘Deep receptors’ in Sherrington’s vocabulary were noted to appear adapted for ‘excitation by changes going forward in the organism itself’ (118-119). He termed deep receptors as *proprio-ceptors* and the deep field was understood as the field of proprioception. In contemporary science, the term has come to refer more specifically to the sense of knowing the positioning of one’s body in space, or as Shaun Gallagher states in *The Oxford Handbook of the Self* (2011), ‘bodily position sense which allows one to know where one’s limbs are’ (5). Alain Berthoz provides a useful definition in *The Brain's Sense of Movement* (2000), stating that ‘sensory receptors contribute to the sense of movement. The receptors located in the muscles (neuromuscular spindles, Golgi tendon organs) and the joints (joint receptors) all detect movements of the limbs. This is proprioception’ (26).[[152]](#footnote-153) I should clarify that my interest in proprioception in this section is only insofar as the word relates to one’s sense of bodily ownership. Research in body ownership is central to the physical problem I am identifying as the operationalizing of a ‘body-swap’ (which I have argued that narrative has only been able to imagine in 3.2) to reconcile the philosophical problem of knowing the body of another (discussed in 3.3). This ontological obstacle necessitates examining research in scientific embodiment for potential solutions, scoping how evolving knowledge in how bodily selfhood is constructed might precipitate new methodological affordances for immersive participation that casts the participant as another.

As I have suggested, of particular relevance to this enquiry is the study of extracorporeal awareness in regards to the neurological condition of ‘phantom limb pain’. This term was coined by American physician Silas Weir Mitchell in *Injuries of Nerves and Their Consequences* in 1872. However, as psychologist Nicholas J. Wade has argued in his article ‘Beyond Body Experiences: Phantom Limbs, Pain and the Locus of Sensation’, the features of phantom limbs were well known before they were ascribed the term in the 19th century.[[153]](#footnote-154) Wade acknowledges that early descriptions occur in medieval texts as phenomena that received paranormal interpretation before being absorbed into the scientific paradigm (2009: 243). Swiss neuroscientist Peter Brugger notes, in his chapter ‘From Phantom Limb to Phantom Body: Varieties of Extracorporeal Awareness’ (2006), that research on limb phantoms has enjoyed increasing popularity since the 1980s (172). Brugger states that a subject with a phantom limb experiences a ‘discrepancy between the spatial extents of their physical and phenomenal bodies’ (171). He also indicates that there are different categories of phantom, including ‘amputation phantoms’, ‘phantoms after spinal-cord injury’, ‘supernumerary phantoms after brain damage’, ‘phantoms of congenitally absent limbs’, ‘hemiphantoms’ (the experience of a deafferented half of one’s body) and even ‘autoscopic’ phenomena (or ‘whole-body’ phantoms).[[154]](#footnote-155) Neuroscientist Vilayanur S. Ramachandran, following his early research on visual perception,[[155]](#footnote-156) progressed to make some significant discoveries in methods of treating phantom limb pain through his experiments in behavioural neurology. Ramachandran’s approaches to experimental treatment have served to challenge the common assumption in the scientific paradigm that neuroscientific research requires expensive equipment and detailed quantitative methods, as I will proceed to illustrate through his invention of the ‘mirror box’.[[156]](#footnote-157)

In a *TED* talk in 2007, Ramachandran discusses the phenomenon of phantom limb paralysis. He states that around half of the patients that he has encountered with this syndrome claimed that they could ‘move’ their phantom limb (e.g. to wave goodbye), while the rest experience their phantom limb as ‘paralysed’. Phantom limb paralysis is a serious clinical problem that can be excruciatingly painful for the sufferer. Toward developing a treatment, Ramachandran observed in those suffering with the condition that the original arm was paralysed because the peripheral nerve supplying the arm was damaged – their actual arm had been in a sling for several months, and in a misguided attempt to clear the pain the surgeon amputates the arm, only for the patient to develop the pain in the ‘phantom self’. He elucidates his understanding of the cause of this phenomenon as follows:

When the arm was intact but paralysed, the brain sends commands to the arm at the front of the brain saying ‘move’, but it’s getting visual feedback saying ‘no’; ‘Move’. ‘No’. ‘Move’. ‘No’. ‘Move’. ‘No’. And this gets wired into the circuitry of the brain, and we call this ‘learned paralysis’ […] How do you help these patients? How do you *unlearn* the learned paralysis, so you can relieve him of this excruciating, clenching spasm of the phantom arm? Well, what if you now send the command to the phantom, but give them visual feedback that it’s obeying this command? Maybe you can relieve the phantom pain? (‘VS Ramachandran: 3 Clues to Understanding Your Brain’)

Following the philosophical problem in 3.3 of knowing knowledge that embodies a point of view, Ramachandran highlights a different problem in phantom limb patients that necessitated finding strategies via which the brain might ‘unknow’ learned paralysis. To overcome this problem, Ramachandran developed the use of mirror visual feedbackas a treatment. The first documented proposal of this idea to accelerate recovery in patients appears in Ramachandran’s ‘Phantom Limbs, Neglect Syndromes, Repressed Memories, and Freudian Psychology’ published in *International Review of Neurobiology* (1994). Notably, Ramachandran invented an inexpensive tool that he termed the ‘mirror box’; a cardboard box partitioned with a mirror. The patient places his/her phantom arm on one side of the mirror, and his/her intact arm on the reflective side. In doing so the reflection of the subject’s intact hand becomes superimposed onto the phantom hand, creating the visual illusion of the phantom hand becoming ‘resurrected’. Ramachandran then instructed patients to move their ‘real’ fingers while looking in the mirror, creating the visual impression that the phantom hand was moving. He makes the critical distinction that these patients, unlike those that might be termed ‘confabulators’, are not delusional. They know that what they are seeing is an illusion, much as they know that the missing hand is a phantom, but nonetheless the feeling of the arm’s movement is a compelling sensory experience for the patient. The astonishing effect of mirror therapy was that it relieved the pain and, in some cases, prompted the sensation of the phantom limb to disappear completely. Ramachandran posits that the reason for this disappearance is that, via this simple illusion, the brain is confronted with ‘tremendous sensory conflict’ that it must reconcile: ‘It’s getting messages from vision saying the phantom is back, on the other hand there’s no proprioception. Muscle signals saying that there is *no* arm. Motor commands saying that there *is* an arm. Because of this conflict […] the brain goes into denial. When the arm disappears, the pain disappears, because you can’t have disembodied pain floating out in space’ (‘VS Ramachandran: 3 Clues to Understanding Your Brain’). In Ramachandran and Eric L. Altschuler’s article ‘The Use of Visual Feedback, in Particular Mirror Visual Feedback, in Restoring Brain Function’ (2009), the authors review the use of mirror visual feedback 15 years after it was first introduced. Significantly, the authors claim that mirror visual feedback brings into fruition a ‘paradigm shift’ in how physicians approach neurological disorders, affirming that some damage to the brain arising from ‘short-term functional shifts’ are potentially reversible through simple non-invasive therapies; Ramachandran had significantly demonstrated that the strategic use of body illusions in healthcare contexts can play a profound role in improving the lives of patients.

Oliver Sacks has suggested that there has been much confusion about phantoms: ‘whether they should occur, or not; whether they are pathological or not; whether they are ‘real’, or not’ (*The Man Who Mistook His Wife for a Hat* 73). The illusory nature of the phantom limb has inevitably prompted broader reflections on how one’s sense of ‘self’ is constructed by the brain. Psychoanalyst Arnold H. Modell suggests, in ‘The Sense of Agency and the Illusion of the Self’ (2004), that since phantom limbs are ‘unconsciously generated constructions of the mind/brain’ and thus do not exist in the physical world, we might understand them as ‘illusory’ (Modell, par. 1). Modell expands on ‘illusions’ in subjective experience, illustrating that ‘colours’, similar to phantom limbs, might be thought of as illusions since they ‘do not exist in the physical world, they exist only in our minds’. In the physical world, what exists of ‘colour’ are objects reflecting, emitting, or transmitting wavelengths (or frequencies) of light. As Colm Kelleher notes in a *TEDEd* article, ‘color raises serious metaphysical issues, concerning the nature both of physical reality and of the mind’ (‘How We See Color’), problematizing the notion that representations of facts created by our mind/brain accurately mirror an external reality. Epistemologically, this idea problematises G. E. Moore’s ‘here is one hand’ claim cited in 3.3, since even accepting the existence of an external world, by this logic it is not possible to know the external world via subjective experience. The physical world is always already mediated by the experiencing body and the perceived world will be highly contingent on the kind of bodily faculties that one ‘owns’, as Nagel’s 'What Is It Like To Be a Bat?’ argument attests. Modell argues that since ‘the self does not extend into the physical world’ either, it could also be described as an ‘illusion’ constructed by the mind/brain, although an illusion of a very different kind to ‘colour’, which is experienced via something invariant in the physical world. Crucially, he highlights that to argue that the ‘self’ is an ‘illusion’ is not an equivalence to saying that ‘the self does not exist’, which was the position of 18th century philosophers such as David Hume;[[157]](#footnote-158) a position more recently occupied by commentators such as Daniel M. Wegner in *The Illusion of Conscious Will* (2002), in which he offers the radical hypothesis that bodily senses of agency and ownership could be illusory.[[158]](#footnote-159) For Modell, ‘self’ is a vital illusion without which one cannot live. I would suggest that the meaning of the word ‘illusion’ in this context requires careful reconsideration. As I have established in my ‘Introduction’, the word ‘illusion’ and its entanglement with experiences that are ‘not real’ (see pages 21-22) are problematic in relation to phantom limbs and body transfer ‘illusions’. Contrary to the word’s meaning as ‘an *instance* of a wrong or misinterpreted perception of a sensory experience’ (‘Illusion’), illusion becomes understood as the continuous construction of ‘self’, rather than a single constitutive event. Thus, the human body constantly ‘misinterprets’ or at least ‘reinterprets’ the external world; colour is one such product of this reinterpretation. Modell argues that our sense of self is ‘fundamentally paradoxical’, since we ‘feel that we are of a sameness, we experience an unchanging core identity that persists over time, yet the self requires that it be constantly altered in response to lived experience’ (Modell, par. 1). In *The Principles of Psychology* (1890), William James had similarly identified that unlike the perception of objects that can be perceived from alternative perspectives, there exists a sense of permanence that accompanies ‘the feeling of the same old body always there’ (1890: 242). However, as the body illusions in sections 3.4.2 and 3.4.3 suggest, the ‘always there’ of one’s body can be momentarily displaced. Modell’s hypothesis is that the continuity of self might be an unconsciously generated illusion that is analogous to the phantom limb. Nonetheless, I would argue that it is important to acknowledge that Modell is presenting the reader with an unfalsified ‘what if’ proposition, since he is formulating inferences on one’s entire experience of self through the highly particular lens of studies in phantom limb patients.

In light of the research surveyed thus far in section 3.4.1, I propose that it is productive to reimagine G. E. Moore’s performance of ‘certainty’ via another ‘what if’ scenario; what if Moore had raised a phantom hand in his lecture and announced, ‘here is one hand’ as proof of an external object in the world? In this hypothetical event, there would be no observable evidence of either the truism that Moore had a hand, or the proposition that this demonstration represents proof of external objects. Intellectually, Moore would know from his ocular sense that the phantom hand is not real, and yet the visceral experience of ‘owning’ the hand might be profound. Ramachandran and Altschuler state that while patients experiencing phantom limb paralysis recognise at a higher intellectual level that their pain cannot be ‘real’, this knowledge does nothing to reduce the pain since ‘the pain mechanisms are partially immune from intellectual correction’ (Ramachandran and Altschuler, 2009: 1698). And yet mirror feedback used to optically resurrect the phantom causes the brain to reject the pain signal as spurious: ‘it is a matter of how different signals are weighted and integrated—or gate each other—in the construction of body image and attribution of pain’ (1698).[[159]](#footnote-160) Neuroscientific research has confirmed that knowledges that constitute ‘body image’ are both conscious and unconscious, and interventions such as mirror therapy can help reconcile conflicting reports between what is observed and what is felt via other sensory modalities. Evidently, the visual resurrection of a phantom limb via mirror therapy is not akin to the concept of ‘body-swapping’ I have discussed in the fictional narratives in 3.1, but importantly it does serve to illustrate how the brain can be deceived into incorporating a visual representation of a hand into one’s ‘own’ body schema.

More recent scientific experiments have used VR to treat phantom limb pain and deceive the brain into receiving visual feedback. Consultant in Clinical Neurophysiology Jonathan Cole (et al) has pursued this experimental method by constructing a virtual reality arm that subjects with phantom limb pain can move using motion capture techniques. VR is used to generate a sense of ‘re-embodiment’ and consequently reduce the pain that emerges from a ‘mismatch between the brain's built-in map of the physical body and what is actually perceived’ (‘Phantom Limb Pain’). Such techniques shift emphasis in phantom limb pain treatment ‘away from the site of damage – the stump – to the centre of pain processing: the brain’ (Cole, par. 15). VR body illusions conducted in laboratory contexts have further evidenced that phantom-like sensations can be easily generated in non-amputees who report having experienced having an ‘invisible hand’,[[160]](#footnote-161) or an entirely invisible body.[[161]](#footnote-162) This growing awareness of the plasticity of one’s sense of bodily selfhood presents new possibilities for artists as to how the strategic deployment of different kinds of body illusions as interactive modes of immersive spectatorship might mobilise the immersive ontological promise of *feeling with the body of another*. The evolution of VR body illusions that relocate a subject’s ‘first-person’ gaze, and generate a sense of ‘whole-bodily ownership’ over a virtual body (surveyed in section 3.4.3), is a cumulative development in the research field of embodiment that highlights the possibility of illusorily incorporating the other as a part of the self. By association, these techniques are contiguous to the conceptual notion of ‘body-swapping’ in 3.1. However, beyond the ‘conceptual’ body-swap reiterated in narrative, empirical evidence has confirmed that body transfer illusions engender a profound and measurable physical change in participating subjects, who temporarily disown their real bodies while their sympathetic responses indicate a reaction when their virtual body is exposed to a ‘threat’.[[162]](#footnote-163) When embedded in performance practices, such illusions problematise the delineation that I cited from Keir Elam in my ‘Introduction’ between the theatrical (actual) and dramatic (counterfactual), since the mind accepts the counterfactual body within the order of the real, even though the subject is never consciously unaware of the deception. This phenomenon represents a further challenge to Samuel Taylor Coleridge’s oft-cited notion of an audience’s ‘willing suspension of disbelief’ expressed in *Biographia Literaria* (1817); ‘disbelief’ can no longer be understood as a constant position of the body that is interrupted by conscious will because affective reactions make little distinction between reality and artifice; responses can be elicited at a non-conscious level.[[163]](#footnote-164)

Of further relevance to body ownership, it is important to consider the obverse of the phantom limb; when a limb, rather than being absent and felt, is present and unfelt. Oliver Sacks describes the loss of proprioception in one of his own legs in *A Leg to Stand On* (1984), following a mountaineering accident in Norway which left him feeling ‘legless’. Documenting the aftermath of the accident, he writes that ‘suddenly, the “professional” attitude and persona broke down, and I realized that this “fascinating case” was me - me myself, fearfully disabled, and quite likely to die’ (6). This accident prompted the physician to involuntarily cross the doctor-patient threshold, experiencing a real-life event that like the ‘body-swap’ plot event in fiction, initiated an act of profound empathic learning - in this case, Sacks momentarily became his own patient. Performance artist, theatre-maker and hand model Andrew Dawson has similarly explored the loss of ownership over a limb in a performance project entitled *The Articulate Hand*, created in collaboration with neuroscientist and author, Jonathan Cole (previously cited in this section in his capacity as lead scientist developing the virtual reality arm). As part of Dawson’s Wellcome Trust supported research, he surveyed numerous personal stories of people and their hands, including the story of Ian Waterman who permanently lost all touch, sense of movement and position sense below the neck. In a presentation at *TEDMED*, Dawson elaborates that:

Ian Waterman was 19 when he caught a virus. It didn’t seem very important at the time. But he woke up in hospital with a terrible fever, unable to move. He wasn’t paralysed, he just didn’t know where his body was in space unless he looked at it. What the virus had done was attack a particular nerve at the base of his neck, which switched off a particular nerve that tells him his position sense, his movement and position sense in space; it’s called ‘proprioception’. […] If you put your hand in the air like this, you know you’ve got a hand. If you close your eyes, you still have a hand. If Ian closed his eyes, he hasn’t got a hand. (‘Andrew Dawson at TEDMED 2011’)

I would argue that G. E. Moore’s ‘here is one hand’ argument is further problematised through the lens of Waterman’s bodily experience that Dawson recounts in his performance. For Waterman, it is only sight that communicates the objective reality observed by others around him that he has hands. Without vision, his other senses communicate different sets of facts about the status of his body. But what if Moore shared Waterman’s experience, losing a sense of proprioception? Setting forth the ‘here is one hand’ claim presumably necessitates first having the conviction that one *has* hands, before illustrating the proof not only of their existence, but using them as evidence for a philosophical belief concerning the status of the external world via a sequence of physical gestures. For Waterman, much like the owner of a phantom limb, the body is a site of uncertainty since different sensory modalities report contradictory information to the brain. But for the neurological subject, which information is *more* correct? Is ‘seeing believing’, even if the owner of the hands has significant cause to doubt their existence based on a lack of proprioception? It would be difficult to dismiss Waterman’s legitimate cause for doubt, much as it is difficult for the physician to dismiss a patient’s phantom limb pain on the basis of lack of visible evidence. I would argue that Moore’s claim hierarchises particular schemas of knowledge over others. Any truth claim that is anchored in the body of the claimant is dependent upon the kind of body that they own, its particular sets of integrations, and its capacities and affordances within its particular environment.

Up until this point I have sought to test Moore’s epistemic use of his hands drawing upon knowledge derived through the unique experiences of phantom limbs and loss of proprioception. I will now progress in section 3.4.2 to consider techniques that have artificially induced the sensation of a humanoid inanimate object’s incorporation as part of the body, focusing on Matthew Botvinick and Jonathan Cohen’s rubber hand illusion (RHI). I will demonstrate that this research suggests that, even in healthy bodies, one’s sense of bodily self is malleable and can temporarily feel as though an external object is part of the bodily self.

3.4.2 The Rubber Hand Illusion (RHI)

Psychologist Manos Tsakiris suggests in his chapter ‘The Sense of Body Ownership’ (2011) that scientific research on the bodily self ‘has only recently started to investigate how the link between a body and the experience of this body as *mine* is developed, maintained, or disturbed’ (Gallagher, *The Oxford Handbook of the Self* 181). The rubber hand illusion (RHI) is an experimental paradigm that has played a crucial role in this field because it allows controlled manipulation of body ownership. RHI permits an external humanoid object to be ‘treated, rather than simply recognized’ as part of a subject’s own body under experimental control. According to Tsakiris, it is ‘one of the few viable ways of investigating body ownership scientifically’ (Gallagher 2011: 182). RHI as a paradigmatic model parallels neurological syndromes such as asomatognosia via which one does not recognise one’s own body-parts, and somatoparaphrenia in which neurological subjects deny ownership over a limb or one half of the body.[[164]](#footnote-165) In the latter case, even when presented with undeniable evidence to the contrary, patients confabulate to account for who the body-part ‘really’ belongs to and how it came to be attached to them.[[165]](#footnote-166) Via both the RHI paradigm and these neurological syndromes, G. E. Moore’s certainty encapsulated by his hands is further problematised, since the healthy body can incorporate external objects as part of the body schema while others who experience monothematic delusions misrecognise or repudiate limbs despite overwhelming visual evidence to the contrary.

The RHI paradigm originates from Matthew Botvinick and Jonathan Cohen’s paper ‘Rubber Hands ‘Feel’ Touch That Eyes See’ (1998) published in *Nature*, in which the authors reported the results of an experiment that referred tactile sensations to an alien limb. This experiment demonstrated a ‘three-way interaction between vision, touch and proprioception’ (756). Ten subjects were seated with their left arm resting on a table. A screen positioned beside the participant’s arm concealed it from the subject’s vision, whilst a rubber life-sized model of a left hand was positioned in front of them on the visible side of the partition. Both their real hand and the artificial hand were stroked with two paintbrushes synchronously. After ten minutes, participants were asked to complete a two-part questionnaire containing nine statements about the perceptual effects of the experiment (presented at random) that they could either confirm or deny on a scale between ‘agree strongly (+++)’ and ‘disagree strongly (- - -)’. Botvinick and Cohen reported that the responses indicated that ‘subjects experienced an illusion in which they seemed to feel the touch not of the hidden brush but that of the viewed brush, as if the rubber hand had sensed the touch’ (756). The authors highlighted that this experiment is closely related to Ramachandran’s work with mirror visual feedback surveyed in section 3.4.1, belonging to a class of perceptual effects that they suggest involves ‘intersensory bias’. They also signpost antecedent reports that the body is distinguished from other objects as belonging to the self by its ‘participation in specific forms of intermodal perceptual correlation’ (756), such as Michael Lewis and Jeanne Brooks-Gunn’s *Social Cognition and the Acquisition of the Self* (1979) and Lorraine E. Bahrick and John S. Watson’s ‘Detection of Intermodal Proprioceptive-visual Contingency as a Basis of Self Perception in Infancy’ published in *Developmental Psychology* (1985). Botvinick and Cohen state that those participants who referred their tactile sensations to the rubber hand consistently reported the object as ‘belonging’ to themselves - 80% employing terms related to ‘ownership’ in their written descriptions of the experience. This mislocalization of one’s hand toward the fake hand has been described as ‘proprioceptive drift’ (Tsakiris and Haggard 2005).

While phenomenology has provided useful descriptive characterisations of embodiment, psychological research in self-attribution and body ownership has provided new tools to generate findings that are empirically tested.[[166]](#footnote-167) Consequently, the RHI experiment has been replicated and modified many times by scientific researchers to test different aspects of cognition, affect and behaviour.[[167]](#footnote-168) Of particular interest in relation to the RHI paradigm is the question of how ownership over a new body-part might serve to alter the experience of one’s own body. One possibility that Tsakiris identifies is experiencing the rubber hand as an additional supernumerary limb (akin to the additional nose experienced via Aristotle’s aforementioned body illusion);[[168]](#footnote-169) but he goes on to argue that behavioural/introspective measures have suggested that the rubber hand rather ‘replaces’ the real hand ‘in terms of both phenomenal experience and physiological regulation’ (2011: 183-4).[[169]](#footnote-170) Accordingly, participants in these experiments did not report that they have three hands, but instead they ‘felt as if their own hand disappeared’ (2011: 184), and for this reason Tsakiris argues that RHI brings about ‘incorporation’ and ‘replacement’ rather than ‘extension’ (2011: 184). The notion of one’s hand feeling as though it has been replaced with another ‘hand’ located outside of the body through a perceptual illusion has obvious resonances with the concept of body-swapping. Furthermore, it elides with the immersive ontology I have advanced, as well as the astronomical derivation of ‘immersion’ that I have signposted in Chapter 2 as the eclipsing of a celestial ‘body’. As I indicated in section 3.2, the body-swap plot event in narrative has typically been deployed to transport characters across the borderlines of the self and other towards radical empathic learning. However, it is not a ‘character’ but the participating subject that undergoes a temporary transformation of self via RHI, much as it is the immersive theatre audience that must necessarily undergo a transformation of some kind to illusorily access elsewhere phenomena. Correspondingly, the relevance of this paradigm to my own argument, which frames immersive participation as the promise of *feeling more fully with the body of another*, is that it distinguishes simple emergent approaches via which participants might feel beyond their skin courtesy of proprioceptive drift and experience the sensation of owning the hand of another – thereby moving towards a position of greater empathy and understanding. In regards to the potential social impacts of embodiment, it is notable that in the field of experimental psychology, RHI has been tested to investigate whether owning other kinds of bodies might alter implicit attitudes towards different body types with results that have indicated positive short-term effects.[[170]](#footnote-171)

Having identified research in which the RHI paradigm has evidenced the malleability of one’s sense of bodily self to incorporate external objects, problematizing G. E. Moore’s certainty regarding one’s hands as external objects, in the following section I will survey embodiment research in the neuroscientific paradigm using VR that has enabled subjects to ‘own’ the whole-body of another. It is my contention that these methods are illusorily operationalising the perception of a body-swap in a way that narrative has only been able to imagine, further hinting at possible simulated reconciliations of the philosophical problem of knowing other bodies. This research has formed important foundations for new immersive modes of interactive spectatorship in the qualitative applied performance practices that I will go on to analyse in Part Two.

3.4.3 ‘Whole Body’ Transfer Illusions

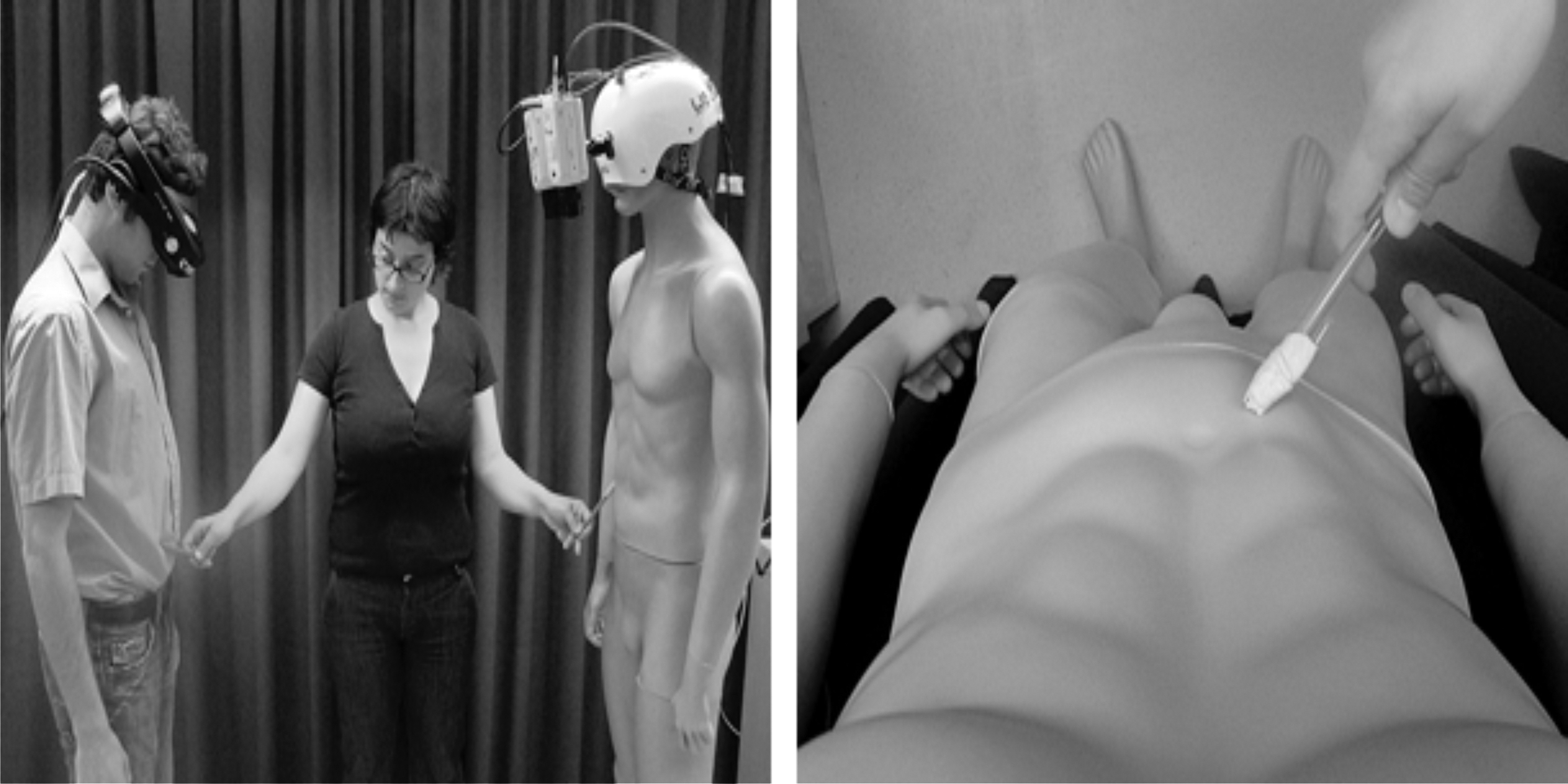


Fig. 1:Experimental setup to induce illusory ownership of an artificial body (left image). The participant wearing the HMD observes the mannequin's torso from the ‘first-person’ perspective (right image).

In the scientific paper ‘If I Were You: Perceptual Illusion of Body Swapping’ (2008), Valeria I. Petkova and H. Henrik Ehrsson acknowledge that Botvinick and Cohen’s rubber hand illusion discussed in section 3.4.2 was formative to their approach in developing whole-body illusions using VR. They conclude that the ‘temporal and spatial patterns of visual and somatosensory signals play an important role in how we come to experience that a limb is part of our own body’ (Petkova and Ehrsson, par. 2). Additionally, they suggest that the ‘first-person’ perspective is a crucial determining factor in how we perceive our body, stating that ‘when we look at ourselves directly, our limbs and body always present themselves in certain orientations because our eyes are fixed to our skull’ (1). This latter hypothesis is founded on both antecedent notions set forth by American psychologist James J. Gibson (1904–1979) in *The Ecological Approach to Visual Perception* (1979), as well as Ehrsson’s previous experimentation with VR HMD’s; for example, in ‘The Experimental Induction of Out-of-Body Experiences’ (2007), Ehrsson documents the results of an experiment in which he artificially constructs the illusion of locating someone ‘outside’ of their bodies using video headsets connected to two cameras that provide a stereoscopic view of the subject’s back. Using two plastic rods, Ehrsson simultaneously stroked the participant’s chest and a location behind their back. While they could feel the rod touching their chest, in the video headset they could only see Ehrsson’s arm manoeuvring the rod behind their back to simulate rubbing the subject’s back without touching them. In combination, this elicited the sensation in subjects that that they were sitting in a location behind their actual body. A similar experiment was undertaken by Bigna Lenggenhager and Olaf Blanke (et al), reported in ‘Video Ergo Sum: Manipulating Bodily Self‐consciousness' (2007), in which subjects wearing head-mounted displays (HMDs) were presented with a view of themselves from behind. When the subject’s back was stroked synchronously to the virtual body seen, participants in the experiment reported that the tactile sensation caused a proprioceptive drift toward the virtual body. These illusory relocations of the subject to an extracorporeal vantage point in an artificially induced ‘out-of-body’ experience are significant because they suggest that the experience of feeling localised inside the physical body strongly relates to one’s first-person visual perspective in conjunction with correlated multisensory information from the body. In a commentary by Greg Miller, entitled ‘Out-of-Body Experiences Enter the Laboratory’ published in *Science* magazine, Peter Brugger contends that while these studies do not fully replicate the kinds of experiences in which people report ‘an enormously compelling sensation of separation from the body’, these illusions may be ‘as close as it is possible to get in the lab’ (1021), and in addition, as close as one might get via the application of related techniques applied in the performance paradigm, as I will go on to discuss in Chapter 4.

This knowledge formed the foundations upon which Ehrsson and Petkova hypothesised that it would be possible to induce the illusion of owning an entire body other than one’s own. In the aforementioned paper, ‘If I Were You: Perceptual Illusion of Body Swapping’, the researchers set out to evidence that whole-body ownership can be similarly achieved through the ‘experimental manipulation of the visual perspective in conjunction with correlated visual and sensory signals being supplied to the respondent's body’ (1). This paper documents five VR experiments conducted at the Karolinska Institutet in Stockholm to test this hypothesis. ‘Experiment #1’ aimed to demonstrate the possibility of eliciting the illusion of ownership of an entire body using two CCTV cameras attached to a life-sized mannequin in a position corresponding to the mannequin’s eyes. Via the head-mounted display, participants in the study could see a first-person live relay of the mannequin’s torso as if it belonged to their own anatomy (see Fig. 1). A short rod was used to repetitively stroke both the participant’s abdomen (concealed from view by the HMD) and the mannequin’s abdomen (observed via live video feeds relayed to the participant through their HMD). Data was subsequently gathered from the subjects who completed a questionnaire affirming or denying the perceptual effects on a seven-point Likert scale.[[171]](#footnote-172) ‘Experiment #2’ gathered objective physiological evidence for the illusion of the subjects owning the mannequin’s body by measuring anxiety via skin conductance response (SCR) when the mannequin was subjected to physical threat.[[172]](#footnote-173) These autonomic responses evidenced that the subject felt that the mannequin’s torso belonged to them – and by association that the threat was to their *own* body.[[173]](#footnote-174) ‘Experiment #3’ was a control experiment to disqualify the possibility that the threat-evoked anxiety response in ‘Experiment #2’ was isolated only to the body part that received tactile stimulation. ‘Experiment #4’ tested the prediction that the body would need to look human to be experienced as one’s own. The SCR results confirmed that the illusion did not work with objects that do not resemble a human body ‘such as boxes, chairs and tables’ (4) – thus we can extrapolate from these results that body transfer illusions are accompanied by the limitation that subjects can only experience human-like bodies as incorporated as part of themselves. From this evidence, we could also conclude that VR body transfer illusions cannot yet generate the sensation of owning non-human bodies, so these techniques certainly do not resolve Nagel’s thought-experiment regarding interspecific knowledge. However, it is my contention that they provide potential models of immersive spectatorship via which individual spectators might feel transformed into other kinds of human bodies (as I will now suggest Experiment #5 indicates). Finally, and perhaps most correlative to the conceptual ‘plot event’ of the body-swap I surveyed in section 3.2 of this chapter, ‘Experiment #5’ tested the possibility of a human-to-human body-swap experience in which participants perceive themselves as ‘localized in another human’s body (the experimenter’sbody) during the performance of everyday actions’ (4). Strikingly, the results of this final experiment suggested that the illusion was ‘cognitively impregnable’, meaning that when presented with one’s real body whilst experiencing ownership of the experimenter’s remediated body, it was possible for the participant to ‘shake hands with themselves’ (4) without the illusion of owning another’s body breaking down. Like ‘Experiment #2’, objective quantifiable data was obtained via the method of measuring the subject’s SCR when both their real and virtual bodies were presented with a threat. The results of this physiological test suggested that the participants’ emotional systems ‘reacted more strongly when the new body was threatened than when their own body was under threat’ (5). Despite the subject’s intellectual recognition of the appearance of their real body through the video headset (which could be readily identified by their clothing etc.), the participant’s unconscious responses were significantly influenced by experiencing the experimenter's body from the first-person perspective (5). Relating back to the earlier example of Ramachandran’s experimental research in phantom limb paralysis, a subject’s ‘intellectual’ or conscious knowledge that they are missing a limb did nothing to alleviate the pain experienced in their phantom. Critically, it was the use of mirror visual feedback that played a crucial role in the treatment of phantom pain. Cumulatively, the importance of visual feedback to body ownership through this survey becomes increasingly apparent, a point that is reaffirmed by evidence that suggests that RHI experiments have limited effect in altering the sense of body ownership in blind participants in scientific papers such as ‘Rubber Hands Feel Touch but Not in Blind Individuals’ (2012) by Petkova, Zetterberg and Ehrsson.[[174]](#footnote-175) Further to the importance of vision, according to Ehrsson and Petkova, there are three critical conditions for eliciting the perceptual illusion of owning another’s body: ‘(i) a continuous match between visual and somatosensory information about the state of the body; (ii) the usage of a sufficiently humanoid body; and (iii) the adoption of a first person visual perspective of the body’ (6). Only by incorporating all three conditions can a subject fully experience the illusion of body transfer - a point that I will return to in my analysis of body transfer experiences in immersive performance in Chapter 4.

Petkova and Ehrsson signpost different potential applications for their findings:

Experiencing swapping bodies with other individuals could provide a valuable tool for research on body image disorders or self-identity in social psychology. Likewise, experiencing ‘becoming’ a humanoid robot in tele-robotics and feeling ownership of simulated bodies in virtual reality applications would probably enhance user control, realism, and the feeling of ‘presence’ (7).[[175]](#footnote-176)

The use of body transfer to create in the user the feeling of ‘presence’ across distances (or telepresence) has already been exploited in different contexts such as medical environments. For example, in an online article published on *Medium*[[176]](#footnote-177) by Rémi Rousseau, entitled ‘Virtual Surgery Gets Real: What the Oculus Rift Could Mean for the Future of Medicine’, he details Dr. Thomas Gregory’s use of synchronised GoPro cameras, which are mounted on his head to record a surgical procedure. Students can subsequently get a first-person view of the surgery from the surgeon's perspective wearing a HMD. Evidently, this example does not meet all three of the critical conditions that Ehrsson and Petkova identified for body transfer by which the medical student might feel that the surgeon’s hands are their own; nonetheless, they occupy his first-person viewpoint and see the surgery ‘through the eyes of the surgeon’. However, of particular relevance to this thesis are the potential applications of body transfer illusions in immersive performance contexts. Artists Lundahl & Seitl cite Ehrsson as influential to their notion of the ‘immersive’ in regards to emergent methods of dislocating what they term the ‘situated self’ of the audience - an idea that has some correspondence with Giannachi’s description of the translocality of the participating self in VR theatre. But their particular interest concerns the idea that different types of spectating self are constituted by immersion in different situations; therefore, there is a related emphasis in their work on science-inspired approaches using virtual reality equipment such as video goggles and binaural sound to transform the spectator (Machon, *Immersive Theatres* 185-186). Beyond the use of body transfer illusions in science to empirically test different biological mechanisms that construct a sense of bodily selfhood, in Part Two I will analyse selected case studies to determine how certain artists are qualitatively appropriating related techniques from scientific embodiment. I will question, in regards to both my own practice and the adjacent practices of other theatre-makers, how illusions of body-ownership are being deployed in different contexts as an applied practice and evaluate what possibilities these immersive approaches present.

**Part Two: Case studies**

Introduction to Part Two

In Part One, I have traced the lineage of immersive theatre via Michael Fried’s critique of the ‘theatrical’ artwork in Chapter 1. As part of a theatrical genealogy, ‘immersive’ practices become associated with incorporating the participating body and its states inside an artwork (hence the ‘theatrical condition’). However, beyond simply acknowledging ‘beholding’ bodies, attendant to the spectating body’s crossing of the threshold ‘inside’ immersive theatre, a paradox emerges in response to which the immersive form seeks reconciliation; the promise is that the audience member’s real body enters a fictional premise while corporeally grounded in the theatrical situation. As a result, the acknowledged presence of the spectator is manifested as a theatrical problem (as noted in Chapter 2 via Nield and Ridout’s discourse in theatre scholarship), since the insistent corporeality of the audience’s body resists the dramatic illusion that it might be ‘other’and ‘elsewhere’. I argue that a nascent subset of performance practices incorporates immersive technologies such as VR and sensory deprivation to ‘eclipse’ the actual body with a remediated virtual body image (consistent with the astronomical derivation of ‘immersion’ as an act of concealment). These performance modes carry forwards VR’s logic of ‘transparency’ examined in Chapter 2, towards permitting access to different phenomena. The primary interest that I am identifying through the selected artists explored in Part Two is in finding methods of illusorily accessing ineffable knowledge contained within other bodies. The practices that are my focus in the second half of this thesis deploy some of the intersensory techniques applied in the empirically tested body transfer illusions surveyed in Chapter 3 (e.g. Henrik Ehrsson’s VR whole-body illusions), which are reconceptualised as a mode of theatrical spectatorship. These approaches enable participating audiences to self-deceive, temporarily altering the sense of body-ownership to incorporate other remediated bodies as part of the phenomenal self without separation. As I have suggested in Part One, the motivation to mobilise an illusory body-swap of this order is to induce empathic learning by constructing a sensate impression of the immersant’s relocation inside different kinds of simulated bodies; these virtual bodies are, in turn, a mediatised trace of the body of origin (whether a live feed in real-time or a pre-recorded body image) that occupies and inhabits a spatio-temporal circumstance that does not belong to the participating body (i.e. the feeling of being a different body in an elsewhere environment). My particular interest in this thesis is in artists who apply these approaches to generate knowledge that necessitates possessing certain kinds of bodies – for example, the unique bodies of different neurological subjects. The practical case studies that will be the focus of my analysis in Part Two draw on the audience member’s intermodal perceptive faculties to create the illusion of transgressing their body’s borderlands to feel with the body of an epileptic (Sublime & Ridiculous’s *Waking in Slough*), for a wheelchair-bound dancer to dance on their feet (BeAnotherLab’s *The Machine To Be Another*), or to own the right hand of someone living with Young-Onset Parkinson’s disease (Analogue’s *Transports*). It is my contention that the ‘body-swap’, when operationalised in immersive performance via body transfer illusions, becomes an effective applied methodology to prompt the perception that the impossible ontological promise of *feeling with the body of another* has been temporarily actualised.

**Chapter 4: Sublime & Ridiculous’ (S&R’s) *In My Shoes*, and BeAnotherLab’s (BAL’s) *The Machine To Be Another* (TMTBA) – Immersion and Neuroscientific Interaction Protocols**

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Fig. 2: *Waking In Slough* at Battersea Arts Centre (London), Fig. 3: BeAnotherLab’s *The Machine To Be*

*Scratch* performance. *Another.*

4.1 Introduction

In this chapter, I will investigate the parallel practices of Sublime & Ridiculous’s (S&R) *In My Shoes* series of interactive documentary performances and interdisciplinary collective BeAnotherLab’s (BAL) performative telepresence experiments, *The Machine To Be Another* (*TMTBA*) and the *Gender Swap*. It is my contention that these practitioners unequivocally employ protocols from the neuroscientific embodiment experiments surveyed in Chapter 3, using low budget technologies such as virtual reality (VR) video goggles in combination with multisensory stimulation as a methodology to engender in audiences the sensation of ‘owning’ bodies other than their own. Correspondingly, these science-inspired applied practices appropriate empirically tested illusions in the attempt to actuate immersive ontology as I have defined it throughout this thesis as *feeling more fully with the body of another* in both the performance paradigm and other contexts towards particular social objectives. S&R utilise body transfer illusions to reconstruct the remote non-normative experiences of different individuals such as traumatic brain injury patients (TBI) for public, non-public and often highly targeted audience groups (e.g. the TBI subject’s family or professional network of medical support). In section 4.2 (‘Origins of Sublime & Ridiculous’s *In My Shoes*’), I will trace the origination of S&R’s *In My Shoes*, demonstrating how embodiment illusions are reframed as a mode of immersive participation in performance, initially to enable artist Jane Gauntlett to communicate and re-stage her own embodied experiences of epileptic seizure to others. I will offer a succinct account of my first-person experience of being ‘Jane’ in a performance of *Waking in Slough* in section 4.3 (‘*Waking in Slough*: A First-person Account of the Experience). In section 4.4 (‘Mentoring and Facilitation – Applications of S&R’s *In My Shoes*’), I will evidence how S&R’s techniques are being implemented as an applied practice, or what they term an ‘alternative communications device’ to facilitate subjects in relating their embodied experiences to others via a creative process that is modelled on person centred planning (PCP) in healthcare. In section 4.5 (‘BeAnotherLab’s *The Machine To Be Another* (*TMTBA*)’), I will scrutinise international art collective BeAnotherLab’s (BAL) open-source empathy building system, *The Machine To Be Another* (*TMTBA*), as a practice that is adjacent to S&R’s. *TMTBA* is an IVR platform developed to allow users to experience the illusion of exchanging bodies with other participants. The collective’s working methodologies similarly take as their foundations protocols in whole-body ownership developed in the neuroscientific paradigm that I have surveyed in 3.4.3, mobilising the conceptualisation of immersive ontology that I have outlined as the actuation of a VR ‘body-swap’. Illusionistic strategies that aim to realise this ontology become a framework in the collective’s practice through which to cultivate ‘self-understanding, empathy and tolerance’ (‘The Machine to Be Another - Artistic Experiment’). In section 4.6 (‘*The Machine*’s Interaction Protocols: ‘Body-change’ and ‘Body-swap’’), I will survey the requisite components that comprise the *TMTBA* system and elucidate its different interaction protocols that the collective define as ‘body-change’ and ‘body-swap’ experiments. I will then progress in 4.7 to an examination of BAL’s aims underlying their project (‘TMTBA – Aims’), before in section 4.8 scrutinising evidence that illustrates *TMTBA*’s diverse applications (‘*TMTBA* *–* Applications’). *TMTBA* is being applied in performance contexts, but also as a ‘tool’ with diverse applications in other sectors such as conflict resolution, to promote empathy across borderlands of race, gender, intergenerational trauma etc. and in the healthcare sector as a resource to aid research in pain tolerance and rehabilitation. As I will seek to demonstrate, while conceived of as ‘art projects’, the different uses of both BAL’s system and S&R’s alternative communications device suggest that these hybridised immersive practices create some difficulty in neatly delimiting the work to discrete paradigms of activity or knowledge creation – hence, BAL’s description of the team that makes up the collective as an ‘antidisciplinary group of artists’ (‘Team’). Consistent with Fried’s critique of the ‘theatrical’ work, these immersive practices occur not only ‘in-between’ the arts, or between art and science in terms of their collaborative interdisciplinary performance-making processes, but the techniques are subsequently applied across multiple fields of research endeavour. In section 4.9(‘*TMTBA* – Access’), I will highlight how BAL propagates their methodological approach to bodily immersion by disseminating the digitised components of *TMTBA* to reconstruct their hardware system via downloadable data online that can be 3D printed and assembled. This enables other practitioners in widely variant global contexts to replicate and use ‘The Machine’ for non-commercial applications that may provide wider social benefits. In 4.10 (‘Conclusion – Body Transfer Illusions as an Immersive ‘Tool’’), I will draw conclusions from the approaches of both companies. In particular, I will argue that these practitioners use science-derived illusions qualitatively as a mode of spectatorship that might be understood as an extreme variant of ‘perspective taking’, shifting the perceived boundary not only between the ‘beholder’ and artwork, but between the audience member’s phenomenal self and others.

I contend that the methodological approaches to immersion within the practices of S&R and BAL are an attempt to circumnavigate the kinds of epistemic obstacles I have identified in Chapter 3 as the narratological, philosophical and physical problems of knowing knowledge that is bodied. Following Thomas Nagel’s previously cited problem of accessing knowledge that is inseparable from possessing certain kinds of bodies, I argue that the practices in this chapter illustrate that reconstructing the experiences of other human bodies can be achieved via illusory body-ownership which, whilst ‘illusory’, is received by the sympathetic system of the participant within the order of the real. While not without limitations, body transfer illusions when reformulated as a mode of immersive spectatorship in performance can be understood as a strategy to reconcile different experiencing subjectivities, drawing on the perceptual apparatus of the audience to create the illusion of being inside another body. Key to my analysis in this chapter is a comprehensive examination of practical exemplars to determine what evidence exists as to the effects of telepresence or virtual body (VB) transactions.

4.2 Origins of Sublime & Ridiculous’s *In My Shoes*

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Fig. 4: *Waking In Slough* at Accidental Collective’s Fig. 5: *Waking In Slough* at The New York Academy of

*Pot Luck #6*, Gulbenkian Theatre (Kent). Medicine, Festival of Medical History & the Arts.

Sublime & Ridiculous (S&R) is a UK-based theatre company founded by artist Jane Gauntlett, whose projects have involved collaborations with Annabel James (Marketing/Development Assistant and Assistant Producer), Zoe Dawes (an advisory partner), Michael Vitaly Sazonov (U.S. Associate, Producer & Artist) and Associate Producers Chloe Courtney and Ruby Glaskin (among others). The S&R website states that the company was ‘born out of a desire to communicate the incommunicable’ (‘About’, Sublime & Ridiculous). It is reasonable to infer that that which is ‘incommunicable’ equates to that which is unknowable. Concomitantly, the company’s interest expressed through the discourse surrounding their practice in making bodily unknowns known accords with the Heideggerian notion of Art cited in Chapter 2 as a truth event focused on the ’unconcealment’ of things in their essence. S&R’s practice also engages directly with the philosophical problem I have signposted in Chapter 3 of accessing knowledge that necessitates possessing a particular kind of body image or body schema.[[177]](#footnote-178) However, the conveying of the experience of unique bodied knowledge to audiences precipitates a paradoxical logic; another’s first-person experience must be recreated for others through tactics that promote bodily self-deception because, in order to communicate the ‘truth’ of other bodies (the ‘incommunicable’), subjects must first seem to become the other body. The production of illusory body-ownership in S&R’s work is a strategy to enable audiences to self-deceive as a means of accessing a truth that is mediated by the artist/subject. As I will demonstrate in section 4.3 through my participation in a one-to-one performance entitled *Waking In Slough*,[[178]](#footnote-179) what S&R attempt to render sensate for different audiences are the embodied experiences of those who may be susceptible to becoming socially isolated as a result of their situation within a particular type of bodily experience. In section 4.4, following my examination of *In my Shoes’* intersensory mode of immersive spectatorship, I will analyse the further applications of the work, questioning what processes and procedures are employed in collaborating with individuals to aid them in communicating their experiences and aspirations to their circle of support.[[179]](#footnote-180) As I will demonstrate, immersivity via S&R’s work corresponds with all the related strategies utilised to bridge an epistemic divide between the body that ‘knows’ a particular experience, and one that cannot know without attempting to embody its unique point-of-view.

*In My Shoes* is a project initiated by Gauntlett in 2011 to ‘help people in extreme, unique and difficult situations communicate their experiences to wider society through art and first-person documentary’ (‘About’, Sublime & Ridiculous). The series is a continually expanding collection of interactive performances that deploy varying kinds of low-cost audio-visual technologies (HMDs, portable media players, headphones etc.), the distribution of multi-sensory stimulation and documentary story-telling to situate individual audience members in the virtual bodies of the real subjects that have participated in the theatre-making process. In a personal interview I conducted with Gauntlett on 19 August 2014, she stated that the use of technology in her work functions methodologically to ‘immerse’ audiences, ‘to involve them and to help them see things from someone else’s perspective’ (‘Personal Interview’).[[180]](#footnote-181) ‘Immersion’, conceptualised as the transference of an individual’s gaze to the virtual body of another, explicitly corresponds with the promise of immersive theatre that I have advanced in Part One of this thesis, which is correlative with the concept of ‘body-swapping’. Subjects whose experiences have been reconstructed by S&R have included individuals with Tourette’s syndrome, bipolar disorder, stroke, post-traumatic stress disorder (as a result of serving in the military as a US Marine), an individual undergoing gender change and Jane herself following her experience of being a TBI patient. Some commentators have positioned *In My Shoes* within the taxonomy of ‘narrative medicine’. This is defined by medical student Lara Crystal-Ornelas from the Icahn School of Medicine at Mount Sinai as ‘an approach to understanding medicine through the stories that are told by patients and health-care workers […] encompassing the cultural context of disease as well as the personal experiences of those whose lives are most affected’ (Reiff-Pasarew). However, I would argue that S&R’s work, beyond understanding medicine from another perspective, is an applied immersive practice engaged with the possibility of bringing about social change. In a presentation by Gauntlett as part of the ‘Spotlight Health’ panel at the Aspen Ideas Festival on 25 June 2015, she emphasised that her aim within the health sector is ‘to get leaders, decision makers, doctors and families as close as possible to first-hand experience’, cultivating empathy ‘with people in situations that are difficult to understand’ (‘2015 Spotlight Health Opening and Welcome (Full Session)’). ‘Empathy’ in this sense is conceived of as a tool that might bring about change on a continuum that ranges from interpersonal experience to the level of policy-making. While the main focus of the series is medical neurological subjects, others with whom S&R have collaborated have included an astronaut, a politician, a dominatrix, a paramedic, a convicted murderer and human rights activists. The idea that is consistently at the core of this diverse practice is the use of immersive technology to ‘pool and share important experiences, both good and bad’ (‘2015 Spotlight Health Opening and Welcome (Full Session)’). Dissimilar to the skillsets possessed by members of the BAL collective, Gauntlett does not have a background as a researcher in science or technology, but has worked extensively as a theatre practitioner, live artist and outreach charity worker with UK-based charities Mencap and Mind. As I will identify, whereas the emphasis in BAL’s practice is oriented on the design, assembly and application of a bespoke hardware platform or the hacking of existing technologies for adapted use in performative embodiment experiments, S&R repurpose existing consumer technologies as accessible communications devices that can be used by neurological patients themselves.[[181]](#footnote-182)

*In My Shoes* has been performed in the UK and US in a variety of contexts. For example, in theatre spaces (see Figs. 2 and 4),[[182]](#footnote-183) educational contexts,[[183]](#footnote-184) medical institutions (see Fig. 5),[[184]](#footnote-185) charities,[[185]](#footnote-186) the Houses of Parliament and at the United Nations headquarters. Crucially, the aim underpinning the project’s origination was to ‘facilitate communications between TBI (Traumatic Brain Injury) patients and those who love, live with, and support them’ (‘In My Shoes’). The focus of S&R’s performances to aid communication between a neurological subject and others is congruent with, and reflects Oliver Sacks’s claim that intersubjective approaches are needed to access ‘the inner worlds that patients, under the spur of illness, create’ (*An Anthropologist on Mars* (1995), xvi-xvii): worlds of experience that are ‘incommunicable’ precisely because they are imperceptible from observation alone. As I have previously argued, this science-inspired immersive ontology of knowing others through illusionistic re-embodiment represents an entirely different approach to theatre-making from that expressed by directors such as Katie Mitchell; Mitchell’s aforementioned proposition flagged in my ‘Introduction’ is that audiences can only ‘read’ what is ‘happening inside someone by what they see on the outside’ (232). However, immersive spectatorship of the kind that is my focus is not simply an act of ‘reading’ external signs, since the placement of the audience inside a body transfer illusion entails the incorporation of a remediated body image as a part of the spectating self. In S&R’s words, via these techniques the immersant is led ‘astray by their own senses’ (‘About’, Sublime & Ridiculous).

The genesis for *In My Shoes* was a personal experience in February 2007 in which Gauntlett was violently mugged. She suffered a traumatic brain injury (TBI), and as a consequence she regularly experiences epileptic seizures and short-term memory and communication problems. In an interview with Faye Reiff-Pasarew for *The Art of Medicine Podcast* (uploaded on 19 December 2013), Jane’s partner Andrew Somerville reflects on the extent of Jane’s injuries; ‘she had quite a big haematoma which was excised through a craniotomy on the right frontal part of her head – she was in a medically induced coma for 3 weeks. The damage was so extensive that she was not meant to survive and even if she had we were warned that she would never be the same person’ (Reiff-Pasarew). Both the incident and Jane’s recovery process were extensively documented through national media coverage in the UK.[[186]](#footnote-187) Prior to her assault, Jane was pursuing her vocation as a theatre producer working on a play entitled *The Dybbuk*, a production which she later returned to produce at the King's Head Theatre (Islington, North London) less than one year after the incident.[[187]](#footnote-188) Gauntlett suggests that this life-changing event has been foundational to the aims and approaches she employs with S&R. The moniker ‘Sublime & Ridiculous’ connects directly with her post-traumatic experience, originating from her period of recovery in hospital. When asked by a visitor, ‘How are you?’, Jane replied ‘I’m sublime and ridiculous’, stating that both adjectives expressed her experience of the world during that time (Gauntlett, ‘Personal Interview’). According to *Cambridge Dictionaries Online*, the idiom ‘from the sublime to the ridiculous’ means ‘from something that is very good or very serious to something very bad or silly’ (‘From the Sublime to the Ridiculous’). Accordingly, when applied as a descriptor to one’s state of being, to be both sublime and ridiculous implies occupying both polarities of this continuum simultaneously. This contradictory self-report is suggestive of the kinds of confusions that can be experienced following a brain trauma. Furthermore, Gauntlett’s description highlights the difficulty of formulating her physiological experiences for others through verbal expression. In interview, Gauntlett went on to expand on the complexity of communicating the sensation of her seizures following her brain injury:

I was constantly asked what it was like. I was often frustrated because I felt like people didn’t understand where I was coming from. I felt very judged. I found it really hard to communicate. I really struggled with my verbal skills […] I wanted to suss out ways that I could get people to understand where I was coming from and what was going on. (Gauntlett, ‘Personal Interview’)

*In My Shoes* emerged as a pragmatic response to overcome hindrances that Gauntlett encountered in transmitting her experiences to others. Following the incident that caused her condition, it was the kindness of a stranger that initially resourced the project. While sitting in a café near the hospital where Gauntlett had received treatment she was recognised by another patient who remembered sharing her ward in 2007. She explained her plans to produce *In My Shoes* and he returned to the café with the funds for her to purchase the necessary technical equipment. As a result of her lapses of memory she was unable to remember his name and when asked, he responded that he wished to remain as an anonymous benefactor. As a result of this investment, S&R were able to realise *Waking in Slough*, the first piece in the *In My Shoes* series. While anecdotal, I would suggest that the significance of this act of kindness is that it denotes the value that others perceive in the aims of Gauntlett’s project, which is designed to promote empathy with neurological subjects through virtual embodiment. The critical perspectives of those that have lived through particular medical conditions towards the kinds of theatrical approaches examined in this thesis – approaches that attempt to re-embody an experience of a condition for audience members - are vitally important. For this reason I incorporate these critical perspectives in Chapter 5 in response to my own practice developing Analogue’s *Transports*: an installation that used related immersive techniques for audiences to temporarily feel the sensations associated with Young-Onset Parkinson’s disease, and for which I conducted qualitative interviews with those living with the disease in response to their participation as part of the project’s research and development process. As I will demonstrate in Chapter 5, the collated feedback provides a compelling case for using experimental embodiment illusions as a vehicle to communicate bodily experiences. In regards to *In My Shoes* and *Transports*, the locus of knowledge is the body of the neurological subject, and the focus of the practice concerns finding methodologies through which these experiences might be effectively rendered sensate for others. Concurrently, ‘expertise’ in these contexts is not only renegotiated but inverted, since medical specialists become the layperson while the neurological subject is framed as the specialist, engaged in an artistic process to relate their experiences to others accurately.

*Waking in Slough* is a reconstruction of Gauntlett's memory of regaining consciousness on a train following an epileptic fit and having no recollection of how she got there. The work is non-site-specific, requires minimal space and can be performed in various environments and contexts since the participant’s eyes and ears are covered as part of the experience. The performance invites individual audience members to step inside Gauntlett's ‘shoes’, drawing on the full range of the participant’s sensorium while using video goggles to enable the audience to embody her re-enacted first-person point-of-view. I first attended a live demonstration of *Waking in Slough* at the launch of the *Beyond Seizures* exhibition on 13 March 2014. S&R’s performance was part of the inaugural event of *The Beyond* *Series*, a public engagement initiative co-ordinated by The London Brain Project (LBP) coinciding with Brain Awareness Week (BAW)[[188]](#footnote-189) to showcase artwork that ‘embodies conversations about the individual experience of epilepsy; living with it, studying it, and learning about it’ (‘The Beyond Series: Beyond Seizures’).[[189]](#footnote-190) Notably, the LBP’s seizure workshop webpage includes the following quotation: ‘"Trying to describe a seizure is like trying to describe the colour blue to a blind person" - Person with epilepsy’ (‘SEIZURE workshop’). This testimony corroborates Gauntlett’s claim as to the difficulties of relating her own experience of seizure to others, reifying the necessity to develop immersive techniques via which something of the incommunicable might be conveyed (with the caveat that there are inevitable limitations to the plenitude of ‘knowing’ another’s corporeal experiences using these strategies). Following my contention in Chapter 3 that the ‘body-hop/swap’ has not been able to supersede its narratological function as a ‘plot event’ in literature, in the context of S&R’s practice the coupling of spectating bodies with body transfer illusions in performance operationalises illusory body-hopping (which I defined in 3.2 as a ‘one-way transferral’) as a mode of interactive participation. However, the aim underpinning the virtual transaction of bodies is grounded in the familiar leitmotif that this transposition produces empathic learning. I would contend that *Waking in Slough* effectively incorporates Ehrsson and Petkova’s three critical conditions for eliciting the VR perceptual illusion of owning another’s body cited in 3.4.3: namely, a correlation between visual and somatosensory information about the state of the body, usage of a humanoid figure, and the adoption of a first person visual perspective of the body (point-of-view video footage from Gauntlett's vantage point). However, in regards to the first condition I will demonstrate in the section that follows that integrations between vision, touch and proprioception are deliberately disrupted in this practice to enable the immersant not only to feel with Gauntlett's VB, but to experience the kinds of false self-reports and associated symptoms that the different phases of her seizure precipitated.

I will now progress in section 4.3 to offer an account of my first-person experience of *Waking in Slough.* My description will be interlaced with a critical exegesis, investigating the kinds of knowledges that are being transferred through the occupation of Gauntlett's VB in performance. Subsequently, in section 4.4, I will examine how the methods employed in S&R’s performances are being applied by Gauntlett through her facilitation and mentoring of others. What are the applications of body-ownership illusions in the arts and healthcare sectors when working with post-traumatic subjects?

4.3. *Waking in Slough*: A First-person Account of the Experience

I was ‘Jane’ on the 27 May 2014 in a performance that took place in The Old Servery at Shoreditch Town Hall, London. As part of my experience, I was greeted by Jane Gauntlett who furnished me with items that were relevant to her memory of the event upon which this immersive reconstruction was inspired. All of the objects were props with which I would later interact; a handbag (containing a notepad) was placed over my left shoulder, a pen in my breast pocket, a bottle of water in my right hand, and a watch strapped to my left wrist. An Apple iPod Touch device was then strapped to my right arm to distribute pre-recorded video and audio content to a pair of Vuzix 920 Eyewear wrap-around video glasses that covered my eyes and a pair of earbud headphones that were inserted in my ears.[[190]](#footnote-191)

An audio recording of Jane’s voice played through my headphones: ‘Close your eyes. For the next 10 minutes you will be me. Open *my* eyes’. With the shift of the possessive pronoun from ‘your’ to ‘my’, the implicit invitation to take ownership over Jane’s experience is embedded in the language of the instructions. I followed the audio command and opened Jane’s eyes to view video footage inside my video goggles of a train entering a station at night. I felt the sensation of the air on the platform being displaced as it arrived. This and other tactile sensations were recreated by Jane’s partner Andrew Somerville who stood outside the experience with Jane, gently waving a hand-held fan in my direction. I was blinded to the artificial construction of the breeze, and sighted to the footage of the First Capital Connect carriages pulling into the platform. While never unaware of my local environment beyond the video goggles, the coincidence of the train’s arrival accompanied by a breeze travelling with the expected force in the direction that my body anticipated (as a result of the information from my ocular sense) acted as a gentle cue to align my perceptions – to seek consonance between the visual information that my eyes received and the sensation of the air on the right hand side of my face, processed through my somatosensory system. In this respect, the first of Ehrsson and Petkova’s necessary criteria for whole-body ownership is fulfilled; the receipt of multi-sensory stimulation that corresponds with the sensations I expect my VB to receive, creates the illusion of bodily transposition with another. By extension, the circumstances are created for me to reconcile my trans-locality in virtual and actual space and the cognitive dissonance of knowing that I am standing in Shoreditch Town Hall with the feeling of a train pulling in to The Old Servery.

Critically, the fidelity and synchronicity of these carefully stage-managed coincidences primed my expectations for what might follow, or how events might progress in accordance with the interaction protocols that it had established. Consistent with my proposal in Chapter 2, in this example of immersive practice the audience member’s presence is ‘doubled’ since they occupy both real and virtual space as an audience-character; although ‘audience-avatar’ is a more accurate description for the immersant’s adopting of Jane’s remediated body image in this VR practice. It is because the audience is necessarily unrehearsed that the performance has to communicate its governing rules to the participant in the absence of the established conventions embedded in a site of reception (e.g. the theatre auditorium or other architectures that structure our interactions in space). Consequently, in the opening minutes of the experience the immersant must understand how to ‘be’ or, put another way, ‘How shall I act?’ (1) - a question that Nicholas Ridout poses as a theatrical/ethical question in *Theatre & Ethics* (2009: 1). Simultaneously, the audience must follow the narrative from a first-person position behind the face of ‘Jane’. As I have noted in my ‘Introduction’, this is a shared characteristic in the spectatorial mode of all the examples of practice that I discuss in Part Two of this thesis, which is symptomatic of immersive participation in which there is a convergence of performing and spectating roles, and a feedback loop in which the audience is spectator to their own act of participation.

Jane’s voice instructs me to walk forwards four steps and a ‘blink’ in my video goggles conceals the ‘jump cut’ edit that transports me from the station platform to the interior of the train.[[191]](#footnote-192) I instinctively turn my head, taking my cue from the panning movement of the camera in the pre-recorded footage which, by association, represents Jane’s gaze in surveying the empty train carriage. My inauguration into the experience was aided by this progression from explicit cues for interaction via audio commands (e.g. ‘Open my eyes’), to increasingly intuitive interactions led by camera movements and the observed actions of the avatar’s extremities with which my own body should correspond (e.g. Jane’s hand reaching for different objects). The *modus operandi* of the performance is cogent and paradoxical; I am ‘Jane’, but I am not Jane. As the story’s protagonist, I lead but I must follow the auditory/visual cues. I am an agent in the story, but a passenger to both the performance and the dramatic situation of the ‘train’. The avatar’s navigation of the virtual environment operates as a fixed score with which I must co-ordinate my actions in real space. It is a structure that is inflexible to improvisation. In this respect, S&R’s approach differs to BAL’s telepresence experiments which afford audience members increased agency, since a live performer-as-avatar, with stereoscopic cameras mounted onto a wearable vest, imitates the actions of the HMD-wearing audience member or ‘user’ (rather than the audience taking their lead from pre-recorded footage).

From observations of different participating audiences, Somerville elucidates in the aforementioned podcast interview with Faye Reiff-Pasarew: ‘They’re not just playing a part - the cognitive dissonance between not carrying out the actions that they see in front of them is so great that they end up doing it. So they end up involuntarily putting themselves in their shoes even if they think they’re not’ (Reiff-Pasarew). I would concur with Somerville’s contention that the desire to interact as a means of reconciling this cognitive dissonance is highly compelling. However, my actions, at least up until the point that my body experiences a simulated seizure on the train, are not wholly ‘involuntary’. As Petkova and Ehrsson have established, whole-body illusions when executed according to their criteria operate at a level that is ‘cognitively impregnable’. For this reason, the affects that they elicit (e.g. sympathetic responses such as sweating when the VB is exposed to ‘threat’) are not disrupted by intellectual thought or awareness of one’s placement inside an illusion. However, the ‘involuntary’ effect of owning another’s body is contingent on the synchronous distribution of tactile stimulation in correspondence with what is seen from the first-person perspective. In S&R’s practice, the immersant assumes some degree of responsibility to generate this synchronicity by imitating pre-recorded video, whereas in Petkova and Ehrsson’s scientific embodiment experiments in 3.4.3, it is the ‘experimenter’ that is responsible for distributing correlating sensory stimulation for the purposes of accurate and controlled scientific study. Nonetheless, the reward mechanism for the audience’s wilful synchronisation of movement between their corporeal self and their remediated other in *Waking in Slough* is the sense of unification between these selves; put differently, the feeling of immersive subsumption of one’s mind inside another’s body. Therefore, immersivity as *feeling more fully with the body of another* in this context is a reward procured through accuracy in performing tasks in real-time in correspondence with pre-recorded video.

Once the logic of my participation inside this body transfer illusion was clear, the experience further subverted my perceptions. I detected a strange unrecognisable scent in the air. Taking the visual cue from my avatar, I drank from the bottle of water which had a peculiar metallic taste that I later discovered was flavoured with lemon juice (to simulate distortions of taste that Jane had experienced in the period immediately prior to her seizure). Imitating the movement of Jane’s left hand in the video, I reached for the bottle that I had just positioned on the ‘carriage table’ to my left. However, although I could see the bottle in my video goggles (a virtual double of the physical bottle I had received at the start of the experience), the ‘real’ prop was no longer where I had left it. The mediatised images no longer corresponded with their material counterparts, which seemingly dematerialised with the onset of Jane’s seizure. The illusion of body-ownership generated through unified three-way interactions between vision, touch and proprioception is substituted for deliberate disintegrations between these senses – conflicting self-reports are generated to represent cognitive disturbances and associated physiological events related to Jane’s pre-ictal phase.[[192]](#footnote-193) Meanwhile, I hear the script of Jane’s conscious thoughts via my headphones. She notes that she is feeling ‘light-headed’ and that the objects around her resist her grasp. I identified in Chapter 3 that in the English language, one’s capacity to ‘grasp’ is a metaphor related to one’s ability to comprehend, the verb placing an emphasis on the bodily apprehension of knowledge. However, in this instance it is my inability to execute a physical task (to ‘grasp’ the bottle) by introducing strategic discordance between my ocular and auditory senses that becomes a method via which one might comprehend Jane’s prodromal symptoms. Inability to grasp the bottle is to ‘grasp’ Jane’s physiological state insofar as she is able to reconstruct it for others. White noise began to underscore Jane’s internal voice. As I look up at the ceiling of the train carriage, my head is gently but firmly pinned back in my chair which begins to shake violently underneath me until my vision of the train is plunged into blackness.

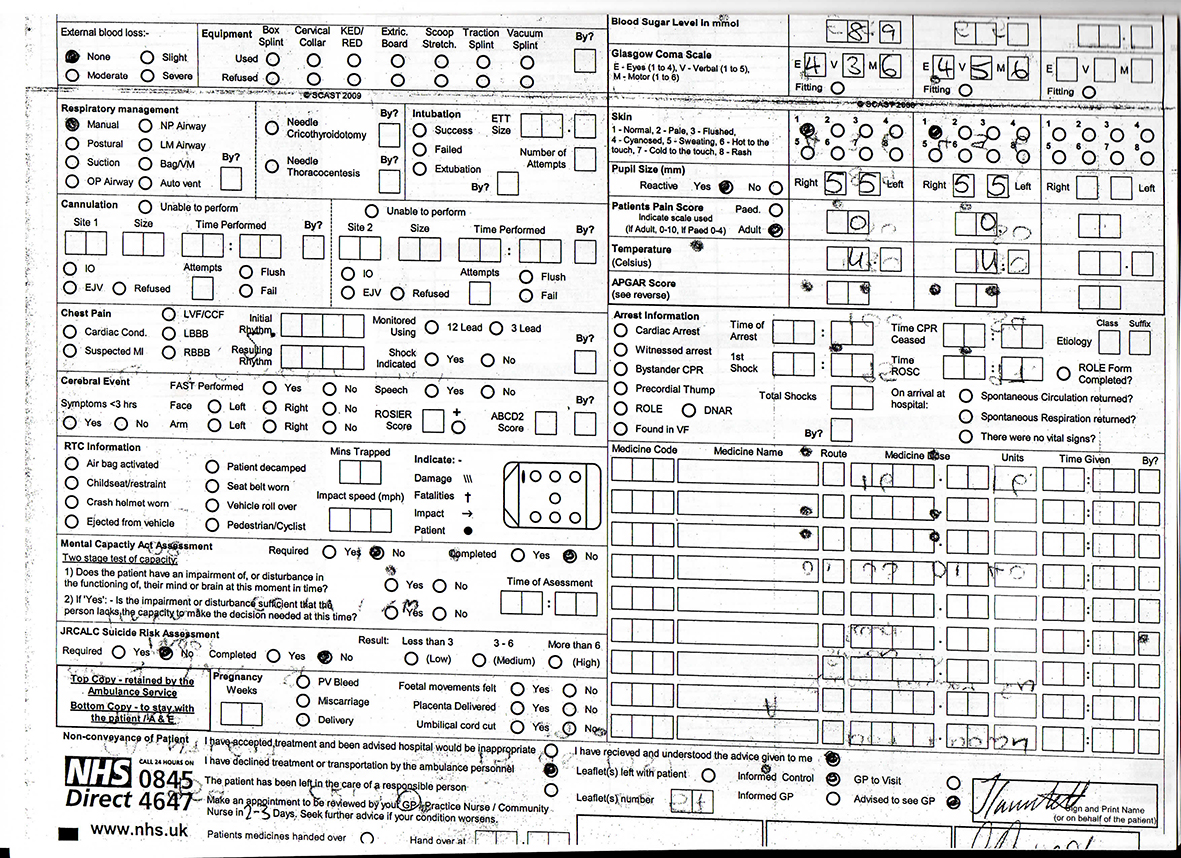
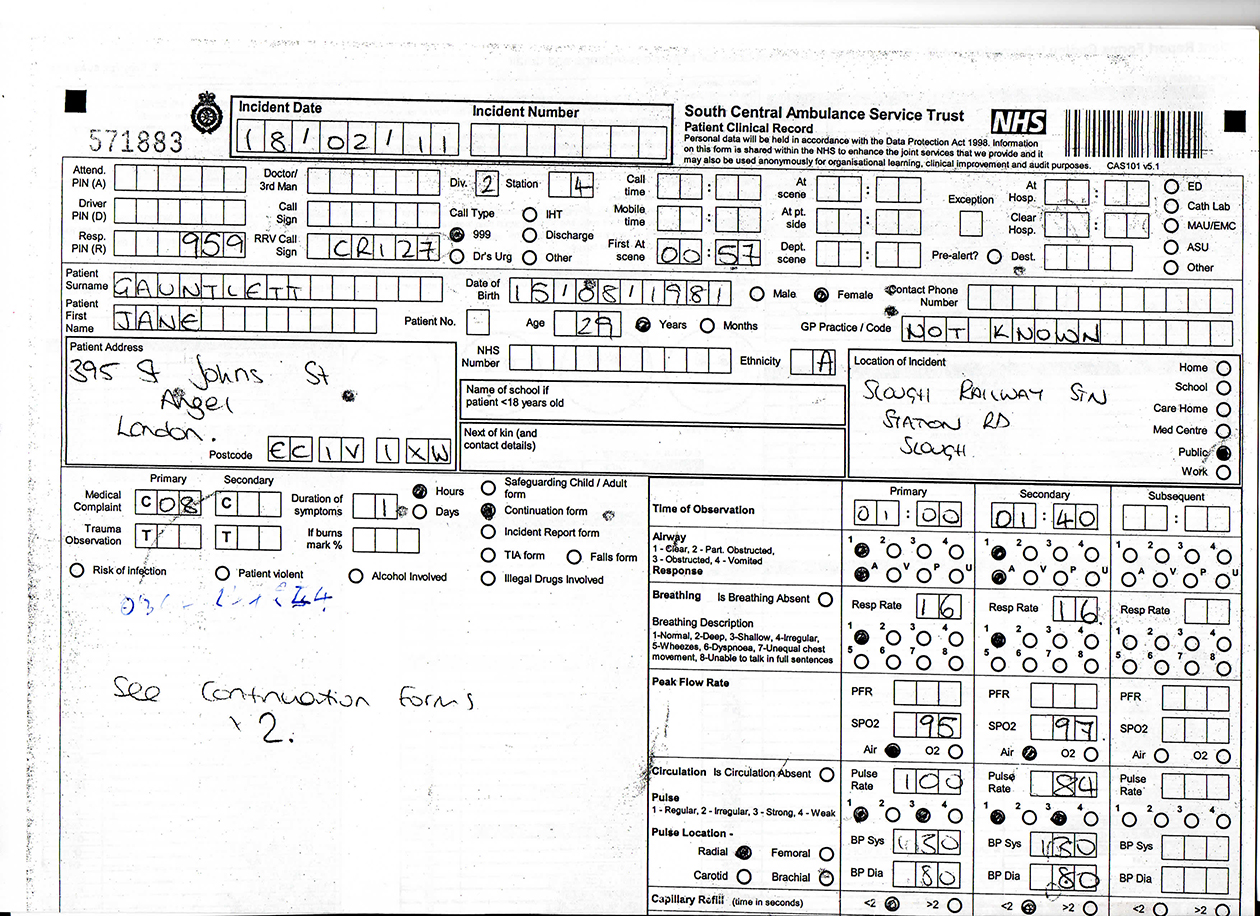
A voice outside of the experience (Somerville’s voice) directs a series of questions at me: ‘Can you hear my voice?’ ‘Where are you headed?’ etc. My video goggles and headphones are removed, and a man in a paramedic’s uniform asks me, ‘Do you know who you are?’ (see Fig. 4). This moment is distinguished by my confusion as to how best to reply. Am I still ‘Jane’? Am I now Liam? I respond but my answer (‘I am Liam’) is met with an expression of puzzlement from the paramedic. I correct myself; ‘I am Jane’. My answer is subsequently recorded on a copy of the South Central Ambulance Service Trust Patient Clinical Record (see Fig. 6 overleaf). This document is then completed based on my answers to further questions relating to my health status. This exchange is contiguous with the theatrical problems I cited in Chapter 2 in which Samuel West/Richard II makes eye contact with Nicholas Ridout, who experiences the unease of not being able to place himself as either a performer or invisible spectator via this exchange. Similarly, my encounter with the ‘paramedic’ parallels Sophie Nield’s uncertainty when a ‘monk’ in the Southwark Playhouse bar addressed her as another character in the fiction of Goat and Monkey’s *Reverence: A Tale of Abelard And Heloise* (2007). However, by this juncture the participatory demands of S&R’s *Waking in Slough* are well established. In this exchange, the practitioners conflate a productive theatrical/dramatic confusion regarding which ‘self’ should reply to the paramedic with the disorientations one might feel when regaining consciousness. Audiences are confronted with the task of disentangling their fused ‘audience-avatar’ identity that had been meticulously constructed over the duration of the performance. Having been situated as a

Fig. 6. A copy of the South Central Ambulance Service Trust Patient Clinical Record document completed with the audience member in S&R’s *Waking in Slough*.

passenger in a telepresence re-enactment on a train, in this deliberately abrupt transition from virtual to actual space with the peculiar demand that I maintain my virtual identity once the apparatus of VR has been removed, I no longer knew who is steering my experience.

The etymology of the noun ‘passenger’ derives from the old French adjective ‘passager’, meaning 'passing’ or ‘transitory', from the related noun ‘passage’ (‘Passenger’). In light of these meanings, it seems I am a passenger in *Waking in Slough* in at least three different respects. Firstly, I am a passenger on a train at the level of dramatic storytelling which as I have noted elsewhere, Keir Elam identifies as a world that is ‘counterfactual’; although ‘counterfactual’ is an imprecise term to designate a mediatised re-enactment of another’s memory, since the desire in S&R’s practice is to retrieve a past event and make known the ‘incommunicable’, not to ‘counter’ or act against the ‘factual’. Secondly, I am the audience and thus a passenger in the theatrical situation, passing through an experience pre-organised by the artist. And thirdly, via an illusion of whole-body ownership I am a passenger transitioning through virtual events via Jane’s body-as-avatar, seeing with her eyes (reconstructed via the gaze of the camera and screen of the video goggles) and feeling with her hands (the avatar’s extremities reoriented as my ‘own’, while my real hands relay tactile sensations concordant with those experienced by ‘my’ VB). Of relevance to the meaning of *passager*, French feminist writer, philosopher and literary critic Hélène Cixous uses the word ‘*entredeux*’ in *Déluge* (1992). *Entredeux* designates a ‘true in-between – between a life which is ending and a life which is beginning’ (*Rootprints* 9). In *Rootprints: Memory and Life Writing* (1997), Cixous returns to this notion, commenting that:

Human beings are equipped for daily life, with its rites, with its closure, its commodities, its furniture. When an event arrives which evicts us from ourselves, we do not know how to ‘live’. But we must. Thus we are launched into a space-time whose coordinates are all different from those we have always been accustomed to (9).

Jane Gauntlett’s report of her traumatic experience in 2007 has some correspondence with the notion of *entredeux*. In an article by journalist Victoria Lambert, she quotes Gauntlett’s reflection on her recovery: ‘when I saw a reconstruction of the attack on *Crimewatch*, I was shocked to learn they [Jane’s family] had been told life would never be the same for me again […] that the injury to my brain might turn me into a new character’ (Lambert). Jane’s performance stages part of a profound transition in her life: the passage in-betweena life ending and beginning in different respects – or more precisely, the end of life as it was experienced pre-injury and the beginning of post-injury life. Correspondingly, the causal seizures that Jane lives with post-injury might be understood as the resurfacing remnants of her historic trauma, imposing the kind of unaccustomed ‘space-time’ that Cixous describes. Alejandro Scaramelli et al state in an article published in *Seizure - European Journal of Epilepsy* that individuals have displayed symptoms of cognitive disturbance in the pre-ictal phase of a seizure such as ‘slow thinking’ or ‘indecision and slowness’ (Scaramelli et al, 2009). These reports are further suggestive of the kinds of temporal disturbances that the onset of a seizure can induce. Gauntlett’s repurposing of body transfer illusions promotes temporary transformations of the spectating self as an analogue for a more profound and long-lasting transformation that she herself had experienced. Regarding the kinds of interiorities to which this immersive work seeks to permit audiences access, *Waking in Slough* is designed to enable immersants to feel the passage of a seizure through the attempt to replicate the disorienting symptoms of the interictal, pre-ictal, ictal and post-ictal brain states.[[193]](#footnote-194)

The bodily experience of a TBI, the potential for transformation into a new ‘character’, the resultant epileptic seizures and the subsequent act of watching a televised reconstruction of events that Jane once participated in from a third-person vantage point, each speak to the notion of being ‘evicted’ from oneself in different respects.[[194]](#footnote-195) Similarly, body transfer illusions represent another kind of eviction, generating the sensation of being separated from one’s participating body which is replaced or ‘eclipsed’ with Jane’s remediated body image. *Waking in Slough* stages the illusion of becoming ‘evicted from ourselves’, as a means of fulfilling the ontological desire of immersive theatre as I have conceptualised it in Part One as *feeling more fully with the body of another*. I would argue that the illusionistic ‘body-hopping’ that takes place in *Waking in Slough* is not concordant with the gnostic ideal of ‘leaving one’s body behind’ identified in Chapter 2. In contrast, Gauntlett’s immersive approach is anti-Cartesian in the respect that it mobilises the desire to experience ‘as others do’, producing empathy and identification with experiences that are bodied. Paradoxically the efficacy of this illusion is highly conditional upon the perceptive faculties of the audience’s perceiving body, and the audience is never unaware of this conditionality.[[195]](#footnote-196) For example, it would be absurd as a spectator participating in this performance to question ‘where has my body gone?’ Body illusions allow us to project our phenomenal sensations onto a virtual body, notwithstanding intellectually knowing that we remain ‘within’ our physical bodies – thus the experience corresponds with non-delusional phenomena such as phantom limbs and the artificially induced sensation of ownership over external objects in the RHI paradigm surveyed in Chapter 3. More profound anomalies of body-ownership precipitated by neurological delusions (e.g. somatoparaphrenia) which cause subjects to ‘confabulate’ differ greatly in this respect, since the subject cannot know the truth of their physical bodies. By contrast, body transfer illusions in S&R’s work are a means for audiences to knowingly self-deceive: to use the performance to act upon themselves, to elicit affective responses, and to generate an embodied understanding of the event of Gauntlett’s seizure.

I should highlight that the epistemic aim of *Waking In Slough* is accompanied by a legitimate concern – namely, that as a consequence of one’s participation, audiences may conclude that they ‘know’ the experience of seizure. As Cixous suggests, ‘ordinary human beings do not like mystery since you cannot put a bridle on it, and therefore, in general they exclude it, they repress it, they eliminate it – and it’s *settled*’ (51-52). In contrast, Cixous argues that instability, uncertainty or what Jacques Derrida called the ‘undecidable’ is ‘indissociable from human life’ (51-52). The IVR participatory model created from Jane’s remembrance and its framing as a ‘tool’ of communication could be critiqued on the basis of making a certainty of an experience that might rather be characterised by chaos. However, I would argue that *Waking In Slough* connects with the ‘*trans-’*, ‘the passage’ or *entredeux*. It is an illusion through which individual participants are caringly ‘thrown into strangeness’ (Cixous 10) and offered a detailed recreation of an experience that one may never have first-hand. The noun ‘seizure’ is defined as a ‘sudden attack of illness’, but also the ‘action of capturing someone or something using force’ (‘Seizure’). Both definitions are suggestive of the way in which symptomatic epilepsy can commandeer a subject against their will when the neurones in the brain which ‘communicate with each other using electrical impulses’ are disrupted, causing the ‘brain and body to behave strangely’ (NHS, ‘Conditions: Epilepsy’).[[196]](#footnote-197) The feeling of isolation that sufferers of epilepsy can experience as a result of their seizures is well documented on online forums such as the ‘Community Forum’ on *Epilepsy.com*. An actor can represent the outward appearance of a seizure onstage for observation, but the audience remain witnesses to the outer appearances of another’s experience. Immersion in the context of S&R’s work employs the neuroscientific protocols of embodiment experiments and subverts them in an attempt to collapse the difference between the immersant and Gauntlett’s subjective experience. It is a strategy that attempts to make remote changes in body state open and accessible to all and reduce a subject’s sense of isolation through another’s lack of understanding. Although my engagement as an immersant cannot be comparable to Jane’s real life experience, it is perhaps as close as performance can take me while ensuring my own physical well-being. In section 4.4 below, I will expand on the benefits of S&R’s techniques as an applied tool to instigate intersubjective dialogues with TBI patients.

Interviews archived on S&R’s *Vimeo* channel document qualitative audience feedback on their participation in *Waking in Slough*, highlighting what they have learnt from the performance. Audience member Simon Sinek comments in a recorded interview uploaded on 21 October 2013 that with other mediums such as video art or interactive art, it is possible to ‘engage with separation’. He was surprised that his bodily incorporation in the work prompted an ‘emotional’ engagement. In response to the seizure in *Waking In Slough*, he states that:

I appreciate that it’s not something you can prevent – you can intellectually say, ‘I don’t want this to happen’, but it’s going to happen. I think that’s one of the things I’m still processing. The thought that things happen to your body and your mind that you can’t stop even if you’re aware of it happening. That feeling of losing control even if intellectually you know you’re probably going to be okay. (‘Simon Sinek on *In My Shoes*’)

Sinek’s testimonial indicates his heightened awareness as a result of the performance to physiological processes that cannot be prevented by conscious thought, and the intense uncertainty that this knowledge generates. The loss of agency and sensation of ‘losing control’ recreated within the work, despite an intellectual awareness that one is not in danger, allow audiences to share in an intense moment of vulnerability by way of an immersive re-enactment. As I have suggested, body transfer illusions also operate at a level that is not pregnable by intellectual thought.[[197]](#footnote-198) As the scientific evidence in Chapter 3 confirms, when the right conditions are applied, self-awareness of the theatrical circumstances of the performance (e.g. wearing a HMD) makes the illusion no less efficacious. The aim of immersion in this context is to construct for individual participants the subjective perceptual experience of the virtualised subject, *without* *separation*. In this respect, it is a practice that is part of a post-Friedian ‘theatrical’ lineage that is radically antagonistic to the ‘exteriority’ and critical distance from the artwork that Michael Fried’s polemic had argued towards (as I have established in Chapter 1). Furthermore, this subset of immersive theatre practices complicates Gareth White’s claim in Chapter 2 that to be ‘surrounded’ necessitates ‘separation’ from that which surrounds, and that which is surrounded in immersive performance. Self-deceiving one’s sympathetic responses by means of a body illusion is predicated on the desire to feel that a virtual body is a part of the self. The immersant recognises intellectually that they are inside an illusion, and yet at the same time, given the right conditions, the participating body can accept the VB as part of the phenomenal self. Thus physically the audience is separate from the artwork, but phenomenally the body responds as though it is not, since the affective responses elicited in the spectating body are not reality tested.

In *Waking In Slough*, illusory body-hopping is used as an immersive technique that unlike some of the historic body-swapping narratives in literature surveyed in the last chapter is not concerned with gnostic escapism of particular corporeal realities (e.g. escaping an ageing body in H. G. Wells’s *The Story of the Late Mr. Elvesham*). The practice is more closely related to those narratives that advance the notion that the radical perspective-taking engenders an act of empathic learning (e.g. *Vice Versa*). In S&R’s practice, the audience is phenomenally projected to incorporate ostensibly fragile bodies that are undergoing transformative and disorienting physiological changes. Audiences lend their bodies to the performance to experience the ‘*trans-’* or ‘the passage’ of Jane’s simulated seizure. This approach is offered as a means of transmitting her embodied knowledge, which in turn might modify attitudes, enhance understanding and ultimately improve the treatment of those that live with the experience of seizures. As I have identified in Chapter 3, the philosophical problem of knowing another’s somatic experiences is never wholly realisable, but it is the attempt to know and the potential plasticity of the parameters of what is known that is crucial in both arts and healthcare contexts. To revisit Vilayanur S. Ramachandran’s statement: ‘it is the physician’s duty always to ask himself, “What does it *feel like* to be in the patient’s shoes?” (*Phantoms in the Brain*, 7). *In My Shoes* represents the mobilisation of embodiment techniques in performance that enable an artist/individual (or ‘patient’ in healthcare contexts) to reformulate their lived experience into a model that better communicates the feeling of complex remembered physiological states.

In the following section, I will examine how S&R’s immersive communication tools of embodiment are being used as an applied practice in the mentoring and facilitation of other TBI patients, before analysing the parallel experimental practices of BAL.

4.4 Mentoring and Facilitation – Applications of S&R’s *In My Shoes*

In an article by Fred McConnell entitled ‘Virtual Reality Theatre Puts Experience of Brain Damage Centre Stage’ published in the ‘Technology: Wearable Technology’ section of *The Guardian’s* website on 15 January 2014, Gauntlett elucidates that following her transition into post-injury life, she has worked as a mentor for young people who are recovering from similar traumatic experiences. Gauntlett’s work as an artist and facilitator has situated her as an intermediary between the post-traumatic subject and those ‘who could in no way relate to the daily experience of TBI’ (McConnell). She applies the techniques she has developed as a practitioner with S&R to aid young people to reach an acceptance of the change in their lives and to better communicate their experiences to others; according to Gauntlett, communication is especially crucial for individuals whose injuries have ‘no physical trace’, making them ‘easy for others to overlook’ (McConnell). Immersivity in this context represents a departure with prevalent observational modes of theatre reception precisely to make perceptible these hidden traces.

Gauntlett designates her approaches to facilitation as an ‘experiment’, oriented around finding different ways to help a subject to communicate their post-traumatic experience to others. The ‘subjects’ in this instance are individuals with TBIs, while the ‘others’ to which I refer are commonly relatives and carers. S&R’s facilitation is a tripartite collaboration; the immersive artwork is created by Gauntlett’s mentee, under her supervision as a mentor and in consideration of an intended audience. Each experimental process is responsive to the needs and interests of the mentee, and the mentor is engaged in an active process of ‘sussing out what works’ for different individuals (Gauntlett, ‘Personal interview’). The tailoring of the creative process for different individuals is crucial because some have difficulty in communicating post-trauma. The appropriate methods, forms and modalities used to tell their stories evolve dialogically, and the VR techniques used in *Waking In Slough* may or may not be reused with others; while they are an effective technique towards empathy, virtual embodiment is not an end in itself. Gauntlett’s personal interest in a particular mode of performance does not take precedence over the needs and abilities of the individual with whom she collaborates. Concomitantly, the platforms of dissemination emerging from the creative process can vary from an intimate live performance that the mentee stages for others to a downloadable audio file that can be shared with invited users online or accessed on a playback device. Gauntlett reports that audio pieces are most frequently created by the mentee since they do not require the advanced technical skills associated with IVR. However, irrespective of the selected medium, the desired outcome is consistently to place specific audience groups in the mentees’ ‘shoes’.

Importantly, Gauntlett does not claim that her work is ‘therapeutic’ on the grounds that she is not a clinician and does not have a formal training that qualifies her to treat patients. Accordingly, she does not pathologise her collaborators or describe them as ‘patients’. The mentor-mentee relationship is unlike the clinician-patient relationship, since its foundations are rooted in equity and mutuality of experience. As a TBI survivor, Gauntlett’s understanding is commensurate with those with whom she works. She enters into an exchange with her mentees, answering questions about her own recovery process and engaging in two-way ‘story sharing’, which she notes can have a ‘cathartic’ and ‘empowering’ effect (Gauntlett, ‘Personal interview’). ‘Camaraderie’ is a word that she has used to define this relationship, indicating the importance of developing trust and understanding to enable the mentee to enter into a dialogue and subsequently reconstruct their experiences for others. In regards to authorship, this branch of Gauntlett’s work prioritises the mentee as the lead artist and the work is created on their terms. As Gauntlett states, ‘they have control over it […] They own it’. In this branch of S&R’s practice, the artwork is confidential and is never exposed to public audiences beyond the target audience for whom the work is intended. Furthermore, in my personal interview with Gauntlett she elucidated that her copies of the files are deleted after they are forwarded to the participant (Gauntlett, ‘Personal Interview’). Complete control over the work is entrusted to the mentee.

Gauntlett’s facilitation in creating immersive artworks with different individuals is an exchange involving multiple stages of activity. The process initially involves a sharing of *In My Shoes* as a case study, inviting participants to feedback on their experience of Gauntlett’s work. Subsequently, the process entails the mentee sharing objects, stories and pictures that have significance for them. These resources and the expressed aspirations of the individual are then mapped out diagrammatically. Gauntlett states that this approach to facilitating those with TBI has been influenced by a technique called ‘person centred planning’ (PCP), which were deployed when she was a Carer & Activities Co-ordinator at Mencap. In 2008, Mencap published an online document entitled ‘Person Centred Planning (PCP) and People with PMLD [People with profound and Multiple Learning Disabilities]’ (2008) which comprehensively outlines why PCP is important and how a plan can be developed and implemented.[[198]](#footnote-199) To contextualise the keys aims of PCP succinctly, they are defined by Mencap as, ‘building a shared understanding of a person and their life’, supporting people to be ‘part of their community’, positioning the person ‘at the centre of the planning process’ (while professionals take a ‘background support role’), and focusing the process on someone’s gifts and the ‘positive effects they have on others’ (‘Person Centred Planning (PCP)’). PCPs are concerned with enabling people to dream about their possible futures before defining the individual’s ‘circle of support’ (those closest to the person with PMLD who can advocate for them) to subsequently implement the plan. I would suggest that ‘immersion’ pertaining to illusionistic methods through which one might *feel more fully with another’s body* is wholly compatible with Person Centred Planning in its core objectives. Both are strategies that are focused on understanding a subject from their vantage point. PCP provides the methodological foundations to co-create an immersive artwork for others and generate a proposal for achieving a better quality of life from the perspective of the individual. Concomitantly, illusionistic re-embodiment, while not always the appropriate tool for all mentees, is an available strategy to improve understanding and subsequently ‘enable participants to use what they learn to inform communications and care’ (‘In My Shoes’).

Having identified S&R’s epistemic aims in mobilising immersive performance in *Waking in Slough* as consistent with the ontology I have described as *feeling with the body of another*, and following my consideration of how the company apply their approaches when mentoring and facilitating others, I will now examine the adjacent practice of BeAnotherLab (BAL). In the following section (4.5), I will focus my enquiry on BAL’s open-source empathy building system *The Machine To Be Another* (*TMTBA*), plotting its correspondences with S&R’s work and the relevance of these techniques to the immersive ontology that is central to this thesis.

4.5 BeAnotherLab’s (BAL) *The Machine To Be Another* (*TMTBA*)



Fig. 7: BeAnotherLab’s *The Machine To Be Another* – This image shows the ‘body-change’ interaction protocol; the ‘performer’ (seated on the left of the image) wears a vest-mounted video camera that relays a live feed to the ‘user’ wearing the HMD (seated on the right of the image).

BeAnotherLab (BAL) is an international art collective that shares S&R’s commitment to the investigation of embodiment using telepresence experiments. The collective was formed in Barcelona by individuals working in the arts and cognitive science as part of an extended network of artists, technologists and others that have creative specialisms in a variety of fields. The group is comprised of Philippe Bertrand, Christian Cherene, Daniel González Franco, Daanish Masood, Marte Roel and Arthur Tres. In a *YouTube* interview with Bertrand conducted by Edwin Rutsch (founding director of the Center for Building a Culture of Empathy), Bertrand succinctly defines the hybridised approach of BAL who hack the protocols of neuroscience embodiment experiments surveyed in Chapter 3, ‘merging these protocols with art performances’ (Rutsch). The collective’s largely self-financed open-source art project entitled *The Machine To Be Another* (*TMTBA*) is described in the company’s video archive as a ‘mind teletransporter’ (‘The Machine to Be Another - Artistic Experiment’) and an ‘embodiment mind transporter experiment’ (‘The Machine To Be Another – Performance at L'estruch – by Youssoupha Diop’). *TMTBA* has commonalities with S&R’s approaches to alternative communication as it was conceived of as a tool for building empathy among individuals to try and ‘understand others and ourselves as part of a complex system’ (Roel, ‘Personal Interview’). I argue that BAL’s practice connects with the ontological desire that undergirds immersive experience to *feel more fully with the body of another*, and it is this desire that precipitates the integration of body transfer illusions in their performances. Correspondingly, ‘The Machine’ utilises VR HMD’s to conduct virtual body extension experiments that immerse participants inside the simulated body of others. BAL’s website states that the *TMTBA* is based on ‘papers published on the web for researchers on embodiment, from institutions such as Group Ehrsson from Karolinska Institutet in Stockholm, and Event Lab in Barcelona’ (‘Research Concept’). While S&R similarly adopt techniques that I have suggested can be traced to the neuroscientific VR whole-body transfer illusions cited in Chapter 3, BAL’s discourse around their practice seeks to make this scientific connection to their work explicit. As I have established in my last chapter, Group Ehrsson use VR body illusions in combination with neuroimaging, neurostimulation, and behavioural methods to empirically test the perceptual rules and mechanisms of the brain and the ways in which a ‘central representation of one's own body is constructed by the integration of signals from the different sensory modalities (vision, touch, proprioception)’ (‘About the Brain, Body and Self Laboratory’). However, BAL’s performances take as their foundations these empirically-tested VR whole-body illusions, repurposing them primarily towards qualitative research as a first-person storytelling experience in the arts and culture sector and as a tool for rehabilitation in healthcare, among other diverse applications. This is another respect in which the practices of S&R and BAL are related in their progress-seeking deployment of science-inspired immersive technologies that might engender positive real-world impacts across the fields of art, science, and healthcare.

In the next section (4.6) I will survey the requisite components of *TMTBA* as an IVR platform and offer an examination of the different interaction protocols used by BAL in performances that the collective refer to in terms of ‘body-change’ and ‘body-swap’ experiments.

4.6 *The Machine*’s Interaction Protocols: ‘Body-change’ and ‘Body-swap’

On the ‘Documentation’ page of the collective’s website, BAL have posted an inventory of the constituent parts needed to reconstruct their IVR platform, *TMTBA*. The system consists of an HMD (Oculus Rift DK1), wireless headphones (for the ‘user’), a wide angle webcam (for the ‘performer’),[[199]](#footnote-200) a *Machine to Be Another* Kit, three servomotors, a computer and BAL’s computer code programmed in OpenFrameworks,[[200]](#footnote-201) Pure Data,[[201]](#footnote-202) and OSC mobile apps (TouchOSC and Control). In a panel discussion at *Engadget Expand*,BAL’s co-founder Marte Roel identifies two different ‘interaction protocols’ or modes of participation used in performances that utilise this system. [[202]](#footnote-203) These are defined as ‘body-change’ and ‘body-swap’ protocols. Body-change is defined as a one-way exchange in which the audience member (who BAL term the ‘user’), wearing an HMD, takes ownership of a live performer’s body as a virtual avatar.[[203]](#footnote-204) For this reason, the word ‘performer’ in the context of BAL’s practice takes on a very specific meaning, referring to the body that is remediated via live first-person video relays and over which the ‘user’ feels a sense of ownership. This interaction protocol differs from S&R’s *Waking in Slough*, in the respect that the avatar of Gauntlett’s remediated body-image observed by the audience from a first-person vantage point is pre-recorded. In relation to this fixed structure, the audience do not have a sense of agency over Gauntlett’s mediatised body-image and cannot influence the outcome of events (although I would argue that this is an appropriate framework in a performance designed to reconstruct the loss of agency through the experience of seizure). Body-change experiments, in contrast, afford the audience the opportunity to lead the movements with the performer imitating their actions in real-time. Body-swap experiments differ, since they involve a two-way transaction in which two users wearing HMDs have their point-of-view switched to that of the other. Notably, Roel’s description of ‘body-change’ is analogous with my definition of the plot event of the ‘body-hop’ in Chapter 3, as a ‘one-way transferral from one body to another’. Similarly, ‘body-swap’ as an interaction protocol corresponds with the narratological definition that I have offered as a ‘two-way exchange between bodies’ (see 3.2). I would argue that this choice of terminology connects BAL’s practice to the fictional body-exchange narratives surveyed in Chapter 3, acting as kind of shorthand for audiences to understand the perceptual effects of ‘The Machine’ which parallel the bodily transposition that is precipitated by a transferral of the mind. This creates a tension in discourses around BAL’s practice between qualifying its methods with contemporary scientific evidence and evoking the spectacular dualist mind-body philosophy entrenched in science fiction body-swapping narratives (e.g. *TMTBA*’s description in the collective’s discourse as a ‘mind transporter’). I would argue that it is precisely the contingency of bodies in shaping minds via the monist conception of the self that makes BAL’s approaches all the more necessary, since illusionistic projection inside other bodies becomes the only means of artificially operationalising body-swapping if we accept the philosophical position that we ‘are our brains’.

*TMTBA* is a system that uses the body-change protocol. The participant’s gaze is relocated to the body of the performer using a stereoscopic camera mounted onto a specially designed vest that is worn by the performer. The camera is positioned directly in front of the performer’s eye line and relays a live video feed to the participant’s Oculus Rift HMD.[[204]](#footnote-205) The performer copies the participant’s movements while they explore different gestures and interactions with real objects, while the performer simultaneously interacts with doubles of these objects (see Fig. 7). The camera mounted onto the performer’s body is attached to micro-servomotors that provide three different rotational axes: pan, tilt and roll. A head-tracking system detects the movement of the participant’s HMD, and the performer’s camera mimics these head movements so that the camera continually shares the same point-of-view as the ‘user’ (‘The Machine To Be Another - hardware development at FABLAB BARCELONA’). The combination of the performer’s imitation of the participant’s movements with the head-tracking technology that similarly adjusts in response to their interactions, maintains the illusion for the audience of being immersed within the performer’s body. The *Gender Swap* experiment uses *TMTBA* platform in a slightly different technical configuration, and is an example of the body-swap interaction protocol.[[205]](#footnote-206) A female and male user each wear both a first-person camera and Oculus Rift HMDs, displaying a live video feed from the other’s vantage point. They receive a single instruction prior to the experiment: ‘try to connect with the other's movements’ (‘Gender Swap - Experiment with The Machine to Be Another’). The embodiment experience only works when both participants’ movements directly correspond, which is a criterion that is consistent with the first of Ehrsson and Petkova’s three critical conditions for VR body transfer illusions cited in 3.4.3 as ‘a continuous match between visual and somatosensory information about the state of the body’ (Petkova, Valeria I. and Henrik Ehrsson, 2008: 6). For this reason, the task requires mutuality and continual spatial negotiation between the users who must reach a constant ‘agreement’ for each gesture. The reward mechanism for the participants’ synchronisation of their movements, much like the reward in S&R’s *Waking In Slough* for synchronous imitation of Gauntlett’s VB, is the sensation of immersion within the body of the other and by extension, the sensate impression of possessing the body of another gender.

Having established the different interaction protocols of *TMTBA*, I will now examine both the aims (4.7) and the applications (4.8) of this system. What evidence is available to demonstrate how it is being used? What kind of embodied knowledges are communicated, in what contexts, and why? Finally, I will scrutinise who has access to *TMTBA* (4.9), questioning what benefits and potential impacts this immersive open-source project provides to users in different social, cultural and geographical contexts.

4.7 *TMTBA* – Aims

The philosophy that underpins BAL’s research in experimental embodiment is succinctly defined by Roel when he states that:

Our main objective is to build empathy […] doing body-swapping through individuals from different communities or different genders […] The idea is that if you can better understand the other you might be able to better understand yourself. And we’re using technology and virtual reality and telepresence not really for building new worlds […] but to come back to our real vulnerable space here of presence, and understanding communities. (‘Virtual Reality beyond gaming | Engadget Expand’)

Roel makes an important claim here that would benefit from further analysis. He designates the repurposing of neuroscientific VR telepresence experiments as a strategy to cultivate empathy between individuals. Unlike the scientific quantitative testing of subjects in body transfer illusions (cited in Chapter 3), via which data is gathered to provide objective scientific evidence that a subject might ‘own’ another’s body (e.g. via questionnaires, SCR data, measuring proprioceptive drift etc.), BAL’s research is predominantly qualitative. Significantly, the focus in applying these methods is shifted toward intersubjective experience, which corresponds with S&R’s approach in re-orienting embodiment techniques as a vehicle for TBI patients (among others) to communicate – and, on the other end of the body-hop/swap transaction, to permit audiences to understand themselves in relation to the other. In a personal interview I conducted with Marte Roel on 7 May 2015, I questioned whether he would situate BAL’s work as an ‘arts’, ‘science’ or ‘arts-science’ practice, to which he responded that these domains represent ‘different ways of knowing’ and that ‘both of them are valuable’; consequently, delimiting the practice to one paradigm or the other is unimportant (Roel, ‘Personal Interview’). However, Roel acknowledges a perceived hierarchy in which scientific knowledge is valued over artistic ways of knowing, and correspondingly BAL’s discourse has ‘shifted towards a scientific discourse’ as a result of the relationships that have formed around the work and the predominant contexts in which the collective have been invited to present *TMTBA*. Roel’s identification of this hierarchy through his practice corroborates the bias that I have discerned via commentators elsewhere in this thesis.[[206]](#footnote-207) Roel acknowledges that BAL’s hybridised approach to performance-making has created distinct sets of challenges in how to present the organisation with a coherent identity. He notes that in the past the collective has located *TMTBA* as a ‘neuroscience project’ and correspondingly, BAL’s whitepaper on ‘The Machine’ cites Italian neurophysiologist Giacomo’s Rizzolatti’s contention, ‘how bizarre it would be to conceive of an *I* without an *us*’ (Rizzolatti, 2008) from *Mirrors in the Brain: How Our Minds Share Actions and Emotions* (2008). Neuroscientific evidence is demonstrably foundational to the claims that are made by BAL for repurposing body transfer illusions in immersive performance. However, although describing *TMTBA* as a ‘neuroscience project’ is not inaccurate, neither is it wholly precise since BAL derive protocols from neuroscience but are primarily engaged in performance-making and behavioural research. Neuroscience uses a variety of measuring tools that BAL have not explored (at least at the time of writing). For Roel, the crucial focus of BAL’s work is on the real-time experience of individuals rather than on measuring a specific behavioural change – and this is reaffirmed when he suggests, ‘we’re not trying to find statistical models of how people react, we’re just trying to really put the weight on the embodied experience’ (Roel, ‘Personal Interview’). BAL’s model of working with *TMTBA* in a particular community starts from an ethnographic standpoint; the collective immerses themselves within a community, conducting a deep listening exercise to better understand who they are working with and how they might wish to use BAL’s first-person storytelling system. Towards the end of the workshop participants are then able to play with *TMTBA* and create performances over which they have authorship. I would argue that BAL’s practice-based research represents a logical progression in how protocols from neuroscientific experiments might be applied to explore the intersubjective realm of social relations. As Chapter 3 makes clear, empirical scientific evidence already exists as to the efficacy of body transfer illusions to engender a sense of whole-body ownership. BAL’s secondary research rather utilises and creatively adapts these extant methods as a pre-tested framework through which to create new knowledge, examining how body-ownership may have wider social impacts and help us to understand broader human systems across borderlands of race, gender, disability, age etc. The emphasis in BAL’s applied practice, much like S&R’s facilitation of others, is on the interplay between the virtual and actual. BAL seeks to create the conditions for audiences to take what is learnt from owning a virtual body and use this knowledge to improve the quality of people’s lives. Consistent with my argument in Chapter 2, the ‘virtual self’ (to borrow Bolter and Grusin’s term) in this context is not simply a means to escape to virtual worlds or transcend the limits of the body. At this juncture it would be productive to scope evidence as to the real-world impacts and uses of *TMTBA* in section 4.8, before examining issues of accessibility to BAL’s techniques.

4.8 *TMTBA* *–* Applications

Referring back to the primary scientific research upon which ‘The Machine’ is based, Valeria I. Petkova and H. Henrik Ehrsson stated that their research in body-swapping could have ‘ground-breaking industrial and clinical applications’, citing it as a potentially valuable research tool for ‘body image disorders’ and enhanced ‘realism’ and ‘presence’ in tele-robotics and other tele-operator systems (Valeria I. Petkova, H. Henrik Ehrsson, 2008: 7). However, BAL has productively expanded the scope of these potential applications within the arts and the non-commercial sector, demonstrating further experimental uses of *TMTBA* as an empathic tool to investigate phenomena such as conflict resolution, tolerance toward different individuals, generational difference, rehabilitation and pain tolerance, as well as democratising access to their hardware for widespread replication (as I will illustrate in section 4.9). BAL’s *Vimeo* channel contains a growing archive of video documentation, including recorded presentations, interviews and demonstrations of ‘The Machine’ being used in different contexts. In a recorded CULTURUNNERS lecture at MIT,[[207]](#footnote-208) Daanish Masood (BAL co-investigator and community organiser/advisor at UN Alliance of Civilizations) explains that within his UN role part of his job entails going directly into communities that are facing different kinds of crises and listening.[[208]](#footnote-209) He advocates ‘deep listening’ as an approach that in itself can have a ‘transformative’ or ‘healing effect’, a claim that has resonances with Jane Gauntlett’s facilitation of individuals with TBI (as discussed in 4.4) in which she engages in a cathartic process of two-way ‘story sharing’. In addition to deep listening, the Alliance provides resources and expertise according to the expressed needs of a community in order to get them to ‘come together on shared interest’ (‘Daanish Masood Culturunners MIT’). These experimental social projects or models are then scaled and applied in different contexts with communities facing similar challenges that range from unemployment to tensions of identity. ‘The Machine’ has been applied as an immersive storytelling device in numerous Alliance workshops. In his presentation, Masood cites the case study of a workshop on intergenerational trauma designed for young leaders in the Somali diaspora. The focus of this workshop concerned narratives of pain that are relayed across generations. He asks:

What are those narratives that are being transmitted and are they allowing us to break away from a cycle of pain, a story of ‘we will never be successful’, or ‘our family will always have troubles?’ If that is the case, can those stories be told in a different way? We went into this group of Somali diaspora story-tellers and we offered ‘The Machine’ to see how they would like to use it. (‘Daanish Masood Culturunners MIT’)

Through the workshop facilitation, participants learn about *TMTBA*’s interaction protocols and the system is subsequently offered to the community for them to explore ways of communicating their stories to others, placing audiences inside their VBs. This approach is correspondent with S&R’s use of *In My Shoes* as means to facilitate dialogues between neurological patients and their circles of support – both empowering different groups to story share from simulated first-person vantage points. This application of *TMTBA* is at an experimental stage, and Masood raises key questions about what results of trialling this platform might yield in terms of changing perceptions in the long term. In my interview with Marte Roel, he similarly acknowledges that BAL would like to ‘measure behavioural changes in the medium to long term, rather than right after the experience’ (Roel, ‘Personal Interview’); to date this is research that the collective have not yet had the capacity to undertake. Nonetheless, BAL’s illusionistic methods have attracted support among key partners who are testing the experience in contexts where the immersive ontology of *feeling more fully with the body of another* is given proximate expression through virtual body transfer with the aim of engendering positive social change.

In Chapter 3, my survey in 3.2 provided an indication of the kinds of boundaries that the plot device of the body-swap has been used to transcend in literature, film and theatre. The narratological problem that I cited was that the ‘reader’ is always exterior to the act of bodily empathic learning that is represented. BAL’s immersive intersensory practice is offered as a solution to this problem, which has further implications in terms of authorship. Rather than positioning individuals as ‘readers’ of extant texts, BAL’s practice passes authorship over to participants who deploy *TMTBA* to tell their own stories and implicate others inside the illusion of a bodily transaction to promote self-understanding, empathy and tolerance. ‘Ownership’, beyond precipitating the illusory possession of another’s virtual body, is also ownership over the artwork which is transferred to the communities with whom the collective work. This interest in passing on ownership to others parallels the relationship that the ‘mentee’ in S&R’s facilitation has as the ‘lead artist’, who applies Gauntlett’s embodiment techniques but has ultimate creative control over the output (I will elaborate on BAL’s related philosophy of ‘open-access’ shortly in section 4.9).

BAL’s *Vimeo* channel documents the kinds of embodied stories that have been shared by individuals using the collective’s telepresence techniques. In a performance created by a Senegalese dancer called Youssoupha Diop, he shares his story of immigrating to Europe at L'estruch in July 2013 while audiences are situated inside his VB using *TMTBA.* Youssoupha invites others to use ‘his’ hands to interact with objects that relate to his journey to Spain where he lived on the streets for 5 months. Another example in which ‘The Machine’ is used to cross generational divides is BAL’s mother-daughter relationship experiment, which afforded participant Anna Recasens the opportunity to body-change with her daughter Sarah in a performance using *TMTBA*. Anna experienced ‘the exact look and natural gesture vocabulary of her daughter’ from Sarah’s bodily perspective during the creative process of drawing a comic book, while listening to her daughter’s voice telling a story she wrote entitled ‘The girl of blood tears’ (‘“The girl of blood tears” – Performance by (mother and daughter) Anna and Sarah Recasens’). The ‘body-swap’ interaction protocol has been used to construct the sensation of exchanging gender identities. In an article entitled ‘I Swapped Bodies With Someone’ on the *BBC: Future* website, science journalist Rose Eveleth documents the experience of actress, model and artist Rikke Frances Wahl who temporarily became a man when swapping bodies with her partner, BAL co-founder Philippe Bertrand. Wahl comments, ‘It feels weird. You start to feel more and more comfortable in it, and you start to really get the fantasy of how it would be if it were your body’ (Eveleth). While these examples connect with extant fictional narratives that function to permit ‘characters’ to traverse boundaries such as race (e.g. Ignatius Donnelly’s *Doctor Huguet*), age (e.g. H. G. Wells’ *The Story of the Late Mr. Elvesham*) and gender lines (e.g. Alan Ayckbourn's *If I Were You*), BAL’s immersive practice is accompanied by a growing corpus of scientific knowledge that has evinced the short-term benefits that these techniques might engender in participating audiences.

In regards to the effects of these empathy experiments, BAL’s whitepaper cites scientific studies that have verified ways in which IVR is effective at combating particular biases toward others on the basis of body image, such as implicit racism. Tabitha C. Peck et al note that prior to their research paper ‘Putting Yourself In the Skin of a Black Avatar Reduces Implicit Racial Bias’ (2013), the extent to which body ownership illusions using immersive virtual reality (IVR) had been scientifically tested to change interpersonal attitudes was ‘meager’. The researchers tested 60 female participants who substituted their own light-skinned body for a dark-skinned virtual avatar (or virtual body). A racial Implicit Association Test (IAT) was administered three days prior to the experiment,[[209]](#footnote-210) and after IVR exposure. The researchers document that the difference in the pre- to post-experience IAT scores suggested that the dark-skinned embodied condition decreased implicit racial bias. This study indicates that virtual embodiment may represent a powerful tool for exploring ‘fundamental psychological and societal phenomena’ (Peck T.C., Seinfeld C., Aglioti S. M. and Slater, M. 2013: 779-787). Another scientific study by Lara Maister et al used the RHI paradigm (discussed in 3.4.2) to distribute multisensory stimulation to ‘light-skinned Caucasian participants to induce the feeling that a dark-skinned hand belonged to them’ (170). Two experiments were conducted, the results indicating that the more intense the illusion of ownership over a dark-skinned rubber hand, ‘the more positive their implicit racial attitudes became’. The researchers concluded from these findings that illusory ownership is an effective way to ‘change and reduce negative implicit attitudes towards outgroups’ (Maister L., Sebanz N., Knoblich G. and Tsakiris M. 2013: 170–178). While it is crucial to note that none of these scientific studies provide significant evidence as to the long-term effects of these approaches, the measured short-term effects (up to 3 days after the experiment) indicate that there may be significant value in the kinds of immersive body transfer experiments used in S&R and BAL’s respective empathy-building practices. Both artists engage directly with the philosophical problem of knowing other bodies by finding methodological strategies through which audiences might be transformed.

Beyond the use of ‘The Machine’ as a story-telling platform, BAL is also investigating its applications in healthcare settings, specifically in relation to pain tolerance. In an online video entitled ‘The Machine To Be Another on Daily Planet - Pain Tolerance’, Ian Coxon, from the Institute of Technology and Innovation at the University of Southern Denmark, tests ‘The Machine’ to investigate whether this technology can be applied to ‘confuse’ the pain system. Coxon has his left hand placed in a tray of ice cold water, and must keep it submerged for as long as he can. His tolerance is initially measured at 3 minutes and 43 seconds. He then repeats the exercise while wearing *TMTBA*. The documentary reports that with the assistance of ‘The Machine’, Coxon’s time in the ice water ‘more than doubles’. Coxon comments after the experiment; ‘I was so involved in the motions and the sensory inputs, at times I completely forgot about my hand in the ice […] I felt no pain’. Further testing is required, but Coxon indicates that this initial experimentation using *TMTBA* to creatively ‘design’ distraction ‘to the point where there is no pain’ may be a possible application. I would note that the purposing of embodiment illusions to divert the mind away from pain has significant correspondence with Vilayanur S. Ramachandran’s use of mirror therapy to treat phantom limb sufferers by prompting the brain to reconcile sensory conflict (examined in section 3.4.1). BAL’s performances have further congruencies with Ramachandran’s experimental approaches to therapy; in a performance experiment entitled ‘Two dancers, one body extended choreography’ at L'estruch in June 2013, a wheelchair bound dancer used *TMTBA* to see themselves from the vantage point of a non-wheelchair using dancer (‘Dancing on the Feet - Embodied Dance Investigation with The Machine to Be Another’). The illusion constructed was of the wheelchair user ‘dancing on feet’, which has formed initial foundations for further research exploring the possibility of developing ‘The Machine’ into a low-budget immersive rehabilitation system. This illustrates how BAL’s experimentation in performance in the arts sector provides foundations to subsequently apply body illusions in clinical contexts where the approaches might contribute to improving the lives of patients.

Having scoped these applications of *TMTBA* system, in section 4.9 I will consider who has access to these techniques. How is the information about these immersive approaches to empathy-building being disseminated and who stands to benefit?

4.9. *TMTBA* – Access

*TMTBA* is licensed under a Creative Commons Reconocimiento-NoComercial 3.0 Unported License, and BAL’s website further describes the outputs from their research as ‘Creative Commons tools based on Open Knowledge’ (‘BeAnotherLab’). ‘Open Knowledge’ is defined on the *Open Knowledge Foundation Network* (*OKFN*) website as ‘a worldwide non-profit network of people passionate about openness, using advocacy, technology and training to unlock information and enable people to work with it to create and share knowledge’ (‘About’). In addition to a ‘network’, the foundational principle upon which ‘open knowledge’ was founded is succinctly articulated as ‘any content, information or data that people are free to use, re-use and redistribute — without any legal, technological or social restriction’ (‘What is Open?’). Roel has stated that the importance of making BAL’s tools widely accessible to other users online is to enable their methodological approaches toward the cultivation of empathy between individuals to spread. The imperative is to allow users to ‘replicate this idea in different communities across the world’ (‘Virtual Reality Beyond Gaming | Engadget Expand’). BAL’s tools are intended for communities and independent researchers who wish to reconstruct the system and apply it in their specific contexts, and accordingly the Creative Commons ShareAlike license for *TMTBA* only permits the recreation of the system for non-commercial applications.[[210]](#footnote-211) The dissemination of knowledge is oriented on the societal benefit that users or immersants might experience from participating in an empathy project, but additionally it affords participation in replicating and assembling the hardware setup through a DIY approach. Users are permitted to reconstruct BAL’s system as the technological building blocks for new and diverse applications to foster empathy in different global contexts. Towards this aim, BAL has uploaded a video (‘General Overview TMTBA Vest’) offering online guidance as to the components needed to build the vest for *TMTBA* system, as well as a link to the downloadable rar. files which can be used to 3D print the different components.

In my personal interview with Roel he expressed his philosophy on authorship, commenting that ‘we all have thought of *The Machine To Be Another* in a way. I think it’s an idea that is out there - we are not the first ones to use this technological setup’ (Roel, ‘Personal Interview’).[[211]](#footnote-212) As my brief historical survey of body-swapping narratives in 3.2 attests, the concept of exchanging bodies has been ubiquitous in art. Furthermore, the foundations for BAL’s techniques derived from scientific embodiment research surveyed in sections 3.4.1, 3.4.2 and 3.4.3 are readily in circulation. Where BAL makes an important and original contribution is their technical innovation, the origination of replicable ‘body-change’ and ‘body-swap’ interaction protocols and open-access propagation of the components for their interactive platform for non-commercial use.

4.10 Conclusion – Body Transfer Illusions as an Immersive ‘Tool’

The importance of the other in defining the self is a question that has been examined in many domains of knowledge; Drew Leder argued that ‘we are never proto-solipsists left to construct a body image in isolation. My awareness of my body is a profoundly social thing, arising out of experiences of the corporeality of other people and of their gaze directed back upon me’ (*The Absent Body*, 92). S&R and BAL’s work effectively displaces the participating individual from their body, inside the gaze that looks back – through these illusion-inducing procedures the audience is doubled, encountering themselves as another through virtual embodiment. These science-inspired self-deceptive protocols reconcile the immersant’s presence ‘inside’ the dramatic by concealing the physical body and assigning them a remediated body image, VB or avatar. This approach to ‘immersion’ as a concealment is analogous to the word’s astronomical derivation as the ‘eclipsing’ of a celestial body behind another. It also shares some correspondence with the immersive theatres signposted in my ‘Introduction’ that have masked or cloaked the spectating self. However, unlike these practices the spectator is not simply costumed but experiences the sensation that a virtual body is incorporated as part of the phenomenal self; this perceptual sense is frequently the reward mechanism for the accurate aligning of one’s movement with that of the virtual counterpart.

To briefly return to Michael Fried’s anti-theatrical discourse that I surveyed in Chapter 1, I would argue that both S&R and BAL’s practice comply with two of Fried’s three aforementioned propositions that define the ‘theatrical’ artwork. Firstly, these practices are ‘incomplete’, since the performative use of body transfer illusions necessitates the ‘haptically incorporated’ spectator to bring about the work’s completion. Furthermore, the spectating body becomes itself a stage-space, and the appropriation of neuroscience-derived embodiment protocols creates the necessary conditions for the phenomenal body to incorporate a VB while the physical body is momentarily ‘replaced’. In this respect, bodies are paradoxically both indispensable to the illusion of body-swapping/hopping (consistent with Machon’s framing of immersive theatre as a (syn)aesthetic practice in which bodies are ‘prioritised’), and at the same time are disowned. More precisely, in a body transfer illusion one’s sympathetic responses report that the physical self has been dis-owned while intellectually the audience know that no such replacement has occurred. Secondly, both practices accord with Fried’s critique of the theatrical work’s ‘synthesis’, since they are wholly unconcerned with remaining inside any given paradigmatic boundaries. As I have suggested, these intermedial works synthesise knowledge from performance practices, virtual reality and scientific research in embodiment to form new modes of immersive participation, and this amalgam of techniques is subsequently applied in multi-paradigmatic contexts. Thus, not only are these practices ‘synthesised’ or ‘interdisciplinary’, but they problematise the very notion of disciplinary boundaries and discrete domains of knowledge creation. The core interest in embodiment as a means to better know the other evidently spans numerous fields; this epistemic interest supersedes Fried’s anti-theatrical desire for adherence to received conventions that constitute the ‘respective essences’ of different artforms. Fried’s third proposition is more complex in relation to S&R and BAL’s practices. He argued that the ‘quality’ or ‘value’ of an artwork is only measurable within the individual arts and therefore the ‘theatrical’ work is incommensurable because it is ‘in-between’ art forms. As I have evidenced in Chapter 3, the efficacy of the VR body transfer illusions integrated in S&R and BAL’s practices have been empirically tested (thus, the affects on a participant and the intensity of a body illusion are measurable), but the appropriation of these illusions in performance is toward qualitative research. Beyond an ‘artwork’, these practitioners are engaged in a dialogic collaborative process that repositions the participant as the lead artist and deploys technology as an empathy-building tool with the pragmatic aim of facilitating individuals and communities to communicate experiences that are otherwise ‘incommunicable’. Following the epistemic problem highlighted in Chapter 3 via Thomas Nagel’s proposition in the philosophy of mind that to know certain kinds of bodies necessitates possessing the perceptive faculties of those bodies, these strategies attempt to operationalise immersive ontology as I have conceptualised towards the aim of *feeling more fully with the body of another*.

**Chapter 5: Analogue’s *Transports*: Touching With Another’s Hand – Immersion and Tremor**

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Fig. 8: Publicity image for Analogue’s *Transports.* Fig. 9: Analogue’s *Transports* (Production shot).

5.1 Introduction

This chapter will investigate the research, development and reception of Analogue’s Wellcome Trust funded pilot project *Transports*, an interactive installation that invites individual audience members to participate in a first-person simulation of a fictionalised subject living with Young-Onset Parkinson’s disease (YOPD).[[212]](#footnote-213) The aims of the *Transports* pilot while distinct are adjacent to those of S&R and BAL, since the installation uses low budget technologies in combination with multisensory stimulation as a methodology to engender in p Afterword added in 1969,re Antrol of Theatre Antrhopology ()sion body illusion to explored the first-person experience of tremoarticipants a feeling of bodily ownership over a virtual body-part – in this specific instance over the hand of another – towards the aim of cultivating an embodied understanding and a personal sense of living with ‘symptoms’ associated with YOPD.

The technical components that comprise the installation include the following: a Raspberry Pi computer (to control a motorised glove and distribute video and audio content),[[213]](#footnote-214) pre-recorded point-of-view high-definition video footage (MPEG-2 format) displayed on a hand-held monitor,[[214]](#footnote-215) a motorised rotating counter-weight mounted onto a wearable glove (to induce tremor),[[215]](#footnote-216) binaural sound distributed via headphones (relaying participant instructions, diegetic sounds corresponding to the environment in the video footage and a character’s inner-thought process),[[216]](#footnote-217) and tactile objects housed inside a custom-made white acrylic specimen case. These components are used in combination to create the illusion that the virtual hand presented onscreen represents that of the participant as its ‘double’. The audience member is cast as ‘Andrew’, a man in his early thirties who invites the participant to momentarily take ownership over his hands and his remembered experience of the onset of his symptoms at a wedding reception. As the immersant observes the virtual hand onscreen develop the symptom of tremor while holding a spoon, the kinaesthetic sensation simultaneously passes into the participant’s own hand as they hold a real spoon behind the virtual one onscreen (see Fig. 9). A spinning counter-weight mounted onto their glove produces a tremor that is activated and de-activated by the Raspberry Pi computer at time-codes that are pre-programmed to synchronise with the events occurring in the video footage. Via simple and inexpensive body transfer illusions such as this, the immersant can temporarily and safely experience sensations that are akin to the way in which interactions with the local environment are profoundly altered by the symptoms of Parkinson’s disease. I will demonstrate that immersivity in this instance concerns playfully problematizing the immersant’s perceived sense of bodily ownership between their hand and the virtual body-part onscreen, corresponding with the scientific VR body illusions surveyed in Chapter 3. I will argue that the technology in use in *Transports* acts as both an intermediary between the two hands, and an intervention designed to deliberately disrupt the co-ordination of the immersant’s limbs involved in the performance of a motor skill. The destabilising of important integrations of sensory information in the audience’s body is a strategy to make accessible to them the remote physical and psychical experiences of another body. The immersive ontology that is the core interest of this thesis, defined as *feeling more fully with the body of another*, is approximated in this case study using a simple body transfer illusion towards an epistemic objective in arts, science, education and healthcare contexts. Crucially, the installation is not intended to replace human-to-human interactions, but is conceived as an empathic learning platform to open up and share remote and potentially isolating bodily experiences in order to facilitate better communication and understanding.

The *Transports* R&D process was undertaken in consultation with behavioural neuropsychologist Professor Narender Ramnani (Royal Holloway University) who advised on the project, Elaine Snell (Chief Executive Officer at the British Neuroscience Association) who supported the organisation of a live demonstration of *Transports* at the Science Museum, and the charity Parkinson’s UK. The latter played a significant role in aiding Analogue’s research, brokering relationships with volunteers, supporting the testing process, and advising the company on best practice in working alongside subjects living with YOPD. I will outline the particular ways in which the charity supported our research and development process in greater detail in section 5.3. To evaluate the outcomes of the pilot, the experience was tested in four different presentational contexts: in an arts context (both at Shoreditch Town Hall on 1 August 2014 and at Forest Fringe as part of the Edinburgh Festival, from the 6-11 August 2014), a science public engagement event (at the Dana Centre, Science Museum on 4 November 2014), with carers, researchers, those living with Parkinson’s disease and staff at Parkinson’s UK, and an educational context with Narender Ramnani’s BSc Psychology students on the *Clinical and Cognitive Neuroscience* course (PS3141) at Royal Holloway University on 30 October 2014. In regards to the latter context, the aim was to test the work’s efficacy as an experiential pedagogic tool for students who may go on to treat individuals with Parkinson’s disease in their professional lives. This application of body transfer illusions in Higher Education connects Analogue’s interests with that of S&R and BAL who, as I have identified in Chapter 4, share an interest in applying related embodiment techniques towards different kinds of real-world impacts with different key audience groups. Consistent with the core argument of this thesis, the motivation for actuating immersion of this kind is epistemological in origin: namely, to reconstruct an ineffable first-person experience of a subject with YOPD through the deployment of wearable technologies and interaction protocols derived from open-source experimental psychology and neuroscience. The RHI paradigm examined in 3.4.2 has particular correspondence with *Transports*, as the installation aims to generate a sense of ownership over a single body part.

I will begin in section 5.2 by expanding on the genealogy of the thinking behind the *Transports* pilot and its aims, which evolved from an earlier Analogue audio performance entitled *Superlatively, Actually Awake*. In section 5.3 I will explicate the different stages of the research and development process through which the work was created. This included the research that contributed to storyboard development and the filming process (to generate the video and audio content) in section 5.3.1, ‘Wizard of Oz’ testing in section 5.3.2 (a methodology used in the early stages of interactive design to test a product through observation), a first-person description of the audience experience culminating from the R&D process in section 5.3.3, and user-testing in section 5.3.4 (in which audiences demoed a working version of the *Transports* installation). Finally, in section 5.4 I will offer an analysis of the qualitative data gathered through the user-testing with different audiences (e.g. through recorded interviews and questionnaires undertaken by participants) to evaluate how successfully the pilot met the aims I have outlined in this introduction. I will demonstrate that immersivity as it is conceptualised within this work seeks to situate the immersant within the bodily experience of another - to *feel with someone else’s hand*. Critically, I will demonstrate how *Transports* creates the necessary conditions for prompting the perceptual illusion of owning another’s extremity, drawing on the scientific findings investigated in Chapter 3 and identifying further corollaries with the case studies explored in Chapter 4. *Transports* is an experience that is designed to create the circumstances through which an immersant (who does not live with YOPD) is able to self-deceive, and to feel kinaesthetic sensations with the virtual hand of someone living with YOPD for fifteen minutes.

5.2 Genealogy of the *Transports* pilot

Fig. 10: *Superlatively, Actually Awake* at the Barbican, Fig. 11: *Superlatively, Actually Awake* at the *Pulse Festival*, *Wonder: Art & Science on the Brain* season. New Wolsey Theatre, Ipswich.

In the ‘Introduction’ to this thesis, I cited a moment in Analogue’s *2401 Objects* in which theatre audiences were invited to inspect their skulls, locating the anatomical region of their hippocampi while imagining that they were performing this procedure with the skilled hands of a neuroanatomist. *Transports*’ application of a body ownership illusion can be understood as an evolution of this idea beyond conceptual ownership of another’s hands. Furthermore, it represents a playful challenge to G. E. Moore’s ‘certainty’ regarding his hands as ‘external objects’ via an illusion in which the external object in question becomes experienced as part of the phenomenal self. The *Transports* pilot was an extension of research interests that emerged through another Analogue performance that sought to immerse theatre audiences inside the experience of neurological patients. In 2013, Analogue was invited to create a short audio piece for *Wonder: Art & Science on the Brain* (2 March – 10 April 2013), a season programmed by the Barbican and the Wellcome Trust that was inspired by the British Neuroscience Association's *BNA 2013: Festival of Neuroscience*: a scientific conference that hosted over 1,700 neuroscientists from across the globe, held at the Barbican from 7-10 April. As part of the season, the Wellcome Trust co-ordinated the *Wonder Street Fair*, an event in the Barbican foyer that was free to the public, incorporating 25 exhibits presented by artists and scientists that explored the workings of the brain. For this event, my company created a short 9-minute headphone piece entitled *Superlatively, Actually Awake*. This work placed single participants inside the first-person perspective of an amnesic musicologist called Clive Wearing.[[217]](#footnote-218) Wearing was diagnosed in 1985 with herpes viral encephalitis which destroyed his left hippocampus and parts of his right hippocampus in the limbic system. Parts of the left temporal lobe and the frontal lobe in Wearing’s cerebral cortex were also damaged and as a consequence, he suffered acute and long-lasting anterograde and retrograde amnesia, leaving him unable to form new memories or recall aspects of his past.[[218]](#footnote-219) While the effects of Wearing’s condition are similar to that of Henry Molaison (the amnesic subject of *2401 Objects*), both the cause that precipitated his amnesia and the way that the condition is experienced in his particular context are very different. Since the 1980s, Wearing has lived a life of moment-to-moment consciousness that is recorded in a journal that he keeps, detailing his many repeated claims of being ‘superlatively, actually awake’.

As part of our research and development process we surveyed a number of secondary research materials, including an online documentary entitled *Clive Wearing: Living Without Memory*. In this documentary, eminent neuropsychologist Professor Barbara A. Wilson conducts the *Doors and People* test with Clive: a neuropsychological test of long-term memory developed by Alan Baddeley, Hazel Emslie and Ian Nimmo-Smith in 1994.[[219]](#footnote-220) This research instrument is designed to test the subject’s visual recognition, visual recall, verbal recognition and verbal recall. In regards to visual recognition, the subject is presented with a series of photographs of coloured doors that they must attempt to memorise. The subject’s memory is subsequently tested by their recognition of each target door from a set of four doors that vary in similarity and, consequently, in difficulty.[[220]](#footnote-221) In the documentary Wearing is shown a series of front doors, a stable door, a church door and a garage door. When asked if he is able to remember any of the doors he has been shown he responds, ‘No. Not at all. I can’t remember anything. It’s just like being dead […] I don’t remember anything’ (*Clive Wearing, Part 2b: Living Without Memory*).

*Superlatively, Actually Awake* begins as a reconstruction of this neuropsychological test between Wilson and Wearing. The audience member is seated on a piano stool at a table, upon which an open photo album displays a photograph of a door (see Fig. 10 and Fig. 11). In a set of wireless headphones, a voice asks the audience member:

‘You can see it, Mr. Wearing? You can see the door in front of you? […] This is a front door. *Turn the page*’ [instructions for action are indicated by italics]. The audience responds to this command, hearing the diegetic sound of the album’s cellophane pages as they are turned. ‘This is another front door. *Turn over*. This is a stable door. *And again*. Front door. *Turn over*. Stable door. *Turn*. And this is a church door. (*Pause*) One of those doors Mr. Wearing – can you remember one of them?’ (*Superlatively, Actually Awake*)

Wilson’s question remains unanswered. The audience member as ‘Clive’ is asked to turn the pages of the album a further three times, on each occasion they are confronted with a reproduction of the same photograph whilst being told, ‘This is a church door’. They are then asked: ‘Can you remember the garage door?’ Whilst the audience can remember the repeated church doors in a way that Clive would not (since repetitions frequently do not register as such for someone with severe anterograde amnesia), there exists no corresponding memory from the repository of images that they have seen that relates to the ‘garage door’. In this moment, the disorientation that the audience member experiences by being prompted to recall an image that they have not seen is an attempt to momentarily position the audience inside the slippages in Clive’s perception of events. These slippages are strongly illustrated in an article by Clive’s wife Deborah Wearing in the *Telegraph* on 12 January 2005, entitled ‘The Man Who Keeps Falling in Love With His Wife’, where she describes how Clive was ‘constantly surrounded by strangers in a strange place, with no knowledge of where he was or what had happened to him’ (Wearing).

The third photograph of the church door differs to the others in one respect; the door is ajar. The sound of footsteps on gravel approaching the church can be heard in the audience’s headphones, as piano music transports them aurally through the visual portal of the open door. They are then told: ‘You’re inside that church. You’re sitting on a black piano stool. […] You’re pressing the black and white keys. And for as long as the music lasts, you can remember the notes. Without the music you’re lost again. Everything’s okay, as long as the music lasts’ (*Superlatively, Actually Awake*). From this moment, the story unfolds in which the audience-as-Wearing had no memory of his musical education, but was still able to play the piano because his procedural memory remained intact.[[221]](#footnote-222) He also continued to remember his wife Deborah, a fact that she documents in the aforementioned article when she states that ‘every time he saw me, he would run to me, fall on me, sobbing, clinging. It was a fierce reunion’ (Wearing). Later in the experience, when prompted to flick back through the album’s pages, the audience encounters the photograph of the garage door, prompting them to question its prior absence from their memory.

It is important to acknowledge that any attempt to reconstruct a first-person experience for an audience through the lens of moment-to-moment consciousness is presented with insurmountable difficulties. Temporarily recreating an experience of anterograde amnesia as a ‘deficit’ is never wholly realisable precisely because it is a deficit that the audience do not possess. This connects with the philosophical problem that I have examined in Chapter 3 in relation to Thomas Nagel’s argument, regarding facts that are beyond the reach of those who do not possess certain kinds of bodies; to *know* the experience of an anterograde amnesic necessitates owning the damage to the anatomical brain regions that precipitates anterograde amnesia. As I signposted in 3.3 in regards to other related memory conditions such as Korsakoff’s syndrome, subjects with this condition ‘confabulate’ because they cannot know that they do not know. This strongly hints at the limits of simulation, since even if it were possible to safely recreate the deficits associated with anterograde amnesia in an audience (e.g. loss of episodic memory), the experience would be meaningless precisely because the audience would not be able to retain it. Any live performance is particularly reliant on the anatomical structure of the audience’s hippocampi because, beyond the ephemeral act, the performance exists only insofar as they have the capacity to remember what took place.[[222]](#footnote-223) Put simply, there is no correlate for Wearing’s mode of ‘being in the world’ in the body of the participating audience. Lawrence Shapiro notes in *Embodied Cognition* (2011) that ‘an organism’s understanding of the world – the concepts it uses to partition the world into understandable chunks – is determined in some sense by the properties of its body and sensory organs’ (68).[[223]](#footnote-224) It is because one’s understanding of the world is contingent on the kind of body one owns that immersing the non-amnesic ‘inside’ the ontology of the amnesic is an irreconcilable proposition. However, I would argue that it is because of the remoteness of disorders such as Clive Wearing’s, that the attempt to construct the subjective character of these kinds of experiences is productive towards empathic comprehension. Oliver Sacks comments in an article entitled ‘The Abyss: Music and Amnesia’ (2007) that, although a person with amnesia cannot have direct knowledge of it, there may be ways to infer it:

[…] from the expressions on people’s faces when one has repeated something half a dozen times; when one looks down at one’s coffee cup and finds that it is empty; when one looks at one’s diary and sees entries in one’s own handwriting. Lacking memory, lacking direct experiential knowledge, amnesiacs have to make hypotheses and inferences, and they usually make plausible ones. They can infer that they have been doing something, been somewhere, even though they cannot recollect what or where.

Analogous to these cues that transitorily illuminate for the amnesic their own condition and prompt them to ‘infer’ what has transpired in the absence of recollection, the self-deception of the absent ‘garage door’ in *Superlatively, Actually Awake* is conceived as an inference that invites the non-amnesic audience member to momentarily ‘know’ their ‘amnesia’.

*Superlatively, Actually Awake* formed initial conceptual foundations for *Transports*, a more extensive research and development pilot committed to constructing first-person experiences through the lens of different neurological subjects. However, a significant development in the way the *Transports* R&D was structured was the intention to test the different potential applications of first-person experiences in relation to public awareness, empathy and care for those living with Young-Onset Parkinson’s disease. In Emma Brodzinski’s chapter ‘Superficial Wounds: The Problems and Possibilities of Medical Simulation’ from *Theatre in Health and Care* (2010), she examines how simulated events ‘may serve to move those who witness them and engender a real response with lasting effect’ (119), reflecting on how simulation may be applied in medical training. As I highlighted in the introduction of this chapter, *Transports* was tested with audiences in different presentational contexts; the testing with volunteers at Parkinson’s UK and Narender Ramnani’s undergraduate Psychology students provided opportunities to evaluate the experience we had created through user responses, interviews and qualitative questionnaire’s completed immediately following the event to assess its effects on these audiences as an applied practice.[[224]](#footnote-225) I will elaborate on the key stages of our testing and provide a first-person description of the audience experience in section 5.3, before critically examining the qualitative data collected from participants in my evaluation in 5.4.

Prior to offering a detailed analysis of *Transports*, I will first elaborate on the origins of the title of the project. The word ‘transports’ is used by Oliver Sacks in *The Man Who Mistook His Wife for a Hat* (1985), which is divided into four parts that are entitled ‘Excesses’, ‘Losses’, ‘Transports’ and ‘The World of the Simple’. He uses the word ‘transports’ to refer to phenomena in which, unlike instances of bodily losses and excesses where there is ‘something (physically) the matter’ (136), the ‘presenting feature [of *Transports*] *is* reminiscence, altered perception, imagination, ‘dream’’ (136).[[225]](#footnote-226) According to Sacks, ‘transports’ are seen as ‘psychical’, not as something ‘medical’ or ‘neurological’, and they have an intrinsic personal ‘sense’ that makes them unlikely to be understood as ‘symptoms’. While transports might be understood by some as ‘spiritual’, the instances cited by Sacks have evident organic determinants. Sacks’s description of a ‘transport’, beyond the word’s use as a taxonomy, usefully encapsulates my research interest in exploring the psychical and ‘personal sense’ of living with, and through, different kinds of bodily experiences. Etymologically, the word ‘transport’ derives from late Middle English, from the Old French *transporter* or the Latin *transportare* (from *trans* meaning 'across' and *portare* meaning 'carry'), and the verb ‘transport’ has multiple meanings. Of particular relevance to the aims of this R&D project is to ‘cause (someone) to feel that they are in another place or time’, or to ‘overwhelm (someone) with a strong emotion’ (‘transport’). In relation to the first meaning, as I will demonstrate, this experience seeks to psychically transport audiences via different bodily feedback modalities - more precisely, the participant’s visual (via video content), auditory (via binaural sound), kinaesthetic (via a glove inducing tremor) and tactile (via interaction with physical props) feedback modalities. As I have illustrated in Chapter 2, ‘transportation’ is key to the effects and affects of virtual reality and other immersive technologies. While *Transports* does not deploy VR HMDs like the practices examined in Chapter 4, it similarly conceals aspects of the participating body as a strategy to instate a new body-image; the immersant’s right hand is hidden from view by an onscreen virtual body-part. In theatre practice, the ‘transformation’ of the actor cited in the ‘Introduction’ of this thesis, that Mike Alfreds had identified as the ‘essence of theatre’, is relocated in this immersive installation to the audience, who is aware of their simultaneity in being both themselves in the ‘here and now’ and another elsewhere; the ‘elsewhere’ in this instance is the hall where a wedding reception takes place while the other is Andrew, the best-man seated at the head table. In regards to the latter meaning of ‘transport’, to ‘overwhelm’ with emotion, the dramatic content of the *Transports* pilot investigates how the physical changes in the body of an individual displaying the symptoms of Young-Onset Parkinson’s impact on both their outward interactions with others in their local environment and inner psychical life. Consistent with the meaning of ‘overwhelm’ as having ‘a strong emotional effect’ (‘Overwhelm’), a key aim of the work is to prompt affects through immersive technologies that trigger bodily sensations analogous to the kind experienced by those living with PD. ‘Overwhelm’ also means to ‘be too strong for’ or to ‘overpower’, a notion that correlates with the way in which other conditions can ‘overpower’ or commandeer the body of the individual as I have previously noted in relation to seizures in Chapter 4 (section 4.3). Consistent with this meaning, the inducing of a temporary tremor in a participant’s right hand whilst prompting them to undertake motor tasks is a playful intervention that allows them to experience a sense of important losses of integration in the body that overpowers the will of the individual. Listening to the experiences of those living with YOPD was crucial at different stages of the work’s development; I will expand on the process of both gathering critical feedback in response to storyboard drafts in 5.3.1, and the user-testing phase of the installation in section 5.3.4.

Our initial Wellcome Trust funding proposal for the project stated the aim of creating three experiences that were divided into different scientific categories: namely, motor impairments (e.g. Parkinson’s Disease), sensory impairments (e.g. tinnitus) and cognitive impairments (e.g. auditory hallucinations). However, the considerable complexity of these vast research areas coupled with our ambition to expand our practice using Raspberry Pi technology and bespoke coding to control and deliver the installation’s content as a fully automated system (in part, towards the pragmatic concern of reducing the costs associated with running the installation), necessitated modifying the focus of the pilot. Having consulted the Wellcome Trust regarding our decision to adjust the parameters of our enquiry, we concentrated our attention specifically on researching the experience of individuals living with Parkinson’s disease. I should note that the engagement and flexibility demonstrated by the Wellcome Trust in enabling us to be reflexive to what was learnt through an exploratory R&D process was crucial to the project’s success. Members of Analogue’s personnel already had pre-existing professional and personal connections with this condition; my Co-Director Hannah Barker had previously worked part-time for Parkinson’s UK to help develop and grow their volunteering strategy, while my connection was through a family member: my Grandmother Iris Beacher who was diagnosed with PD in 1983 after experiencing problems gripping objects in her hand. Following an initial consultation with Parkinson’s UK, the focus of our project was further refined, surveying the experiences of those specifically living with Young-onset Parkinson’s disease (YOPD) (sometimes called ‘early-onset’ Parkinson’s). The rationale for this decision was that the prevalence of YOPD is less widely known. According to Parkinson’s UK, approximately ‘10% of the 1 million people with the disease are thought to be below the age of 40.3’ (‘Young-Onset Parkinson’s Disease’), and it is when an individual is diagnosed below the age of 50 that the disorder is termed ‘Young-Onset Parkinson’s disease’. *Transports* provided a unique opportunity to both test, and raise, public awareness.

Named after English doctor James Parkinson who published the first detailed description of the disease in *An Essay on the Shaking Palsy* in 1817, Parkinson’s disease might be characterised in particular by the bodily ‘excesses’ and ‘losses’ that it engenders. For example, Richard West in a book published by the UK Home Office entitled *Parkinson’s Disease* (1991) cites cardinal manifestations of Parkinson’s as excessive movement through tremor or loss or restriction of movement through bradykinesia (‘slowness of movement’), rigidity and postural instability (‘chasing one’s own centre of gravity’) (3).[[226]](#footnote-227) Where Young-Onset Parkinson’s differs from the conditions that Sacks defines as ‘transports’ is in the fact that there is something ‘physically the matter’. However, neuropsychiatric disturbances and ‘altered perception’ are not uncommon in those living with Parkinson’s, which can manifest as disorders of speech, cognition, mood, behaviour and thought.[[227]](#footnote-228) Sacks quotes Ivy McKenzie who wrote that: ‘The pathological physiology of the Parkinsonian syndrome is the study of *an organised chaos*, a chaos induced in the first instance by destruction of important integrations, and reorganised on an unstable basis in the process of rehabilitation’ (‘Losses’, *The Man Who Mistook His Wife for a Hat*, 7). In response to McKenzie’s description, a key aim of *Transports* was to allow the immersant to experience safely something akin to this ‘organised chaos’ and create a temporary intervention that destabilises the relationship between the participant’s thought (or rather the superimposed thoughts of ‘Andrew’ relayed through the headphones), feeling (tactile sensations experienced by the participant’s right hand, ‘as if’ it were the virtual onscreen hand), and action (the participant’s motor control and kinaesthetic sense is altered by the glove when activated). Having introduced the project’s origins and aims, I will now analyse the research and development process through which the experience was formulated.

5.3. *Transports* Research and Development Process

This section offers an account of the *Transports* making process; its inclusion signals a shift in viewpoint in this thesis from my role as a participating immersant engaging critically with the work of adjacent performance makers in Chapter 4, to a practitioner who is accountable for the artistic output and embedded in a practice-driven research process. The importance of documenting the *Transports* research and development from this vantage point is to illuminate the project’s particular challenges, how they were navigated and to articulate the model of working that was applied. I should acknowledge that the overarching epistemic aim of generating embodied or tacit knowledge that is ‘ineffable’ presents an inevitable problem in subsequently articulating the result of being an audience to such an experience; if the complex reconstructed sensations of another’s non-normative perception could be wholly communicated through text alone, there would be no necessity for the installation itself. As a result, the practical output accounts for this particular aspect of knowledge creation. However, my interest in this critical exegesis is rather to highlight both the methodologies and the crucial interdisciplinary networks of collaboration that circulate around this kind of knowledge creation with the aim of formulating a systemised approach to deploying body transfer techniques in performance. Therefore, the task of this chapter is to begin to establish what constitutes best practice in a nascent but burgeoning field of immersive theatre-making.

Analogue’s *Transports* R&D process was divided into different phases of activity. In this section I will expatiate on the different stages of research that contributed to storyboard development and the filming day (5.3.1) and ‘Wizard of Oz’ testing (5.3.2). I will then offer an account of the audience experience (5.3.3) and a critical reflection on the user-testing process (5.3.4), which entailed the trialling of an installation prototype with volunteers at Parkinson’s UK. Finally, I will analyse the data gathered from different users who tested the installation (5.4), to draw conclusions in regards to the efficacy of this first-person immersive simulation.[[228]](#footnote-229) I propose to evaluate *Transports* both as an experience to heighten awareness and empathy among different audiences and as a pedagogical tool for those who may be engaged with the care and treatment of those living with Young-Onset Parkinson’s disease. I will also consider other potential applications for the experience that emerged through responses following the user-testing phase of the pilot.

5.3.1 Research and Storyboard Development

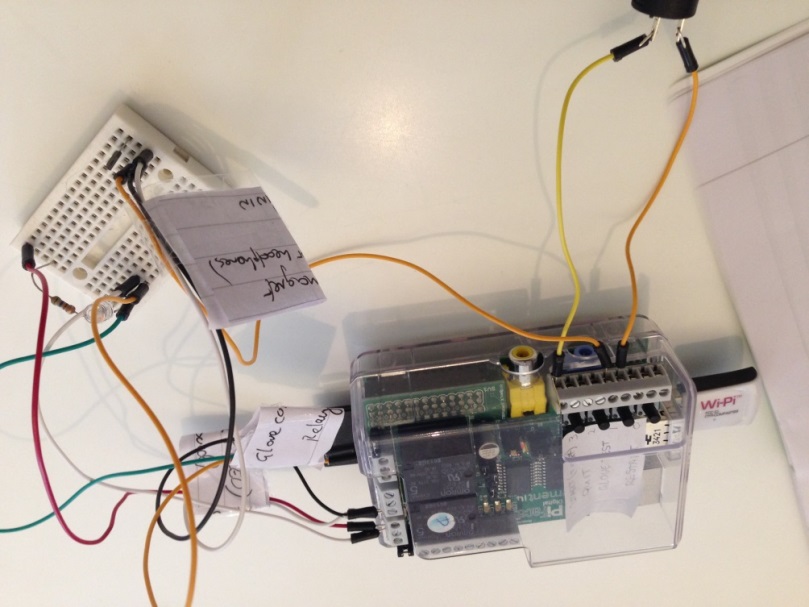
 

Fig. 12: *Transports* R&D – Analogue’s Production Fig. 13: The initial setup of the Raspberry Pi system for Manager Helen Mugridge testing the proto-type *Transports,* developed by Julian Harley.

glove with Designer Max Humphries.

As part of the initial research that contributed to the script development process, my co-author Hannah Barker and I first explored secondary scientific research materials that expanded on the pathology of PD. The National Institute for Health and Clinical Excellence (NICE), an organisation providing national guidance and advice to improve health and social care, has published a pathway online (‘Parkinson’s disease overview’) that illustrates the diagnosis and management of PD in adults in primary and secondary care. This clinical guide on PD is regularly updated to take into account the latest evidence-based clinical trial data on pharmacological and surgical treatments. These pathways are predominantly an online tool to help healthcare professionals and patients decide on the most appropriate treatments. However, this is also a valuable resource to aid practitioners in the arts to better understand and construct an informed fictionalised journey of a subject living with PD, from the early stages of displaying symptoms through to referral, diagnosis, management of the disease and palliative care.

In order to further engage with the causes of PD through the lens of the neuroscientific paradigm, I attended two of Professor Narender Ramnani’s lectures as part of the *Clinical and Cognitive Neuroscience* course(PS3141) designed for a Psychology undergraduate cohort at Royal Holloway University. The first lecture I attended on 31 October 2013, entitled ‘Nervous System Damage I: Neurodegeneration - Parkinson's Disease’, was predominantly focused on prevalence and symptoms, degenerating pathways and neuropathology (specifically the importance of understanding the relevant systems in the brain), PD in the context of the Basal Ganglia anatomy, PD in the context of the dopamine system, MPTP-induced lesions (a drug that caused Parkinson’s-like symptoms in patients)[[229]](#footnote-230) and treatment strategies. The second lecture I attended on 14 November 2013, entitled ‘Rehabilitation I: Neural transplants and brain repair’, expanded on different PD and MPTP models, investigating transplants to replace lost dopamine and the ethics of such treatments. In an interview I later conducted with Ramnani on 23 June 2014 for a documentary created by Alex Markham and digitalSTAGE that accompanied the *Transports* installation (‘Transports Documentary’), he noted that:

The cause of Parkinson’s disease is very interesting because unlike other neurodegenerative disorders like Alzheimer’s where the pathology is very diffuse, the areas in the brain that degenerate are very specific and local. There is a collection of cells deep in the brain called the basal ganglia and there is a very specific pathway within the basal ganglia that degenerates, a place called the striatum and the substantia nigra and it’s the nigrostriatal pathway that degenerates; it’s the pathway that arises from the substantia nigra and goes up to the striatum. And that’s basically a dopamine pathway. Dopamine is a neurotransmitter in the brain that deals not only with motivation and reward mechanisms, but also with motor control. And when that pathway degenerates that’s when the symptoms of Parkinson’s disease kick in.

Having established which anatomical structures in the brain become affected through PD, we conducted further research into how the damage to this dopamine pathway manifests itself in terms of loss of motor control, particularly in relation to tremor which is described on the Parkinson’s UK website as ‘one of the main symptoms of Parkinson's, alongside slowness of movement and rigidity’ (‘Tremor and Parkinson's’). According to The American Academy of Family Physicians (AAFP) website,[[230]](#footnote-231) in an article entitled ‘Classification of Tremor and Update on Treatment’ by P. David Charles and Gregory J. Esper (et al), Parkinsonian tremor is characterised by a ‘frequency of 4 to 6Hz and a medium amplitude’.[[231]](#footnote-232) While this empirical data is useful, it is an abstracted way of knowing a symptom that becomes dissociated from an experiencing body; what this SI unit of frequency does not adequately communicate is the bodily sensation of another’s hand with PD when operating machinery or performing a motor task.[[232]](#footnote-233) The scientific data does not permit us to ‘perspective-take’ unless it is translated in such a way that one might re-embody a measure of movement that was once bodied. An outcome that emerged as a result of the gap between scientific data derived through external measures and the experiential knowledge of living with the physical symptom, was a design brief to develop a prototype glove that can distribute to its wearer the kinaesthetic sensation of tremor at 6 Hz (See Fig. 12). The aim was to use this technology to disrupt the performing of simple motor tasks by the hand of the participant. Further consultation with Parkinson’s UK clarified that PD motor symptoms that are less widely recognised in the public domain are those exhibited through the voice, despite a wealth of recent research activity that has surveyed and quantified speech impairment and changes in voice performance in individuals with PD.[[233]](#footnote-234) Applied mathematician and Wellcome Trust Fellow, Max Little, states in a *TEDGlobal* talk in 2012 that: ‘just as the limbs are affected in Parkinson’s, so too are the vocal organs […] We see all the same symptoms: vocal tremor, weakness and rigidity. Speech actually becomes quieter and more breathy’ (‘A Test for Parkinson's with a Phone Call’).[[234]](#footnote-235) Acknowledging the breadth of secondary research in this area, we used the installation to explore impacts on speech which became an extension of our exploration into the experience of individuals living with PD motor impairments. Having established these aims, I will go on to outline in section 5.3.3 how the manifestations of PD were incorporated in the narrative treatment more thoroughly in the first-person account of *Transports*. At the centre of the experience is a narrative in which the audience-as-best-man are unable to hold a speech still enough to read, or speak with enough clarity to be heard by a room full of wedding guests.

Once a first-draft of the storyboard had been created, we organised a meeting with Parkinson’s UK’s Creative Arts Project Manager, Meghan Hutchins, on 9 May 2014. In preparation, we sent a copy of the storyboard, a document outlining the project’s core aims, key milestones, a breakdown of the specific support we were requesting and an overview of how the pilot might benefit the charity’s aims. As part of our research and development, we requested a point of contact who could advise us on how best to create an experience that is consistent with the charity’s goal of improving the lives of people with Parkinson’s, communicating the perspective of those with the disease as well as offering ethical guidance and indicating best practice in relation to working with individuals with PD. In addition, we sought the charity to act as a referral, assembling a panel of people with PD who could act as consultants throughout the process of development by feeding back on the storyboard treatment and testing the experience: a process that I will detail in the ‘user-testing’ section of this chapter (5.3.4). For the purposes of the user-testing, we requested the provision of relevant Parkinson’s UK staff to participate and to facilitate the attendance of those with Parkinson’s. Finally, as part of the evaluation process, we requested feedback from Parkinson’s UK staff with the aim of developing the project further.

In accordance with our request, the charity assembled a panel of three people living with YOPD to review the first draft of the *Transports* storyboard. Our invitation to the panel was to read and critically respond to the treatment, addressing the following questions: did our representation of Andrew’s story resonate with their own experiences? How accurate did they perceive the representation of Andrew’s experience of YOPD to be? Finally, how did they feel about the aims toward immersive empathic learning that underpinned the project? The panel’s feedback was reported to us anonymously via email. I will first outline the feedback that we received from the three panel members before going on to illustrate how these responses shaped both the dramaturgy of the story and the way in which I worked with the actors during the filming day on 28 June 2014 (to capture first-person point-of-view video content for the experience):

Panel member 1: A male living with Parkinson’s, diagnosed at the age of 44

I have looked through the story board, and I like the idea. I do have a couple of comments. With respect to the tremor, I would describe it clogging [*sic*] [*recte* cogging], as although the hand is tremoring, it happens with tension in the muscles. Normally in the body to move one muscle contracts the opposite muscle relaxes and the subsequent movement is smooth. With Parkinson's residual tension remains in the muscle that is releasing and the movements become staccato. There is an exercise in the user involvement staff guidelines that gives you an insight into this.

The other point I would like to make is when things like this are happening to you, the mind goes into what I would describe as freefall, spending very little time in the present moment, as your mind flits into the past looking for a match from the past. Then projecting the concern into the future and imagining all the different ways it could affect you. This is mentally very tiring, and if you try the exercise you will find that tiring both mentally and physical [*sic*] (Meghan Hutchins, 25 June 2014, email)

Panel member 2: A woman living with Parkinson’s who is 44

I've looked at the script and I think it's brilliant - funny enough I had a similar experience last May whilst on holiday. […] I was away for 3 weeks drinking alcohol everyday […] what I did not realise was that daily consumption was cancelling out my medication. My left arm started to get weaker and weaker to the point I was struggling to put a fork in my food. The thought of my husband cutting up my food for me in a restaurant was too embarrassing and there was also no way I would ask the waiter to do it for me. I tested myself so to speak […] when we came back by not touching a drop of alcohol for two weeks and I slowly noticed the strength coming back’.

Meghan reported that in a follow up phone call with panel member 2, she described the storyboard as ‘incredibly accurate. It actually made me feel sick at one point. It felt so accurate and actually brought my tremor on. Extremely well done. (Meghan Hutchins, 27 June 2014, email)

Panel member 3: A woman living with Parkinson’s who is 44, diagnosed at the age of 39

It’s absolutely fantastic, it feels like it’s exactly how I felt [*sic*] – trying to hide it from people. It’s really amazing; it really touches on your heart. It touched a nerve. I felt it. It’s all fantastic, I wouldn’t change anything about it. My husband and I had just been discussing how we were going to do something similar at our local fete – create something where you had Velcro on your shoes and invite people to walk a day in my shoes. (Meghan Hutchins, 27 June 2014, email)

Following our receipt of these comments, panel member 1’s feedback contributed to the project’s ongoing development in two specific ways. Firstly, his note about the muscular tension experienced in the arm during tremor, and the related exercise that he signposted in the Parkinson’s UK user involvement staff guidelines, provided foundations for my approach to working with the actors during a workshop on our filming day, as I will discuss shortly. Secondly, the mental ‘freefall’ that he describes, or the psychical journey triggered by the symptom of tremor, contributed to both the storyboard development and audio design; the characterisation of tremor as a spatio-temporal disturbance that takes an individual out of the ‘present moment’ has resonances with the ‘*entredeux*’ of Jane Gauntlett’s experience of seizure explored in Chapter 4 in which a different space-time is imposed by a physiological event taking place in the body. Importantly, panel member 2’s comment that reading the *Transports* storyboard treatment activated their tremor raised an important ethical consideration; if simply reading a treatment can trigger a physical symptom, then the installation itself that engenders a physical correlate for tremor in non-YOPD participants might similarly function to trigger symptoms in those who already have PD. It was primarily during the user-testing phase of the project that we had to negotiate this tension in our research: namely, between the fact that the intended audience for *Transports* were those that do not have an embodied understanding of YOPD, and yet to ensure accuracy in reconstructing a sensate impression of the motor symptoms necessitated the participation and validation of those living with YOPD. Panel member 2’s feedback influenced the protocols surrounding how the installation would be introduced to participants in public contexts, ensuring transparency around precisely what kind of audience participation is entailed, what the experience ‘does’ and highlighting the underlying principle that the audience member has full ownership over their experience and as such retains the right to opt-out at any point.

The Parkinson’s UK user involvement document cited by panel member 1 contains a section entitled ‘What it feels like to have Parkinson's’, which includes a simple experiment that can be undertaken that demonstrates panel member 1’s point that tremor occurs with ‘tension in the muscles’, also known as ‘cogging’ (staccato movements) or ‘cogwheeling’.[[235]](#footnote-236) For every movement in the body, muscles are both contracted and relaxed. However, with Parkinson's, ‘as muscles are signalled to relax, much of the residual tension remains’, an effect that can happen throughout the body (‘Parkinson’s UK User Involvement Staff Guidelines’). One of the significant challenges faced by the actor playing ‘Andrew’ on the *Transports* pilot (Chris Woodley) was representing on-camera via a close-up of the actor’s right hand the experience of tremor whilst interacting with objects at the head-table. On the filming day, I began by leading a workshop focusing on the somatic experience of tremor. I began by taking the actors through the aforementioned exercise. The actors were asked to stand upright with their arms by their sides and their palms facing forwards. They were then asked to focus on their right forearm, from the elbow to the tips of their fingers, and to slowly raise the forearm from the right elbow until their palm faces their right shoulder. They then held this position and relaxed, returning their arm to its starting position. I then asked the actors to score themselves on a scale of 0-10 both in terms of the physical and mental energy that they felt that they had used to carry out the task. In regards to physical energy, two actors assigned a score of 3 and one actor a score of 2, and in terms of mental energy two actors assigned a score of 2 and one a score of 3. I then asked the actors to repeat the exercise, this time before raising their right forearm to consciously contract their right triceps as hard as they could and to raise their arm with the muscle contracted. This time for physical energy one actor scored themselves as an 8, one a 7 and the other a 6. For mental energy, one actor scored themselves a 9, one an 8 and the other a 7. These scores demonstrated for the actors the increased physical exertion and mental concentration required by those living with PD to perform even basic motor tasks either prior to treatment or when their medication is not fully effective.[[236]](#footnote-237)

Subsequently I repeated this task with actor Chris Woodley, this time asking him to interact with objects on the head-table, both with his triceps contracted whilst wearing the prototype spinning counter weight glove (seen in Fig. 12), artificially inducing a 6Hz tremor in his right hand. Once Chris had had this opportunity to experience the physical sensation of tremor with residual muscle tension, we then attempted to reconstruct the tremor in his performance for camera without the use of the glove while he wore a head-mounted camera to capture footage from Andrew’s point-of-view (see Fig. 15). Since the installation would subsequently invite the audience to see from the perspective of Chris-as-Andrew and to take ownership of his right hand, the fidelity of the representation in the video footage to the experience of the symptoms communicated by the panel was very important.

Fig. 14: Setting up the wedding reception for the Fig. 15: Actor Chris Woodley wears a head-mounted

*Transports* filming day. camera to capture point-of-view footage to be

displayed on an LCD monitor in the *Transports*

installation.

The second respect in which panel member 1’s feedback contributed to our representation of ‘Andrew was his comment that his tremor takes him mentally out of the ‘present moment’ - searching for corresponding experiences of tremor in his past and projecting concerns about his symptom into his future. As I will describe in my first-person account in 5.3.3, the headphones in *Transports* function to map out binaurally the diegetic aural space of the wedding reception that surrounds the immersant (being ‘surrounded’, as I have noted in Chapter 2, is a recurrent definition of ‘immersion’), and to relay the dialogue between different characters. However, the sound design also provides access for the immersant into Andrew’s remembrance of events from his past: in particular, a memory of his first experience of tremor in his right hand which inhibits the tightening of a bolt onto a piece of machinery whilst working as an engineer in Afghanistan. A pulsing sound which underscores the tremoring glove segues into the sound of a Chinook helicopter flying overhead, psychically transporting him back to his first experience of tremor. The sounds and inner-thoughts also provide access into his projected anxieties about becoming a father in the future. The diegetic sound of liquid sloshing in a wine glass raised by Andrew’s trembling right hand at the wedding reception transforms into the sound of him accompanying his as yet unborn child at the local swimming pool, unable to hold his child’s hand or to help her out of the pool.

Having assessed the panel’s responses to the treatment within the storyboard and how their feedback cultivated greater accuracy in recreating a first-person experience that corresponds with their own experiences, I will now describe in detail Analogue’s use of the ‘Wizard of Oz’ method to test *Transports*’ efficacy as an interactive experience.

5.3.2 ‘Wizard of Oz’ testing

Fig. 16: *Transports*’ ‘Wizard of Oz’ testing day. Fig. 17: Video content on an iPad is manually activated.

On 23 June 2014, we undertook the next stage of the *Transports* pilot development called 'Wizard of Oz’ testing.[[237]](#footnote-238) The term ‘Wizard of Oz’ or ‘OZ Paradigm’ was originally coined in the field of human-computer interaction by engineering psychologist and IBM Master Inventor John F. Kelley in his unpublished PhD thesis entitled *Natural Language and Computers: Six Empirical Steps for Writing an Easy-to-use Computer Application* (1983) (undertaken at The Johns Hopkins University, Baltimore, U.S.). Kelley describes a technique or methodology that is used in the early phases of design to test a product or service through the observation of interactions between the ‘user’ and the ‘object’ without revealing the evaluator’s presence.[[238]](#footnote-239) He later described the method more fully in *An Empirical Methodology for Writing User-friendly Natural Language Computer Applications* (1983) and *An Iterative Design Methodology for User-friendly Natural Language Office Information Applications* (1984). The title of Kelley’s methodology is a direct reference to the children’s novel *The Wonderful Wizard of Oz* (1900) by Lyman Frank Baum, in which Dorothy’s dog Toto tips over a screen in the Wizard’s throne room (or pulls back a curtain in the 1939 film adaptation), revealing the Wizard to be an ordinary man. In Kelley’s lexicon, the term specifically describes an iterative design methodology in which the ‘experimenter’ (the ‘wizard’) is in another room (‘behind the curtain’), replicating the behaviour of an intelligent computer application and ‘"helping" the computer to "understand" the inputs during the early phase of the design, before all the empirically-derived grammar was in place (later on, the computer could "understand" the inputs without help)’ (‘Jeff Kelley's Personal Web Page’). The purpose of the ‘wizard’ in this context is to fill in the missing system functionality that may be implemented in later iterations of the system. This process is sometimes undertaken with the participant’s a priori knowledge (the ‘curtain’ is left open throughout), but occasionally low-level deceit is employed to encourage natural behaviours in the participant (the ‘curtain’ is closed until after the experiment has been completed). Significantly, the goal of a ‘Wizard of Oz’ test is to observe the effectiveness of a potential user interface while test participants undertake the interactions that an experience produces.

In the context of research and development for *Transports*, Wizard of Oz testing represented an inexpensive method of evaluating an audience member’s experience in its early stages of creation that would involve user-technology interactions without the entire system needing to be in place from the beginning.[[239]](#footnote-240) For our purposes, a Wizard of Oz test was undertaken in the presence of the entire creative team working on the project to allow them collectively to observe how intuitively different participants interact with the different elements of the installation. It was also an opportunity for each team member to be immersed inside an early iteration of the first-person experience we were constructing for individual participants, with the aim that the knowledge derived from this experiential mode of testing would then productively feed back into enhancing the user experience and influencing the ongoing design process. In preparation for these tests we had assembled all of *Transports’* component parts. Designer Max Humphries constructed a prototype glove, powered by a 12V battery. Additionally, he built a wooden prototype of the case and installed inexpensive mock versions of the necessary props: a bowl, a spoon, a napkin, a piece of paper and a wine glass (see Figs. 16 and 17). The positioning of these objects inside the case had to correlate precisely with the positioning of their mediatised ‘doubles’ featured in the immersant’s point-of-view video footage that my co-writer Hannah Barker and I had shot in advance with the camera of an iPhone 5 for the purposes of this testing process (see Fig. 17). The footage used captured an edited version of the storyboard, which incorporated what was learnt from the panel’s feedback. The video content was uploaded onto an iPad mini, the device that we used for testing which stood in for the Lilliput 7" HDMI monitor that we would eventually use. A pair of inexpensive headphones was plugged into the iPad to allow the user to hear the audio content on the video file which captured a reading of the script whilst we were filming the storyboard. Pieces of string were attached to the different devices to stand in for cables that will eventually be present to see how they influenced or inhibited the participant’s movements.

Having used this methodological process to critically evaluate the effectiveness of *Transports*’ interaction protocols and to contribute to refining the technical execution of the experience we had created, the next phase of the project entailed each member of the creative team actioning what was learnt towards the development of an advanced prototype that would be employed for the user-testing phase of the pilot at Parkinson’s UK’s London headquarters. Before surveying audience responses to the user-testing process of this advanced prototype, I will first provide a first-person account of my own experience from inside the installation.

5.3.3 *Transports*: A First-person Account of the Experience



Fig. 18: Analogue’s *Transports* (pre-set configuration). Fig. 19:Analogue’s *Transports.*

I participated in *Transports* as ‘Andrew’ on the 29 June 2014 at the London office of Parkinson’s UK. A white specimen case rested on a table. I sat on a chair and followed the audio instructions coming from a speaker inside the case, picking up a pair of headphones located on a laboratory stand to my left. A pre-recorded voice then guided me to pick up and wear a glove located on a stand to my right. I was then instructed to open the case which unfolds to reveal a number of props with which I would later interact (see Fig. 20 and 21): a 7” monitor attached to a handle, a bowl, a spoon, a napkin, a piece of paper and a wine glass.

Fig. 20: Analogue’s *Transports* (opening the specimen Fig. 21: *Transports*’ onscreen instructions.

case).

I receive audio and visual instructions to pick up the monitor and press a button on its handle that triggered video content (see Fig. 21). On the screen, a man introduces himself directly to camera as Andrew. He stands in a large empty hall that is dressed for a wedding reception and explains that while his condition makes it difficult for him to ‘travel or to be in crowded spaces’, this experience allows him to share something with me even though he cannot be physically present. He elucidates that he has worked as an engineer in the military in Afghanistan; entering villages and towns once the troops have left, he uses his hands ‘to build roads and bridges’. However, the most significant change in his life occurred, he explains, when he returned to the UK in October 2012 to attend his best friend’s wedding at the age of 31. His introduction concludes when he says, ‘I’m going to take you back to that day’. As he walks from the centre to the left of the shot, the camera pans left to track him. Andrew indicates that he would similarly like me to adjust my screen’s position and ‘follow’ him with it, creating the illusion that he is standing over my left shoulder. He says: ‘I’m going to sit where you sit, and you are going to be me for the next few minutes’. He sits, seemingly in the chair I am seated in, and his right hand from a point-of-view perspective appears onscreen. He says, ‘hold your right hand behind mine on the screen’. I follow this prompt, placing my gloved hand behind the virtual hand. ‘My hand is now your hand. Follow it. Do as I do and step inside my world’ (see Fig. 22).

Fig. 22: Analogue’s *Transports*. User places their hand Fig. 23: Analogue’s *Transports*. The user reaches for behind the virtual hand onscreen. Andrew’s best-man speech which rests on the table.

Onscreen, I see Andrew’s hand slowly reach for a spoon on the table, a visual cue to perform the same action with my gloved hand. I pick up a spoon located inside the open case on the table. Following the onscreen hand, I manoeuvre the spoon towards the bowl and pick up some soup. In my headphones, I hear Andrew’s inner thoughts as he rehearses his best-man’s speech. The onscreen hand begins to tremor, which coincides with the activation of a device that is mounted on top of my gloved hand, which is hidden from view behind the screen. A spinning counter-weight attached to the glove begins to rotate, causing involuntary shaking in my hand at a frequency that is analogous to that of the hand in the video. Onscreen, a spoonful of minestrone soup spills and soils the white tablecloth of the head-table, as I hear Andrew’s internal voice: ‘Must just be nerves. Just need to grip the spoon more tightly. That worked last time. Why can’t I keep it still? Quick, lower it before someone notices’. Following the video, I lower the trembling spoon to the table, and in the video another hand arrives next to mine delivering a napkin for me to clear up the mess. I pan the screen up the arm of a pregnant woman who is seated to my right. It becomes clear that she is my wife. She has noticed ‘my’ hand shaking and comments that I’m mumbling and that my words are slurred. Following the action onscreen I pick up the napkin and dab the stained table-cloth (see Fig. 23), as I hear Andrew’s inner thoughts rationalising what is happening to his body: ‘Maybe it’s the stress of coming home? Or maybe I’m just run down? […] It definitely didn’t tremble this long the last time. Why can’t I stop it? What if it doesn’t stop? What use am I going to be with the baby? You can kill a baby by shaking it’. My hand lowers the napkin and comes to rest on a written speech positioned on the table. The sound of carbonated water being poured into an empty glass in front of me prompts me to look at the glass and pan up the arm of a waiter who looks at me with concern. I hear Andrew’s inner thoughts: ‘He thinks I’m drunk.[[240]](#footnote-241) Is that how I look? Is that how I sound?’ I pick up the glass of water which shakes violently: ‘If I can’t hold a glass who will hold my wife’s hand when the contractions start? Or my child’s hand walking to school? How can I protect them?’ In my right ear I hear the sound of a champagne flute being tapped with a spoon. The speeches are starting early. The groom’s introduction to my speech is underscored by a stream of anxious thoughts. My hand grips the notepaper with difficulty as it continues to shake. I stand and face a crowded room of reception guests. I look down towards the written speech onscreen in my shaking hand, as the words tremble at a frequency that makes them impossible to read.

5.3.4 User-testing

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Fig. 24: User-testing at Parkinson’s UK, London. Fig. 25: User-testing at Parkinson’s UK, London.

The user-testing process involved trialling the advanced prototype of the *Transports* installation with volunteers at the London headquarters of Parkinson’s UK on 29 July 2014. As part of this process, nine participants took part, ranging from those with a professional interest in YOPD (e.g. nurses, researchers, campaigners etc.) to individuals who had a lived experience of the disease, including those that had been diagnosed with YOPD and their relatives. In advance of their participation, each volunteer had received an ‘Information Sheet for Participants’, which outlined the pilot’s research aims, the nature of the data being collected, information as to how this data would be used and stored, and a consent form to enable the volunteers to provide their written permission both to participate in the study and to have their qualitative feedback recorded on camera immediately after taking part in *Transports*. The questions that were asked following each volunteer’s participation in the installation focused on their perceived accuracy of the experience, the extent to which they believed that this immersive approach to empathic learning might cultivate a more accurate understanding of YOPD among the public, and further ways in which they could see these approaches toward virtual embodiment being applied. This latter question was specifically designed to aid us in identifying other key audiences that might benefit from this kind of participatory experience. In regards to the question of accuracy, Jason Batup (diagnosed with Parkinson’s in 2012) and Sharon Martin (diagnosed with Parkinson’s aged 39) provided the following comments in their interviews:

I can’t put it into words. It’s so close to what it’s like. I was thinking ‘well how long have I got to go of this?’ Not that I wasn’t enjoying it and wasn’t enthralled by it, but it was tiring. And that’s exactly what it’s like […] we all get tired, but it’s a different tired. It’s a tired that you don’t expect because you’re just standing up. It’s not like you’re going out running or anything, and it gives you that experience within 15 minutes which is really very clever. (Batup, ‘Personal Interview’)

It did feel realistic yeah, it was amazing. It was like me going back in time to five years ago, before I was diagnosed. You get all these little things and you don’t realise what they are. You say those things in your head as well like ‘Stop, stop doing it, stop doing it’. You’re willing yourself to stop doing it, so it was bang on really […] the weird thing was when the tremor came on that hand, this hand stopped. And that was really, really weird. It was such a weird feeling to have this hand semi-normal. It didn’t stop altogether, but it was really calm. It was really surreal’. (Martin, ‘Personal Interview’)

This feedback usefully indicates that for these participants we had reconstructed an experience that accurately correlates with aspects of their own experience of their physical symptoms. In Batup’s feedback, he identifies that the efficacy of the installation is in recreating the feeling of fatigue that is engendered by the oscillating glove, which he suggests is proximate to his own experience of tiredness when engaging in tasks that otherwise require minimal effort (e.g. standing up). Martin’s comments rather focus on the conflict that she recognises between the involuntary excess of movement that the glove introduces and the introspection that can accompany a physical symptom when it enters one’s conscious field of attention. Martin’s response also flags an outcome that we had not anticipated through the user-testing process – namely, that the artificial induction of a tremor in the participant’s right hand had inexplicably and temporarily reduced their actual tremor in the left hand. While this effect was unintended and only occurred in one individual, it is important that this event is acknowledged; unexpected outcomes discovered in the context of embodiment illusions in an arts project might productively indicate further potential avenues of scientific research that might illuminate the mechanisms underlying this unanticipated result.[[241]](#footnote-242)

An inevitable limitation of reconstructing a first-person experience of YOPD is that the body represented, its specific manifestation of physical symptoms (when there exists a myriad of both symptoms and ways in which they might be felt) and the social and cultural context within which that experiencing body is immersed, are all factors that might influence the subjective character of one person’s experience. The first-person vantage point cannot provide an effective container for a multitude of experiences, but this is not this immersive form’s specific agenda; in this case it rather affords audiences access to the personal sense of a combination of physical symptoms. While *Transports* cannot hope to provide a correlative match for every manifestation of tremor and vocal weakness, it can effectively connect with elements of other’s experiences as well as making visible the social factors that are part of the feedback loop that might influence one’s perception of their own body image. It is productive at this point to briefly revisit Drew Leder’s aforementioned statement that we are not ‘proto-solipsists’ and that body images are not constructed in isolation, but arise through the ‘corporeality of other people and of their gaze directed back upon’ a subject (*The Absent Body*, 92). It is *Transports*’ temporary instating of a virtual body image, an artificially induced tremor, but also the gaze of virtual others that surround the VB, that cumulatively serve to construct a holistic impression of Andrew’s body image as the audience’s ‘own’. For example, the immersant’s excess of movement attracts the gaze of a waiter, whose action in filling their glass with water constitutes a social mis-diagnosis in which he assumes in the context of the wedding reception that Andrew has consumed too much alcohol. In this respect, virtual embodiment draws attention to the way in which PD symptoms can be misread when displayed in younger bodies. Furthermore, it illuminates how a subject’s awareness of such potential misrecognitions places social pressure on individuals who might feel that they need to ‘perform’ the concealment of their symptoms from the gaze of misunderstanding others (e.g. Martin’s feedback which highlights her thought process in willing her tremor to ‘stop’). This desire to render these misrecognitions perceptible in *Transports* resonates with Jane Gauntlett’s expressed frustration in feeling judged primarily through a lack of understanding in regards to her experience as a TBI patient, as discussed in Chapter 4; *In My Shoes* and *Transports* are both projects that share an interest in counteracting these kinds of judgements through virtual ‘perspective-taking’.

In terms of further potential applications for *Transports*, Daiga Heisters (Head of Professional Engagement and Education at Parkinson’s UK) stated in her feedback that she could see this method ‘being used for health and social care professionals to understand who they are looking after. You read a text book, you listen to your patient, but you don’t necessarily get to feel like they do for a little time and that’s incredibly powerful’ (Heisters, ‘Personal Interview’). To verify the extent to which others share this perception that the installation might have further applications in professional contexts, I will now move on to an evaluation of *Transports* testing in both arts and educational contexts to highlight key learning outcomes.

5.4 Evaluation

Fig. 26: *Transports* at Shoreditch Town Hall, London Fig. 27: *Transports* at Forest Fringe, Edinburgh 2014.

2014.

The evaluation of *Transports* in this section will focus on what has been learnt from the qualitative data gathered from participating audiences both in the context of public performances at Shoreditch Town Hall and Forest Fringe, and with third year undergraduate BSc. Psychology students at Royal Holloway University. The format of *Transports*, which was undertaken by individual audience members, is particularly suited to a qualitative survey of its impacts on the different audience groups that took part. Analogue personnel spoke with every participant immediately following their experience, gathering responses using either recorded video interviews (or ‘vox pops’) or a written questionnaire. The questions asked were adapted slightly to reflect the different contexts in which the pilot was presented. Unlike the scientific quantitative methods used to test the affects of body illusions surveyed in Chapter 3 (e.g. SCR), the aim through this process of evaluation was not to obtain an objective measure for the level of body-ownership that audiences of *Transports* experienced over the virtual hand. As I have outlined in Chapter 3, there exists ample open-access scientific data to support the notion that, given the right conditions subjects can experience owning either a virtual body (whole-body illusions) or a sufficiently humanoid external object (RHI) as part of the phenomenal self. In contrast, *Transports* integrates a body illusion as a scientifically pre-tested mode of interactive spectatorship, and therefore my focus in this evaluation is oriented more specifically on whether audiences consciously judge these immersive first-person techniques to be efficacious in communicating the sensate experience of YOPD towards intersubjective applications. As a result, the research methods used by Analogue necessarily invite the audience’s critical responses, rather than measuring underlying physiological processes or other kinds of bodily ‘proof’ that might be elicited from one’s participation in *Transports* at a non-conscious level (e.g. measuring sympathetic responses etc.).

Of all the participants that were surveyed immediately following their participation in *Transports*, 100% answered ‘yes’ in their responses to the following questions: ‘Did the experience increase your understanding of YOPD as a condition?’, ‘Did the experience give you a more empathic understanding of what it might be like to live with YOPD?’, and ‘Can you imagine how this experience could impact on how you, or others, might approach working with those living with YOPD?’. All seven BSc. Psychology students that tested the *Transports* pilot confirmed in their questionnaires that they believed that immersive first-person approaches to understanding a patient’s experience of a condition would help them to access important knowledge that empirical data alone does not communicate. Furthermore, all of the students confirmed that they had felt that *Transports* would impact on how they, as future medical practitioners, would approach working with those living with YOPD. Lastly, every participant in both arts and higher education contexts expressed an interest in variations of the project using immersive techniques to reconstruct different experiences of other conditions. This strongly suggested an appetite for the work’s future, highlighting the crucial role that immersive empathic learning might play both as an artistic mode of reception and simultaneously as a communications tool to facilitate those with a professional interest in the subjective character of certain kinds of ‘patient’ experiences.

Following this period of testing *Transports* in art and educational contexts, the installation received a live demonstration at a free scientific public engagement event organised by Analogue in collaboration with the British Neuroscience Association at the Science Museum’s Dana Centre, entitled ‘Feeling With Another’s Hands’ on 4 November 2014. The demonstration of *Transports* was followed by a panel discussion chaired by Narender Ramnani, with Anna Farrer (User Involvement Adviser at Parkinson's UK), Ian Harrison (Faculty of Medicine, Department of Medicine, Imperial College) and myself as contributing speakers. The event concluded with an open forum for attendees to ask questions and contribute their thoughts and feedback. This discussion was energised and productive in further identifying adjacent fields of intersecting research interest, such as occupational therapy. The event was oversubscribed, suggesting a significant public interest in approaches to virtually embodying patient experiences, and the live demonstration at the event attracted significant press attention both in the UK and internationally.[[242]](#footnote-243) Subsequent to this demonstration, Analogue was invited to run *Transports* at the UK Parkinson's Excellence Network launch event on 3 February 2015, which has initiated a continuing discussion as to how the installation might be made available to the charity as part of their ongoing efforts to train incoming volunteers. As part of Analogue’s ‘End of Grant Report’ for the Wellcome Trust, which enables the recipient of a grant to share details of ‘achievements, difficulties, impacts, outputs and learning’ (Jarvis, ‘Engaging Science: End of Grant Report’) with the funding body, I gathered the following testimonials from scientific advisors on the project:

This was a fascinating project to be involved in. Usually, when an able-bodied person “understands” a physical disability at an abstract level, something is still missing. This project was interesting and exciting because so many people reported that the physical experience of the disability caused a transition in their understanding into something less abstract and much more vicarious and direct. Working on *Transports* was a great opportunity to develop something innovative with people completely outside my field, and create something that changes the way that people think.

Professor Narender Ramnani, Royal Holloway University

This unique installation captured the imagination of the public who attended. Even watching the volunteer and the film, people overwhelmingly thought that it gave them a much better idea of what it must be like to have Parkinson's disease. It was notable how many young people were in the audience, and many apparently had little or no connection with Parkinson's. I thought it was great that the event and the technology appealed to young people. Many ideas and opinions were generated by the audience and speakers which will undoubtedly lead to new ways to use the technology. I congratulate Liam and his team on such an innovative and useful project.

Elaine Snell, Chief Executive of the British Neuroscience Association (on the Dana Centre event)

Key learning outcomes to extract from these testimonials on the *Transports* pilot are Ramnani’s epistemic emphasis that virtual embodiment in this context can function to engender a ‘transition’ in an audience’s understanding of another. This observation is consistent with my overarching argument towards the potential of immersive ontology when both conceptualised as *feeling more fully with the body of another*, and when mobilised through the integration of body transfer illusions. Furthermore, Snell’s observation, regarding the audience demographic in attendance at the Dana Centre event, indicated that in her view the presence of new technologies as part of the installation afforded the opportunity to reach younger audiences with no pre-existing connection to PD. This implies the broader potential reach of *Transports* as a public awareness raising tool, beyond its applications as a performative interstice to facilitate better communications between those with YOPD and their extended network of support.

In conclusion, the collated audience feedback from testing in different contexts, the significant public interest and testimonials from our scientific consultants submitted as part of our evaluation process cumulatively indicate that the *Transports* pilot was a significant success in relation to its aims, as outlined in section 5.2. The virtual embodiment techniques in *Transports*, and the adjacent practices of S&R and BAL examined in Chapter 4 that operationalise the immersive ontology of *feeling more fully with the body of another*, provide collective evidence of an expanding and energetic research field. These distinct but related immersive storytelling formats are providing powerful tools that are already demonstrating the profound role that they can play in pedagogy and experiential knowledge creation.

**Conclusion**

6.1 Introduction

Central to the enquiry of this thesis has been the acknowledged presence of the immersed audience within performance practices that descend from a post-Friedian ‘theatrical’ lineage. It is the promise of the spectating body’s presence in the elsewhere phenomena of dramatic space that necessitates the immersant’s becoming other. I have pushed this peculiar ontology that is characteristic of immersive theatres further, arguing that a desire that undergirds immersive experience is the desire to *feel more fully with the body of another*. This ontology raises a further epistemic question that I have addressed throughout this thesis: how might we know another’s experience when certain modes of knowing necessitate possessing a particular kind of body? Of specific interest has been an examination of practices that directly engage with this problem towards an empathic understanding of the non-normative experiences of different neurological subjects. Correspondingly, I have investigated hybridised immersive practices that draw on illusion-inducing techniques originating from neuroscientific studies in embodiment to transform the spectating self and simulate sense-making that is uncommon to the participating audiences. Virtual embodiment in the case studies I have examined in Part Two fulfils an epistemic desire to experience the world as others do, simultaneously attempting to reconcile the paradox of the immersed audience’s dual circumstance both in the ‘here and now’ of the theatrical circumstance, and the ‘there and then’ of other bodies situated in elsewhere spatio-temporal circumstances. Furthermore, audiences take up the invitation to be transformed into fragile bodies that are transitioning through different states using creatively adapted body transfer illusions; connecting with the ‘trans-’ or *entredeux*, immersants are caringly ‘thrown into strangeness’. Accordingly, aspects of the physical spectating body are temporarily concealed by a mediatised body image which, in combination with correlating multi-sensory stimulation, constructs a sensate impression that the virtual body is incorporated as part of the immersant’s body schema. Concomitant with the persistent narratological plot event of the ‘body-swap’ when understood as an act of profound empathic learning (3.2), I have demonstrated in Part Two how practitioners integrate body transfer illusions to engender a productive act of wilful self-deception (though illusions of body-ownership operate at an unconscious level) and attempt to actuate the immersive ontology that I have advanced in this thesis.

In my ‘Introduction’ I cited an anecdote from *2401 Objects* in which the theatre audience were invited to imagine feeling with the hands of a neuroanatomist. This complex request has prompted an ongoing research investigation in which I have pursued a trajectory via art criticism (Chapter 1), immersive ontology in theatre and media scholarship (Chapter 2), neuroscientific studies in embodiment (Chapter 3), and qualitative applied arts practices that integrate science-inspired body ownership experiments (Chapters 4 and 5). I will conclude my discussion of practice in section 6.2 of this ‘Conclusion’ by relating the knowledge derived from this enquiry back to an example of theatre practice. Analogue’s *Re-enactments* represents a deconstruction of the ontology I have advanced and thus provides a productive space to signpost its limitations. Finally, in section 6.3 I will gather together the different strands of my argument. I will extract the key points from each chapter, identifying the contribution that this thesis is making to knowledge in an emergent field of practice, as well as fertile areas of future research for which this intellectual enquiry has laid the groundwork.

6.2 Analogue’s *Re-enactments*: Feeling through the Dissociated Subject?

As I have acknowledged, certain non-normative modes of being in the world pose a significant epistemic obstacle to mobilising the immersive ontology that I have advanced (e.g. the problem of ‘knowing’ the embodied experience of an amnesic or a confabulator in 3.3). In this section I will put immersion as I have conceptualised it to the test by briefly scrutinising an exemplar of my practice that develops a theatrical aesthetic as an analogue for a dissociative mode of experience. *Re-enactments* (2012-‘14) is a multi-stranded headphone performance in which pre-recorded commands are distributed to a theatre audience to stage live immersive reconstructions of a fictionalised narrator’s memories, following an accident that has left him feeling hopelessly detached from his body. I draw on this work to question how an artist might reconcile the paradoxical promise that an immersive theatre audience might be able to feel a fictionalised other’s dissociation ‘more fully’.

In Andy Warhol’s ghost-written autobiography, he documented vicariously his dissociated experience of the world following an assassination attempt by Valerie Solanas in 1968: ‘Before I was shot, I always thought that I was more half-there than all-there - I always suspected that I was watching TV instead of living life […] Right when I was being shot and ever since, I knew that I was watching television’ (Warhol 91). This quotation usefully typifies a Warholian lens on the world, much as the artist’s aesthetics provided a stage-space to emphasise copies without originals and life as an endlessly reproducible image. The analogy between Warhol’s post-traumatic experience and ‘watching television’ is suggestive of the way in which dissociation can induce a mediatised and detached sense of both one’s body and immediate environment. Research in trauma studies has illuminated that one’s capacity to become ‘immersed’ in one’s own bodily experiences (let alone immersion in those of a virtual other via an artistic practice) cannot be assumed. Suzette Boon, Kathy Steele and Onno van der Hart examine dissociative conditions through the lens of clinical psychology in *Coping with Trauma-Related Dissociation: Skills Training for Patients and Therapists* (2011), stating that dissociation interferes with both one’s ability to integrate experiences into a ‘unified whole’ and one’s capacity ‘to be present’ (4-7). Post-traumatic dissociation elicits a distinct sense of non-participation and a lack of immersion inside one’s own experiences, producing disunities of self, such as experiencing one’s surrounding environment as ‘unreal’ (commonly termed ‘derealisation’) or feeling as though one’s mind is no longer situated within one’s body (termed ‘depersonalisation’).

*Re-enactments* is a participatory structure created in collaboration with sound designer Tom Wilson that emerged from research in dissociation as part of an artist-in-residence programme called ‘Art in Progress’ at the scientific institute, Hanse-Wissenschaftskolleg (HWK) in Delmenhorst, Germany in 2012. The work accommodated up to eight theatre-going audience members at a time, and took place in the basement of Shoreditch Town Hall, a warren of interconnecting subterranean rooms beneath architect Caesar Augustus Long’s imposing civic building.[[243]](#footnote-244) *Re-enactments* generates an ephemeral collaboration among combinations of either strangers who have never met, groups who know each other, or admixtures of individual attendees and sub-groups of participants that have pre-established relationships with one another. In advance of the performance, each audience member received a set of headphones plugged in to an Apple iPod Touch device, and pre-loaded with the StageCaller app.[[244]](#footnote-245) This software connected the audience’s smart devices to a MIDI network, enabling Analogue to trigger audio content using cuing software (QLab 3). Four pre-designed audio tracks (A, B, C and D) were synchronously activated, generating different pathways through the script and the performance space. Track A was a group pathway, via which commands were distributed to a collective audience of up to five people. In contrast, tracks B, C and D were localised to individual participants who took on specialised roles within the re-enactments. B was most frequently cast as the ‘narrator’ in various reconstructions, while A, C and D played peripheral characters from the narrator’s memory. Through the impromptu enacting of received commands, a live role-play unfolds in which the participants stage live reconstructions on film sets, piecing together the life of the disembodied narrating voice. The framing conceit of the performance is that the narrator (voiced by actor Dan Ford) has enlisted the audience as ‘re-enactors’ to vicariously re-stage events from his past so that he might enter the simulacrum of his memories and feel ‘real’ again. Thus, ‘immersivity’ is conceptualised in *Re-enactments* as both the audience’s mode of engagement through the performance’s theatrical form, but also the narrator’s ontological objective at the dramatic level, to *feel more fully with his own body*. The re-staging of memory functions as a methodological framework to aid him in feeling like he is participating in the world again. *Re-enactments* intertextually references Tom McCarthy’s cult novel *Remainder* (2005) and Charlie Kauffman’s film *Synecdoche, New York* (2008), with which the performance shares a particular commonality – these adjacent texts portray protagonists that deploy re-enactments as a therapeutic methodology to work through their respective conditions, only for these performances to become manifestations of their suffering, or an aesthetic form-as-symptom. The significant development in *Re-enactments* as a structure to be performed live by an audience (as opposed to these parallel examples of literature and film) is that the theatrical work engenders the sense that audiences might be directly implicated from inside the re-enactments, becoming complicit with an unreliable narrator and experiencing the potential risks of their own participation.

As I have signposted in Chapter 2, scholarly discourses circulating around ‘immersion’ in media theory are entrenched in an ontological preoccupation with ‘totalisation’ and technological strategies to enable the immersant to illusorily cross-over the threshold and ‘enter’ the simulacrum. This preoccupation parallels the narrator’s approach in the story of *Re-enactments* in staging headphone reconstructions as a strategy to counteract the perceptual effects of his post-traumatic experience; a notion that I would identify is closely aligned with the aforementioned Nietzscheanidea ofart as an ‘organic function’. Remembered locations are resurrected as film sets that might permit the narrator, who is rendered corporeally present only through the re-enacting bodies of the audience, to ‘enter’ his memories by way of their likeness. In this respect, akin to S&R, BAL and Analogue’s *Transports*, technology is similarly conceived as a solution to an intrinsically ontological problem. The narrator operationalises a transformative concept of ‘immersion’ to shift his impassive observation of events (a ‘half there’ experience, as if ‘watching television’), to a directly felt participation ‘inside’ of them. Importantly, since the narrator is a construction and his dissociative state is correspondingly fictionalised, unlike the practices examined in Chapters 4 and 5 there is no direct experience of another to be accessed in this instance. This distinction highlights that *Re-enactments’* concern cannot be strictly about faithfully re-constructing an ‘authentic’ lived experience or bridging epistemic divides between the body that knows an experience and the body that cannot know without occupying its unique point of view. *Re-enactments* was rather conceived of as a critical interrogation of received ideas about immersive participation as a strategy toward a ‘fuller’ spectatorial experience as an audience-character. Furthermore, it sought to problematise the radical and unrealisable promise that undergirds certain conceptions of ‘immersive’ performance via which the spectator might ‘be’ the other body. *Re-enactments* is not a performance that attempts to offer ‘ownership’ over a fictional other’s dissociation; it is rather a participatory structure that draws on research in post-traumatic dissociation to place audiences within a continually deferred reality using the headphone form as an analogue for the narrator’s fragmented and dissociative mode of being in the world. The interest was to stage a productive tension between the immersed audience’s participation in staging a character’s actions in the immersive artwork, and the fact that the character’s anomalous perception of their dramatic world leaves them unable to feel as though they are participating inside their own lived experiences.

The noun ‘re-enactors’ requires examination to clarify precisely what kind of spectator the performance designates. The hyphenated verb ‘re-enact’ means to ‘act out (a past event)’ - ‘re’ originating from the Latin *again, back* which prefixes the verb ‘enact’, meaning to ‘act out (a role or play) on stage’ (‘Re-enact’). In relation to historical re-enactments, Rebecca Schneider contends in *Performing Remains: Art and War in Times of Theatrical Reenactment (*2011) that ‘participants fight to “keep the past *alive*” […] The effort is to provoke an in time experience bearing some relation to “living”’ (37). And yet, any enactment or bodying of history in the lived present might be recognised as a matter of ‘againness’ through the ‘manipulation of give-way signs of theatricality’ (32). Participation in a ‘re-enactment’ in this sense is an attempted retrieval of, and immersion within the past that resists the tell-tale signifiers of one’s contribution in the present to an ongoing cycle of ‘againness’. While most theatre might be understood as a form of re-enactment to some extent (if not a re-staging of historical events, then a re-staging of a dramatic or post-dramatic structure intended to be enacted multiple times), inevitably not all theatre places the same participatory demands on its audience. Variously, the case studies examined in Part Two represent ‘re-enactments’ of different kinds. They are predominantly framed as simulated acts of retrieval in which the audience are incorporated within the ‘theatrical’ artwork, bodying another’s history in the present to actuate another’s ‘there and then’ in the immersant’s ‘here and now’. As I have established, ‘immersion’ understood as the ‘eclipsing’ of the participants’ actual body with an avatar is a requisite component of a body transfer illusion, but it performs the simultaneous task of concealing ‘tell-tale signifiers’ of one’s contribution in the present towards immersion in another’s lived past. However, any act which implies the bodying of another’s post-traumatic experience adds another dimension of complexity to the staging of a re-enactment.

In *Trauma-Tragedy: Symptoms of Contemporary Performance* (2012),Patrick Duggan draws out two performative elements in relation to the experience of trauma. Firstly, ‘trauma might be seen to perform itself, as it were, within a collapsing of time; in a sense the inability to ‘exist in the present’ is a traumatic performative disruption/disturbance of time’ (4). Secondly, the ‘survivor-sufferer might be seen to perform the symptoms of their suffering’ (5). The notion of performing symptoms elides with Roger Luckhurst’s contention in *The Trauma Question* (2008) that individuals, collectives and nations can become trapped in ‘cycles of uncomprehending repetition’ until such time as that repetition becomes a process of ‘healthy analytic […] “working through”’ (9). These performative elements to post-traumatic experience are central to an understanding of the narrator in *Re-enactments* who implements immersive role-playing to counteract his inability to feel ‘present’, but the acts become an infinite regress of ‘working through’ without resolution. A tension is staged in the performance between the content of the narrative and its mode of presentation; the participation of the audience in *Re-enactments* cannot satisfy the narrator’s desire to feel ‘real’, since the retrieved events are always already twice behaved, as per the definition of ‘re-enactment’ as an ‘acting out (*of a past event*)’. A ‘hyperreality’ is staged within which the narrator deliberately aims to blur the distinctions between simulated and real events. His reincarnated memories parallel Umberto Eco’s notion of ‘authentic fakes’ in *Travels in Hyperreality* (1987), as the narrator radically conceives of his re-enactors as a ‘“sign” that will subsequently be forgotten as such: the sign aims to be the thing, to abolish the distinction of the reference’ (6-7). The narrator-as-re-enactor immerses themselves within historical reconstructions as a strategy to feel ‘all there’, and this ‘unreality’ substitutes real presence. However, vicarious participation, film lighting and pre-set marks for the re-enactors to ‘hit’ (indicating the positions of characters on the film sets), are all ‘give-way signs’ exposing artifice in the present and incomplete immersion in the past. Schneider notes that the discrete act of re-enacting is ‘never temporally singular nor straightforward but double, triple, or done “a million times before”’ (32-33). The multiply revisited event of the ‘re’-enactment, which aligns with the aforementioned notion of Warholian reproducibility and copies without originals, becomes itself an obstruction to the narrator’s desire for authentic lived experience. Furthermore, his desire to ‘exist in the present’ cannot be fulfilled by immersive reconstruction, as there is a tension between immersivity’s promise of *presence,* of ‘being there’, and the fact that the ‘there’ that the narrator wishes to be is always other than where he resides: namely, immersed inside his memories but, by association, inside the inaccessible elsewhere of his untraumatised body *prior* to his accident. In this respect, *Re-enactments* operates as a metaphor to think through the theatrical limits of the ontology I have advanced by situating the audience as intermediaries between a fictional protagonist’s dissociated experience in the present and his irreconcilable desire to re-embody his past.

Regardless of the fidelity of the immersive environment within which participants are surrounded, audiences are never unaware of immersive performance’s devices or contrivances.*Re-enactments* exploits this paradox by never permitting its re-enactors a fixed position or a single identity that can be ‘owned’ throughout the performance (unlike the case studies in Chapters 4 and 5). Participants are transitioned fluidly between different performing roles (e.g. re-enactor B’s instructions bifurcate from the rest of the group, who later re-encounter him/her in a hospital bed as the narrator regaining consciousness from the accident). Furthermore, the atomising of the participating group with different sets of interlocking instructions for action produces a dramaturgy of partialness that disturbs consensus reality by instating a ‘need-to-know’ reality. The unknowability of others’ audio instructions constructs inequities of information and disrupts the immersive promise of access, of being fully ‘in on it’. It is the impossibility of occupying or knowing the narrator’s experience, since one cannot be ‘immersed’ through the lens of a dissociated subject, that provides a space to stage a productive agitation to the immersive promise of ‘experiencing more fully’. The problematizing of this ontology within a theatre event was borne out of an interest in critiquing *soi disant* immersive practices that have exploited the form as a vehicle through which audiences might, for example, ‘know’ extreme events of trauma such as the ‘physical and psychological insanity’ of the gas chambers at Auschwitz-Birkenau by way of a theatrical representation (in Badac Theatre’s *The Factory*) (‘The Factory’). The result of this troubling logic in adjacent manifestations of ‘immersive theatre’ is to simply position audiences as passive enactors of historic acts of suffering, replicating inequities of power to which any act of resistance ultimately brings the audience only closer to the mechanics of theatrical representation. The inevitable resistance of a spectator-character to the commands of an actor-Nazi soldier can only possibly expose the limitations of a theatrical simulation to be the thing that it professes to simulate. Reflexive to these ethically problematic acts of immersion, *Re-enactments* apprehends the immersive reconstruction

Fig. 28: Analogue’s *Re-enactments.* A re-enactor is Fig. 29: A ‘re-enactor’ points a gun at the rest of the instructed to stand behind the bar. audience.

precisely to deconstruct it and re-stage it as a site of inevitable failure to ‘know’, contain or access the narrator’s unresolved post-traumatic experiences. Inevitably, there is an inherent contradiction within *Re-enactments* because the narrator and Analogue’s personnel must necessarily represent very different kinds of custodians to their respective re-enactor’s experiences; within the narrator’s fiction, the ‘re-enactors’ are dispensable agents. The narrator assumes no ethical responsibility for the lives of others. Instead, his participating re-enactors are exploited to perform increasingly violent re-enactments in his pursuit of feeling ‘real’, to the point that the reality status of the events that they are instructed to simulate becomes increasingly unclear. In the theatrical situation, to superimpose our re-enacting audience as the narrator’s ‘re-enactors’ is a layering choice that must be delicately navigated, since we have a responsibility that the narrator does not to protect the welfare of our participants. The work must negotiate a common paradox within the immersive work of providing a safe environment, but one in which the associated risks of becoming implicated in precarious circumstances might be felt. The dénouement of *Re-enactments* in which a re-enactor receives an instruction to point a gun at the rest of the audience is a useful event to illustrate the limits of immersive participation (see Fig. 29).

This plot event in the performance is an intertextual reference to a heist that takes place in McCarthy’s *Remainder*, which transitions from a re-enactment on the set of a bank constructed in a warehouse, to one staged in a real bank that has a different reality status for all of the participants involved. In his co-ordination of this hold-up, the novel’s narrator instructs that his re-enactors should neither get the bank’s permission, nor inform participating re-enactors or the bank’s staff of the planned ‘transfer’. All the participating re-enactors are stratified into different ‘NTK (Need To Know) categories’, and within each category ‘how much they need to know, and when they need to know it’ are determined (246). Thus there is a dangerous inequity of knowledge between what the participants believe they have consented to and what is actually taking place. The rationale for transferring the simulated heist to an actual bank is that the novel’s protagonist wants ‘to cut out the detour that sweeps us around what’s fundamental to events, preventing us from touching their core: the detour that makes us all second-hand and second-rate’ (244). In essence, he is seeking to smuggle into his reconstructions ever greater degrees of what he perceives to be ‘reality’. The inevitable outcome of this confusion between simulation and reality is tragedy, as one of the re-enactors pulls the trigger of what he believes to be a fake gun, shooting another re-enactor and killing him. The contamination of reality and artifice is exposed in a horrifying moment of *anagnorisis*, as a re-enactor exclaims, ‘Oh my God […] *It’s real!*’ (269-270). In this stratified bank heist, the crime is staged by participating agents situated within different spheres of knowing. Fake guns are substituted for real ones, and the re-enactors only become aware of their true mode of participation when a ‘fake gun’ produces a lethal wound.

A crucial distinction in *Re-enactments* is that the audience is never unaware that they are participating in a ‘fake’ hold-up. However, the command and response mode of interaction stratifies the participating re-enactors into different orders of knowing. Epistemically, the audience are cognisant that the performance disseminates different fragments of information to assemble a complete picture of the work; there is no possibility of experiencing *Re-enactments* as a ‘unified whole’. The technical apparatus of the performance is an intervention that introduces paradoxical effects; personal media is used to co-ordinate the audience’s actions while continually keeping them separate from one another. Whilst any theatre work cannot ethically stage the lethal inequities of knowledge between *Remainders’* narrator and his participating re-enactors, the work prompts the audience to interrogate critically the information disseminated to other audience members. The re-enactor pointing the gun at the audience hears that whilst it’s a ‘toy’, the other re-enactors are being told that ‘the gun is real’, prompting the gun-wielding re-enactor to question whether their causal responses are the result of continued instruction or an off-script reality. Simultaneously, the hijacked audience members hear that the re-enactor holding the gun seems ‘unaware that it’s real’. Had an audience believed that the re-enactor posed a genuine threat, resistance would have been the inevitable result. The most that this deception can achieve is to play upon the doubt and uncertainty in-between its constructed stratas of knowledge – to stir the audience to question the reliability of the truths presented by a dissociated narrator and analyse the status of their own participation, critiquing the work and their mode of participation from within the act of participating.

In an article in *The Guardian* entitled ‘The Theatre of Reality… and Avoiding the Stage's Kiss of Death’, Tim Crouch reflects on the dangers of ‘too much reality’ in theatre. He states that:

An obsession with the real can sometimes feel like an acquisitive or even capitalistic act: a desire to own someone else's reality. I think of Daniel Day-Lewis now owning Abraham Lincoln, or Meryl Streep owning Margaret Thatcher, now that the real Margaret Thatcher is dead. (Crouch, par. 5)

Crouch refers specifically here to the ‘ownership’ that a high-profile actor acquires over a deceased historical figure that has been resurrected through a dramatic re-enactment. However, his core argument is that theatre practices, unlike the visual arts, widely maintain a figurative dependency in which quality is still assessed on how closely representation resembles reality.[[245]](#footnote-246) *Re-enactments’* narrator is a hyperrealist motivated by precisely this kind of figurative ‘obsession with the real’, but its recreation via the immersive re-enactment is employed to overcome his anomalous perception of the world and an unwanted change of bodily state. The narrator’s desire to feel ‘real’ produces an extreme solipsism in which at the level of the dramatic mode, his re-enactors are exploited in service of this need, while in the theatrical mode the audience participate in the ‘as if’ of their being at risk and are brought to the theatrical limits of the mechanics of the production itself. Ultimately, *Re-enactments* is a contemporary parable that stages the idea that a perceptual sense of connection to one’s body is a prerequisite to connecting with others. And notably, the case studies examined in Part Two share in the obverse of this idea, that knowing the other through virtual embodiment might aid the immersant to better understand the other, as well as oneself.

Crouch’s point in regards to the desire to ‘own someone else’s reality’ has some connection to the immersive ontology that I have advanced throughout this thesis as *feeling with the body of another*. Where my argument departs from Crouch is that while, in regards to the work scrutinised in Part Two, accuracy in recreating another’s perceptual experiences is critical to aid a particular audience’s understanding, this is not an equivalence with the ‘figurative’. The ‘figurative’ to which Crouch refers in theatre and film finds value in comparative assessments between appearances and their likenesses on the basis of what is ‘read’ from the outside. However, an immersant cannot verify the accuracy of a simulation of another’s bodily experience with the ‘real’ thing through observation – indeed, if one had direct access to the subjective character of another’s experience the simulation wouldn’t be required in the first place! The practices with which I have engaged are concerned with ‘ownership’ only insofar as the term relates to bodily selfhood. It is knowledge regarding how the audience member’s body constructs its body schema that contributes to the use of illusions that might aid them in feeling as others do. Unlike the currency and cultural value assigned to the verisimilitude of the film actor, or the blending of the image of the posthumous historical figure with that of their iconic re-enactor (e.g. a Thatcher-Streep blend), immersivity as I have defined it is not a ‘capitalistic act’ that is analogous to the acquisition of material things. The non-commercial transactions that I have explored are rather predicated on empowering individuals and communities to reconstruct the subjective character of personal experiences that carry no physical trace, or to recreate uncommon sense-making that a participating body might otherwise have difficulty knowing. Immersive theatre such as *The Factory* fails to accomplish what a case study such as S&R’s *Waking in Slough* successfully achieves; immersion inside a post-traumatic experience is framed as a multi-modal communicative tool to bridge an epistemic divide with the crucial pragmatic concern of improving the welfare of others, while meticulously protecting the participating audience member who is caringly ‘thrown into strangeness’.

This returns my examination to the critical concern for the immersive artist of what a ‘theatrical’ artwork ‘does’; what do audiences take from an experience in which they are invited to put their body in place of another’s? In Part Two, I have demonstrated that my selected case studies formulate the radical immersive ontology that I have proposed into a suite of repurposed interdisciplinary illusionistic techniques. These techniques are used for applied aims with key audiences where empathic learning is providing real-world impacts to improve treatment and understanding. ‘Illusion’, which as I stated in my ‘Introduction’ typically means something that is ‘misinterpreted’ or ‘wrongly perceived’ by the senses, counterintuitively enables individuals to render their experiences perceptible; the audience consent to a wilful act of self-deception toward the aim of accessing another’s ineffable ‘truths’.

6.3 Synthesis of the Key Findings

Having used Analogue’s *Re-enactments* as a case study to examine the limits of the immersive ontology that I have propounded, I will use this ‘Conclusion’ to tease out the key propositions of this thesis.

Central to my argument has been the task of grounding ‘immersive’, insofar as the word pertains to performance, in a meaning that is more precise than its prevalent usage as a ‘faulty’ umbrella term for a heterogeneity of multi-modal and participatory theatre forms. By repurposing ‘immersive’ in the context of the practices analysed in Part Two as an attempted realisation of the ontological desire to *feel with another body*, this thesis contributes to the field by identifying a subdivision of ‘immersive theatres’ that bifurcates from the broader distinctions that have been highlighted by other theatre scholars (which I have surveyed in section 2.2). In dispensing with pluralistic distinctions, I have been able to bring into sharper focus the specific ways in which performances that deploy digital technologies and visual and tactile deception are aesthetically and ontologically distinct. I have located ‘immersion’ as a set of related methodological strategies deployed by artists to attempt to bridge epistemic divides across the borderlands of bodily difference. Consistent with this idea, I have demonstrated that the desire to be another body is increasingly finding expression through new illusionistic architectures that form the basis for distinctive modes of interactive spectatorship, new interdisciplinary collaborations and the re-appropriation of knowledge from scientific embodiment experiments towards intersubjective knowledge creation (as distinct from the neuroscientific paradigm’s differing agenda to use experimental embodiment to understand the mechanics of how bodily selfhood is constructed in the individual). The protocols of these experiments constitute a pre-tested framework for evolving techniques in transitioning an audience’s understanding of different kinds of bodily otherness – an interest that productively intersects with applied theatre and role-playing in educational, community or other kinds of non-theatre contexts (as I have highlighted through the case studies in Chapters 4 and 5). Crucially, immersivity understood in this way reorients the other’s first-person gaze, making use of current knowledge that the feeling of being localised inside the physical body relates specifically to one’s first-person visual perspective in conjunction with correlated multisensory information from the body.

In Part One, I established the foundations for a ubiquitous shift towards experience creation in art-making, arguing that the extended conceptual ‘frame’ of the Friedian ‘theatrical’ work that incorporates spectating bodies had shifted analysis from what an artwork ‘says’ to what it ‘does’. In my ‘Introduction’, I identified the paradox that immersive theatres tend to produce a duality to the spectating self; this simultaneity, typically associated with an actor-character, extends the transformational act to the audience-character. While other theatre scholars have explored the unrehearsed audience’s doubled presence ‘inside’ the drama as a theatrical problem (surveyed in section 2.5), the original contribution that this argument makes is in identifying the undergirding desire of immersivity more specifically towards reducing the proximity between oneself and one’s virtual counterpart; the virtual others that have been of particular interest in this thesis are bodies that are in flux and subject to the ‘trans-‘, or ‘the passage’, of epileptic seizure or motor impairments. I have argued that neuroscientific studies in body ownership intersect with this immersive ontology, identifying the science-inspired performance practices of S&R, BAL and Analogue as exemplars in an emergent field. It is the reformulation of body transfer illusions as an applied technique towards the aim of promoting an understanding of subjects by virtual ‘perspective-taking’, which represents a significant advancement in the analysis of the ‘immersive’ work. Furthermore, this thesis places an emphasis on the need for greater rigour in understanding what the immersive artwork ‘does’, examining models of practice in Part Two that seek to harness the potential social impacts of this kind of experiential artwork. Consistent with this idea, immersivity has been reframed in my discourse as a creative process or story-sharing platform curated by artists and used by participating subjects to mobilise something proximate to the ontology that I have conceptualised in order to improve communication and produce real-world impacts in the arts, healthcare and other adjacent fields. I have surveyed existing research occurring in-between cognitive studies and theatre scholarship in my ‘Introduction’, but have sought to circumvent a ‘top-down’ hierarchy of knowing associated with the ‘cognitive turn’ that deploys tools of analysis from the hard-sciences to validate extant artistic practices – although I should acknowledge an inevitable degree of indebtedness to the neuroscientific methods that have enabled experimenters to measure the intensity of the perceptual effects of embodiment illusions (since this knowledge has provided compelling foundations for using body illusions as an effective communications tool). However, it is important to note that the expertise in all of the practices in Part Two primarily belongs to the body that ‘knows’ an experience, while the artist-as-facilitator provides both the process and the technical apparatus to reconstruct that knowledge for specific audiences.

In Chapter 1, I revisited the anti-theatrical debates that emerged from art criticism in the 1960s, having first aligned my position with theatre scholars that have argued towards ‘anti-theatricality’ as a historically relational phenomenon (Barish, Davis, Postlewait, Ackerman, Puchner). I have argued that the pertinence of Michael Fried’s anti-theatrical discourse to my argument is that it encapsulates the enduring philosophical concern of the Diderotian tradition that sought to deny the ‘beholder’s’ presence in the reception of a work of art. I have situated the incorporated body of the immersed spectator as part of the ‘theatrical condition’, but it is this acknowledged presence of the spectating body that provides a precondition to the theatrical problem of the participant’s physical presence ‘inside’ elsewhere phenomena. This has necessitated reconciliation via illusionistic means. Exteriority is privileged by Fried (exemplified by the ‘absorptive’ work), but disavowed by immersion as I have conceived of the term as a bodily act and not simply an act of ‘deep mental involvement’. My selected case studies in Part Two represent a desire not just to be ‘acknowledged’ by the artwork, but to become another subject ‘inside’ of the work. Correspondingly, body transfer illusions are intended to reconcile the incongruity of one’s bodily presence inside the distant elsewhere of other bodies and their spatio-temporal circumstance by prompting the feeling of proprioceptive drift between a spectator-avatar.

Having traced a genealogy between the ‘theatrical’ artwork and the ‘immersive’ practices investigated in Part Two of this thesis, I surveyed definitions of the terms ‘immersive’ and ‘immersion’ advanced by theatre scholars in Chapter 2. While the astronomical derivation of ‘immersion’ connoting the eclipsing of a celestial ‘body’ has largely been disregarded, I have reinstated its metaphorical relevance to body transfer illusions that mask off aspects of the participating body to instate a mediatised body image. Following an examination of how the spectator in immersive theatre scholarship has been conceptualised, for example, as a ‘(syn)aesthetic’ subject whose body is ‘prioritised’ by a characteristically polysensorial practice (Machon), I have scrutinised the body’s prioritisation *tout court* in immersive theatres. Having scoped other critical commentators who identify the spectator’s bodily proximity to the dramatic space of a performance as a theatrical problem (Nield, Ridout, White), I have argued that the case studies examined in Part Two deploy body transfer illusions with the aim of reconciling the paradox of the immersant’s physical ‘being there’. Participants experience a virtual body image as part of the phenomenal ‘self’. Consequently, the emphasis via this artistic mode of reception is on prioritising the experiencing body of another through virtual bodily replacement. Having signposted the specific ‘intermedial’ practices with which Part Two of the thesis is engaged, in Chapters 4 and 5 I surveyed the ontology of ‘immersive’ technologies identified by scholars in media studies to understand what promises of access are attendant to the kinds of spectator-enveloping digital technologies that are in service of the work. I extracted discourses pertaining to the ‘totalization’ of immersive technologies as an undergirding ontology via which an illusionist medium (such as VR) seeks to deny its presence towards the aim of desirably unmediated access to different phenomena. I have contended that this logic is associative with immersive theatre’s problematic promise of physical access to dramatic space. Having surveyed radical adjacent philosophical discourses that have reconciled the body’s passage ‘inside’ the simulated through transcending the body or conceptualising the self as reducible to ‘information’ (e.g. Moravec and Bostrom), conversely I have argued that the application of VR in the case studies in Part Two is anti-Cartesian because they frame ‘knowledge-as-sense perception’. The practices in Part Two relinquish distance, disavowing the ‘separation’ associated with Friedian ‘absorption’ and ‘Cartesian perspectivalism’. Spectating bodies are ‘remediated’ (and at the level of sympathetic responses, ‘replaced’) but not consciously denied, and the temporary dissolution of the borders of the immersed audience member becomes a strategy towards empathic learning.

While Chapter 1 used art criticism to expatiate on the extended boundary of the ‘theatrical’ artwork, in Chapter 3 I paralleled these developments with the shifting partition of bodily ‘selfhood’ via scientific studies in body ownership. The rationale for undertaking this groundwork has been to substantiate the contention in my ‘Introduction’ that neuroscientific studies in embodiment are being hacked by artists to enable audiences to *feel more fully with the body of another*. I identified this ontology as correspondent with the conceptual schema of ‘body-swapping’, arguing that the desire for bodily exchange has surfaced as a tripartite problem that is narratological, philosophical and physical. Following a survey examining the body-swap as a ‘plot event’ in narrative (3.2), I argued that literature and other representational media are wholly ineffective at mobilising the precise mode of empathic learning that fictional characters are depicted to have experienced, since the ‘reader’ remains a ‘reader’ and is exterior to the transaction. Furthermore, I have demonstrated that the intersection of science with the ‘body-swap’ narrative tends to recycle exhausted tropes of the ‘mad scientist’ as a convenient ready-made antagonist: a point that it is important to acknowledge, as these recurrent representations may erroneously inflect how one views the use of science-derived body transfer illusions in performance. I went on to revisit arguments that have illuminated the persistent philosophical problem of ‘knowing’ other bodies (3.3), such as Thomas Nagel’s claim that certain modes of knowing necessitate possessing particular kinds of bodies. Although the subjective character of another’s experience is unknowable, I have argued that the attempt to bridge epistemic divides between the embodied experiences of neurological patients and those around them is a persistent concern that requires pragmatic solutions. Finally, I proposed that the acquisition of knowledge that is bodied by others presents a significant physical problem (3.4), necessitating a profound transformation of the participating self: a problem that I have argued corresponds with immersive theatre’s problematic transgression of the spectator’s crossing the threshold ‘inside’ conceptual space. I then progressed to a consideration of how scientific embodiment interacts with this problem, plotting a trajectory through the origination of proprioception as a field of study and the use of illusions as a treatment for phantom limb pain (Ramachandran) (3.4.1), to experimental studies using the rubber hand illusion (Botvinick and Cohen) (3.4.2). I identified that the RHI paradigm permits controlled manipulation of body ownership in a participating subject, engendering the sensation of owning an alien humanoid limb as part of the phenomenal self. In addition, I have surveyed studies that indicate the potential short-term social impacts of experimental embodiment to alter implicit attitudes towards different body types. I concluded Chapter 3 by acknowledging subsequent research that has evidenced that whole-body ownership can be accomplished virtually through relocating the first-person visual perspective (using VR HMDs) and distributing correlating visual and sensory signals to the body of the participant (Petkova and Ehrsson) (3.4.3). I have drawn on this survey of scientific research to problematise G. E. Moore’s use of his hands as a site of epistemological ‘certainty’, highlighting the relativism of ‘common-sense’ knowledge and the conditionality of truth claims that are anchored in a claimant’s body as a site of ‘proof’. I then evidenced that scientific embodiment has obvious resonances with the concept of ‘body-swapping’ and ‘immersion’, both in regards to the immersive ontology I have advanced throughout this thesis, and the astronomical derivation of the term as an eclipsing of a celestial ‘body’.

My research enquiry in Part Two has been focused on artistic practices that integrate and creatively adapt embodiment illusions, conceiving of immersivity as a ‘tool’ with a use-value (and notably, in the case of BAL the audience is described as a ‘user’). This is an understanding of ‘art’ that is unthinkable via Fried’s polemic. Cumulatively, the practitioners I have examined use techniques to occupy different unique points-of-view as an attempted illusionistic solution to Nagel’s philosophical problem. This approach engenders a paradoxical logic: that knowledges that are unknowable from observation alone can become ‘known’ through the audience’s self-deception (hence, the necessity for the ‘immersive’ work, and the departure from prevalent observational modes of theatre reception). The concealment of the actual body of the audience conversely renders perceptible the injuries of individuals that carry no physical trace (as in S&R’s facilitation of TBI patients), or makes visible the gaze that looks back at a body that exhibits physical symptoms that are misread in different social contexts (as in *Transports*). As I have demonstrated, the elicitation of ‘empathy’ in these contexts has the potential to engender positive change on a continuum ranging from interpersonal experience (e.g. between an epileptic subject and the medical professionals supplying treatment) to the level of policy-making (e.g. the UN’s trialling of BAL’s *TMTBA*). My critical exegesis of case studies in Part Two has provided a site to substantiate my over-arching claim that ‘body-hopping/swapping’ via body transfer illusions operationalises immersive ontology as an empathy-building practice to attempt to *feel with the body of another* in arts and healthcare contexts. S&R, BAL and Analogue’s practices, examined in Chapters 4 and 5, exemplify the actuation of this immersive ontology through the deployment of low-cost technologies and interaction protocols derived from the RHI paradigm and whole-body illusions surveyed in Chapter 3. Immersivity in S&R’s *In My Shoes* and BAL’s *TMTBA* is distinguished by the utilisation of protocols that adhere to Ehrsson and Petkova’s three critical conditions for VR whole-body perceptual illusions (systemised and refined in BAL’s practice as ‘body-change’ and ‘body-swap’ interaction protocols). The spectator-avatar generates a feeling of unification between these dual selves through accurate and wilful synchronisation of movement between one’s corporeal self and a virtual other. However, as my critical exegesis of *Waking in Slough* demonstrates, artists are skilfully adapting these techniques to generate deliberate disintegrations between visual and somatosensory information, for example, to recreate the onset of another’s experience of seizure (which I have connected with Cixous’s notion of ‘*entredeux*’). I have further demonstrated that S&R’s rationale for using these approaches is as a solution to the problem that individuals face in communicating their remote experiences to an extended circle of support following a traumatic brain injury. Immersivity is purposed as a multisensory approach to facilitate other individuals with a TBI in a creative process influenced by person centred planning (PCP) in healthcare. The mentor-mentee collaboration is grounded in mutuality of experience and the neurological subject maintains complete ownership over the outputs of the creative process. BAL’s process similarly applies neuroscience embodiment protocols to generate intersubjective knowledge in a process that starts from an ethnographic standpoint; the collective’s immersion within a community initiates a dialogic process to better understand the needs and aspirations of a specific group before offering *TMTBA* as a story-telling system with which to create their own performances. Additionally, the application of *TMTBA* in healthcare corresponds with S&R’s interest in using an empathy-building practice as a positive intervention, investigating how these techniques might contribute to care and rehabilitation (e.g. improving the support a patient receives, exploring narratives of intergenerational trauma or counteracting the effects of conditions such as body dysmorphic disorder (BDD)). BAL further democratises access to its immersive system as data that can be downloaded, 3D printed and assembled. Immersive approaches via this mode of dissemination are intended for widespread replication by communities and independent researchers who wish to use *TMTBA* in their specific contexts for non-commercial purposes.

Analogue’s *Transports* corresponds with the RHI paradigm, generating a sense of ownership over a single body part. However, as I have argued, the installation builds on these techniques by implementing wearable technologies to translate abstract statistical data derived from PD patients (e.g. the frequency of tremor) into kinaesthetic understanding. I have demonstrated how the different phases of the research and development process were negotiated with scientific consultants and Parkinson’s UK to ensure best practice in working with volunteers living with YOPD, whose feedback contributed in shaping the direction of the project. The evaluation of *Transports* has provided compelling evidence as to the value that participating subjects perceive in the attempted mobilisation of the immersive ontology advanced throughout this thesis. The qualitative feedback affirmed that all participating subjects agreed that *Transports* increased their knowledge of YOPD, providing an empathic understanding. The sample group of BSc. Psychology students unanimously confirmed that *Transports*’ approach to raising awareness of the lived experience of a condition would impact on how they might work with those living with YOPD in their professional lives. Finally, every participant in both arts and education contexts expressed an interest in other variations of the project, using related immersive techniques to reconstruct individual experiences of particular conditions. This indicates the crucial role that immersive empathic learning might play both as an artistic mode of reception and as a communications tool to transform the understanding of those with a professional interest in the subjective character of certain kinds of patient experiences. These findings clearly demonstrate the potentials of immersive ontology conceptualised as *feeling more fully with the body of another*, when it is proximately mobilised through the integration of body transfer illusions in performance.

While non-normative modes of being, as I have identified throughout this thesis and in section 6.2, pose a significant obstacle to the epistemic agenda of immersive approaches to knowing the subjective character of another’s experience (e.g. confabulators, amnesics, dissociated subjects etc.), I maintain that it is the attempt to know that is crucial to engendering empathic comprehension. Body transfer in this instance is not conceived of as a complete solution or as a ‘capitalistic act’ of possessing another’s reality; to participate in the exchange is rather to entrust one’s own body to an art experience designed to throw the immersant into strangeness caringly. While I have focused on practitioners who use body transfer illusions, a crucial distinction to extract from the processes examined in Part Two is that VR body illusions are not an end in, and of, themselves. The approaches of S&R, BAL and Analogue are reflexive to the needs and abilities of the individuals with whom they collaborate. While these practitioners evidently share a commitment to the immersive ontology that I have advanced, the procedures through which to mobilise something of this ontology are ‘experimental’ insofar as each process is an exploratory investigation to discover ‘what works’. S&R generate illusions of re-embodiment as a tool in their facilitations, but only when it is the appropriate tool to serve the mentee’s need to further the understanding of others and improve communications and care. Alternative techniques are substituted when they are more practicable. Similarly, the solicitation of critical feedback throughout the *Transports* pilot from those living with YOPD and organisations that advocate on their behalf influenced the techniques applied and technologies in service of the installation. Thus, I would argue that the artistic processes examined in Part Two are illustrative of Ramachandran’s aforementioned proposition regarding the use of illusions in science that we are working within an ‘era of experimental epistemology’ (*Phantoms in the Brain* 3).[[246]](#footnote-247)

It is my intention in this closing section to briefly clarify the offer that this thesis is making to the wider discipline and to identify some key areas for future investigation that arise from my research. Primarily, my identification of the radical ontological promise that underlies a particularised notion of immersivity that I am forwarding refocuses the discourse around immersive spectatorship – it does so by examining the kind of spectatorial self that is constituted by nascent hybridised performance practices that take as their methodology illusionistic architectures that have been used in science to demonstrate that bodily selfhood is not hardwired. The softening of boundaries between the phenomenal self and other has necessitated this crucial line of research enquiry, which is intended as an invitation for a wider critical discussion on the evolving scientific knowledge in circulation and the far-reaching implications when this knowledge is reconfigured into new models of theatrical spectatorship. One productive area of further enquiry might focus on measuring the longer-term impacts of body transfer techniques in immersive performances within the specific applied contexts in which they are used. Methodologies to evaluate changes in interpersonal attitudes and shifts in behaviour when working with subjects who have been virtually embodied would provide further supporting evidence for the application of these techniques. To this end, direct consultation with those who use scientific methods to measure the perceptual effects of body illusions would help to identify potential approaches to understanding longer term behavioural impacts in this rapidly developing field. The *Transports* pilot project has provided initial foundations for this kind of sustained exploration, and one potential area of development is to use related immersive embodiment techniques to support the training activities for incoming charity volunteers in consultation with Parkinson’s UK.

Beyond testing the longer term impacts of body transfer illusions in applied contexts, future directions for the research could involve targeting other potential organisations and audiences such as medical professionals and occupational therapists (the latter being identified as a key group with intersecting research interests at the live demonstration of *Transports* at the Science Museum). I intend to identify external professional healthcare networks with whom we might engage as potential contributors to the research of both parties, to survey how the suite of nascent embodiment techniques examined in this thesis might be beneficial in therapeutic contexts. This avenue is as yet unexplored in my research (although as I have acknowledged, BAL’s research has been exploring the possibilities of applying *TMTBA* as a tool for rehabilitation in healthcare).

An extended research project could further seek to investigate personal experiences of other symptoms associated with Parkinson’s (e.g. bradykinesia) and develop new embodiment techniques to reconstruct these experiences for others. Following the success of the *Transports* pilot, Parkinson’s UK’s have expressed an interest in collaborating in a longer term research investigation of this kind. I would also seek to adapt the project to evaluate its potential efficacy as an experiential learning tool with different demographics, targeting students studying psychology in further education and at a post-graduate level. This testing process would help to generate further understanding as to what kind of participants perceive such knowledge creation to be of most value. Furthermore, testing with a wider cross-section of student undergraduate participants would enable qualitative data to be gathered from a larger cohort and capture responses from a greater percentage of those with a professional interest in the lived experience of different conditions. I would also need to address the limited audience capacity for the installation, finding creative solutions to enable greater levels of participation, disseminating embodiment experiments more widely and more cost-effectively. This is a problem that was evidenced through the unprecedented levels of interest that we received by email from relatives of those living with Parkinson’s disease who wished to experience *Transports,* but were located overseas. BAL’s approach to uploading the components of *TMTBA* to be downloaded and 3D printed is one such solution to improve accessibility to their story-telling IVR platform; however, this method targets those with specialist research skills and competency in engineering and electronics, and is not a strategy that makes these techniques accessible to the layperson, relative, student or carer working in the healthcare sector.

Finally, the taxonomy of immersive performance practice that I have introduced in this thesis might be understood as an initiation of the important task of identifying and aggregating genealogically related sets of techniques into a recognisable theatrical ‘movement’. The shape-shifting nature of these rapidly evolving modes of immersive spectatorship, their ‘inter’ or ‘anti’-disciplinary character and the hybrid methodological processes which I have demonstrated are creatively adapting extant scientific research in embodiment towards multiple applications in different fields, create inevitable difficulty in gathering these disparate activities around a shared identity. Notably, this difficulty resonates with Fried’s critique of theatre’s ‘synthesis’ which I previously cited in Chapter 1. Nonetheless, beyond simply eroding the borderlands between ‘different art forms’, I have demonstrated how the integration of body transfer illusions is radically problematizing neat demarcations of the immersed physical self and one’s virtual counterpart. The ontological desire that I have argued that these immersive approaches attempt to operationalise, to *feel with someone else’s body*, is a unifying principle around which these nascent theatrical forms congregate. Additionally, a further task that this thesis has precipitated is to consolidate this new movement by establishing a dedicated interdisciplinary network of practitioners that apply body transfer illusions in performance in different global contexts. As part of my ongoing research activities, I aim to deliver the UK’s first dedicated *Immersive Body Transfer* symposium at the University of Essex to provide a unique platform for artists, scientists and technologists to skill-share and exchange knowledge from multi-disciplinary vantage-points, opening up new sets of questions as to how illusion-inducing approaches might be deployed to access proximate sensory reconstructions of the ineffable first-person experiences of neurological subjects. It is this endeavour that represents the major contribution of this thesis by identifying the key features of a burgeoning subset of practices in the field of immersive performance.

**Appendices**

**Appendix 1**

**Transcript of a personal interview with Jane Gauntlett (Sublime & Ridiculous), 19 August 2014.**

**Liam Jarvis:** How did Sublime and Ridiculous come to fruition as a company and what is your background as a theatre-maker?

**Jane Gauntlett:** I was working as a freelance producer and then I decided I wanted to start making my own work. I came up with the name Sublime and Ridiculous. The first project I made under that name was *Flatland*, based on the book. We did a scratch performance of that in Margate at the Tom Thumb theatre as part of a festival. And then I came up with the idea for *In My Shoes*.

**LJ:** Why is the company called ‘Sublime and Ridiculous’?

**JG:** Somebody said to me ‘how are you’? And I said ‘I’m sublime and ridiculous’. I was going through a period of time in hospital and everything was a bit crazy, and it just seemed to be that that was my general experience of the world. So it seemed like a good name for my company. I also wanted to make work about the sublime and the ridiculous.

**LJ:** What was the genesis for the *In Your Shoes* series of interactive works?

**JG:** I had a brain injury and I was constantly asked what it was like. I was often frustrated because I felt like people didn’t understand where I was coming from. I felt very judged. I found it really hard to communicate. I really struggled with my verbal skills and I wanted to use it as an alternative method of communication. I wanted to suss out ways that I could get people to understand where I was coming from and what was going on. One day I had a seizure on a train. I remembered it all very well and I wanted to recreate it. And I wanted to explore using virtual reality. I’d read about VR. I just wanted to experiment with technology and the way I could use it to immerse somebody, to involve them and to help them see things from someone else’s perspective.

**LJ:** What different stages did *Waking in Slough* (or work with your mentees) go through in the process of making?

**JG:** *Waking In Slough* was the first time I’d made my own work; it was the first time I’d used technology. I don’t come from a technical background. Initially, I had an experience which was really important. I got on a train. I woke up in Slough. The absurdity before that in the run up to the seizure, and then the craziness after was quite unusual but also really represented what it was like for me to have a seizure: about the way I’m treated and about what it feels like. What I wanted to do was see how far I could push an audience into experiencing what it was like to be me; how intense I could make the experience. I wanted to use multi-sensory tools because I felt it was really important for them to smell, hear touch, taste everything that I did, in the way that I did. I wanted to take that experience and recreate it as close to the truth as I could. I get introduced to people, quite often young women that have been through trauma. This isn’t necessarily linked to the hospital, there are people I get advice from. To call them a ‘patient’ seems a bit too formal. There’s a lot of questions that are asked. Because I had a severe brain injury I’m often quizzed, about ‘what’s this like’? So we get to know each other quite well, and we develop quite a nice relationship and I show them experiences that I’ve had, or I show them examples like *Waking In Slough* or audio pieces that I’ve made. So they get to know me and trust me – there’s a huge thing about story sharing that is really important, really cathartic and also quite empowering. ‘Camaraderie’ is one of my favourite words, so there is something about that that’s really great. But what I do is that I work really closely with them and then we talk about things that have an impact on their lives that are positive and negative. It’s really important for me to get some positive things in there too because I think often work that is made about disability or mental health comes across as being really negative.

We just play around so it [the process] is very much tailored towards that person, and sometimes they can’t communicate very well so we use pictures, we use all sorts of other ways of telling stories. Audio pieces have been the easier ones to make and the easier ones for them to present and make themselves. Sometimes they have props they will give to people and it becomes a performance they can do, and sometimes we create it so that it’s something they can put online and be downloadable by people they know or they can show it to them on an iPod.

We take notes of things that are important, messages we want to get across, funny anecdotes, and then we think of experiences that have had a big impact on them and then from that we create the piece.

I’ve developed a better structure of ways that I’m going to work with the new pieces and the process that we’re going to go through. So much of it is about trust, so I guess that’s the first thing. Meet, share, trust. It’s about talking, getting to know each other and then showing them some of the work I do and asking them for feedback. And then in the next session it would be about them showing me things that are important for them: objects, stories, pictures etc. So it’s very much an exchange. And then we map it out [diagrammatically]; so we map out what’s important to them in their lives, their relationships, and their world. I did a thing when I was working for Mencap called ‘person centred planning’ which I have used in a hundred different ways since, where you take the name of a person, write it in the middle of the page and write the dreams around it and then you look at those dreams and work back. So one of the ladies I worked with wanted to marry the whole of Manchester United football team; we couldn’t do that. We could get her a season ticket. We could make sure that she went to see them play. We could get her photograph taken with them. We could find their website and make sure that in the care plan there was booked time to spend talking with a member of staff about Manchester United; the amount of knowledge I have about Manchester United 2001-2, from working there! And that’s very much the approach I use in this. It depends very much on the person; it seems to be what works the best most of the time. It’s become very two-way – it very much feels like a collaboration. I go along with the tools and we work on it very much together and I think that’s been a really important thing to learn.

**LJ:** Is the process similar when working towards a public performance?

**JG:** Yes. There’d need to be more formalities – signing permission forms etc. But I think it would be a very similar structure –it’s important to structure the meetings and it’s the best way to work out how we’re going to work with artists/film-makers to help us make it etc.

**LJ:** What are the challenges involved in relation to reconstructing your experience of seizure for an audience ‘authentically’? What part does authenticity play in reconstructing personal experiences?

**JG:** Authenticity is really important. The idea is that we bring it as close to the real experience as possible. In the beginning I was really nervous about pushing audiences to do things: to move, to touch things, to taste things. But it is really key. That piece was about me, but for the pieces I’ve been making since then it’s really important for me to work really closely with people to recreate their experiences, in their shoes, from their perspective. So I work really closely with them, I get to know them, we talk about their experiences, their lives, we get to know each other and then we talk about a way that would be a good way for them to communicate and recreate the experience that they’ve had. So that might be audio or video goggles etc.

It’s been an experiment really; I’ve been interested in testing different technologies out, seeing what works, strengths and weaknesses of using audio, goggle technology etc. and I’ve constantly got my eyes open for new things being invented. But I think it’s very much about the story and the aim, so I’ve made quite a lot of audio piece with mentees: people with brain injuries that I’ve been a mentor for. And that’s been about creating experience for their families and helping them to understand what it’s like to be them. Those ones are confidential; I don’t use those as performances. They have control over it. The person I make it with, it’s theirs, it’s not mine anymore. They own it. It’s been about sussing out whether it’s useful for them, their families, loved ones.

Until now it’s been very much an experiment, about me learning how to work in that environment; it’s been about me becoming more confident in public speaking. A lot of it’s been about experimenting and sussing out what works. I don’t claim that it’s therapeutic, I’m not qualified. I see it more as an alternative communications device. It feels like more of a way to experiment with different ways to communicate. They’ve been made very much on my mentees terms; those pieces don’t necessarily feel like my work. If I was designing it for a public audience, it might be quite different.

As someone who’s trying to make work that is authentic to being in someone else’s shoes, I’ve got to learn how to adapt my approach and learn from other people and their ways of telling that story. So it’s been about learning to write about other people’s experiences as well.

**LJ:** When did you first start working with video glasses? What have you discovered are the possibilities and limitations of this technology for the purposes of theatre-making?

**JG:** The limits are the size of audience you can reach out to, especially with funding applications, that’s something that people frown at or are a bit anxious about. Also the technology is quite expensive and it’s not advancing very quickly. It’s already looking like a twee gadget. And it whether I want to stay with this technology or jump straight ahead and use technology which might actually make the experience itself less immersive, because you have to be so careful about making people sick [VR sickness]. There is a new thing called Oculus Rift that I’ve had my eye on, I remember when it was in Kickstarter. It’s taken years for them to develop it to a point where it safe for people to use without getting sick. So technology has all sorts of problems but mostly in terms of funding and sustaining the project, it’s the size of audience and the cost that are the limitations.

**LJ:** What are the challenges of employing VR technology in a theatre context (in terms of audience/critics expectations etc.)?

**JG:** We get a harder time with theatre audiences. They tend to ask more questions. It’s been great doing it with elderly neurologists. And people that are familiar with technology have different expectations. I want it to be very much a library of experiences of diversity, but I also want it to attract people that might see ‘disability’ or ‘mental health’ on something and be put off by it and not necessarily want to go and see it but might be really excited by the technology. So I see technology partly as that, as a way to involve people that wouldn’t necessarily want to be involved. And also it gives me the opportunity to be able to run the experience because I can carry it around.

The technology is advancing quickly; they’ve created DIY HMDs with cardboard and smartphones. So it’s keeping above and beyond that; how can I make my work better than what they’re experiencing through their iPhone’s covered in cardboard?! That’s quite important. Or do I embrace the cardboard video goggles and turn it into an app.? It’s experimenting – I’m constantly aware of technology and advancements and how I take it further and make it into a library that’s accessible.

**LJ:** *Waking in Slough* immerses individual audiences inside a first-person reconstruction of your experience of an epileptic seizure – what do you perceive to be the advantages of first-person approaches for an audience, as opposed to stage productions in which audiences watch representations of other’s experiences?

**JG:** I like the idea that it’s a license for the participant to be in someone else’s shoes for 10 minutes. I like the idea that maybe they would lose a bit of their feeling of responsibility for their actions, or behave in a way they wouldn’t dare otherwise. I’ve watched people at interactive theatre shows that behave in a way that I’m sure they would not behave at home. And I’m wondering if we can play with that; license to let go of your general self-consciousness.

It’s almost like giving everyone license to be five. It’s like putting people in a playground with toys to play with. I think immersive experiences tap into fantasy.

**LJ:** What are the considerations that you have to make as a theatre-maker when placing unrehearsed audiences at the centre of an experience?

**JG:** The piece you saw was edited slightly in terms of timings. We’d tried making people walk further; stepping onto the train, turned around and walking along the carriage. But we actually cut it [inserting a ‘blink’ edit], and that was because we found that asking people to walk around killed the immersiveness of the experience.

I think it’s very hard to recreate stepping up into a train; we held a door with a door handle and they’d reach up and pull it, and that was fun because we played around with getting the weight right; how you can make an actor put weight on the door to make it feel like a train door. But we found that the less facilitator-participant interaction there was the more immersive it was. We learnt not to move things around people. That if they didn’t take the handbag off we shouldn’t touch it, we should just let them create their own world.

The experience changes quite dramatically; the film is always the same. What they see is always the same. What they feel might not necessarily be the same. The smell, the environment we create around them is the same. When the participant comes in, the facilitator is making sure that they are safe. We don’t want the facilitator to touch the participant because that snaps them out of the moment immediately. It’s much more about making sure that the props are in the right place. But if they want to hold onto something that we’re expecting them to let go of then that’s fine to. It’s been fun to experiment with what makes people become more involved.

**LJ:** From my experience of *Waking In Slough*, I was struck by the way you expertly complicate the pronoun ‘I’. Notably, when the paramedic removed my video glasses and asked me ‘Do you know who you are?’ I wasn’t sure how to answer! Was I me, or am I ‘Jane’?! (a very productive confusion of identity that I imagined mirrors the disorientation of coming out of a seizure?). From your observation of audience behaviours, how easy is it for the unrehearsed audience to take on the role of ‘Jane’? (Andrew commented previously that many people say their name is Jane when asked).

**JG:** I’ve been really surprised by how involved people have got. I don’t watch all of the performances. But I think about 60% of people say ‘Jane’ when they are asked their name. They mostly say to the paramedic that they’re going to London, which is what they’re told. The responses generally mean that they’ve taken in quite a lot. They’ve been listening. Some people are just really surprised and don’t know what’s going on. We’ve not had many negative responses. Only two people who didn’t find it very immersive. It became very obvious how much atmosphere is important. We did it in a building where the heating was broken. And the actors were doing it for 8 hours in a long stint. That was the only place we received negative feedback. It was freezing and our poor actors had been in a freezing environment for 8 hours, and the participants were brought in to sit in the freezing cold. That was an eye opener for how important it is that the environment is as close to the environment of the experience as possible. It’s hard to be immersed in something if you’re freezing! Moving it around and doing it in a variety of different places has been really good; if you do it in a hospital it’s very different to doing it in a university, which is very different to doing it in a theatre.

**LJ:** One of the aims mentioned on your site is to ‘communicate the incommunicable’ – could you expand on this? Are the unique forms you use in performance (e.g. VR) a response to trying to find ways to explore events that are beyond representation (e.g. the sensation of seizure)?

**JG:** I think ‘communicating the incommunicable’ came very much from people asking me questions; what is it like to have a seizure? And then post-seizure: have you wet yourself? Where are you going? What’s your name? What’s your date of birth? And I wanted to communicate that from my perspective. So people ask me questions all the time, but there also questions you wouldn’t dare to ask. I think it’s about answering questions you wouldn’t dare to ask by showing them the world from our perspective. So it’s about me sharing everything and not holding back.

[On the inner monologue we hear] It’s about it being unedited, open and honest. When we present it, it’s been really quite brilliant the stories I’ve been told afterwards, the emails I get sent, not necessarily to do with epilepsy but about their own experiences of something. And the warmth I get from people, and people want to tell me their stories and say ‘I’ve never talked about this before’. I was working with a lady who’s going through gender transition, and she was very shy. A few weeks later she did a talk in parliament about gender transition (she works there), and she said that it was a lot to do with what we’d been through and talking about it; it helped give her confidence, and she said that being part of *In My Shoes* made her feel like she was part of something huge and that it had really helped. So that’s why I do it. She in particular was communicating things she’d never shared with anyone. And then I worked with a guy that was a marine, and we made a piece that was about him having PTSD. We made it very quickly, it was a quick commission. But he also really wanted to show it to his friends and family. The most powerful thing that came from that is that people always tell him what they think about war, what they think about him going to war, they criticise but no one ever asks him any questions. So he said that he was really grateful for working on it, and he really enjoyed being able to speak openly and honestly for hours and not feel judged and for it to feel like I was his comrade, and we were working together on communicating something that he hadn’t communicated before. And it was quite powerful for me because he’s the same age as me and he’s been to war three times, and he’s just retired. So I think it’s things like that. So ‘communicating the incommunicable’ is about, I keep saying ‘giving licence’, but I guess that’s a big part of it, giving people freedom. I think it’s about helping the people I work with to communicate things they wouldn’t necessarily dare talk about.

**LJ:** How do you meet the subjects that you work with?

**JG:** Until now it’s been very much word of mouth; I met the marine through a talk I did at the New York Academy of Medicine. I’m making a couple of gender pieces; the one in Parliament I met through a friend. The next step is to explore reaching out further. It’s been quite important to me that I try it out myself first, and then I try it out with people I get to know a bit better and now I feel like I’m in a place where I’m confident to work with people I don’t know.

It’s not only been an experiment with how far I can push audiences, it’s been an experiment in how can I work with people that might be very vulnerable? How can I make it really important for them? How can I make it really interesting for them, and really productive? And it not be about me? That’s partly why I really like the mentoring pieces, because it’s not about me being an artist making work for reviewers, it’s not going out in public to be slated. It’s me working really closely with them, playing around, experimenting. And I think that’s been a really important part of the process of me developing as an artist, and making work that works. That helps me to achieve me aims. It’s been quite a long development, but it’s partly because I’ve been teaching myself things along the way.

**LJ:** How do you protect vulnerable subjects and build trust?

**JG:** The mentoring pieces that I make are confidential. With the pieces I make I’m very careful about confidentiality, and I actually delete the work after giving them the files. I don’t have copies. Because I want them to trust me. It’s partly because I want them to feel like they can go as far as they wanted without feeling afraid. Hey know from the start of the project that the work is theirs. Which obviously isn’t a good business strategy! But it’s been really quite important to me playing around with ideas and them being part of it.

**LJ:** How long does it take to make a mentored piece?

**JG:** It depends on the people, the relationship that we have, how much I understand what’s going on, how well they’re able to communicate, how free they are at speaking openly about things. It very much depends.

**LJ:** Cultivating ‘empathy’ seems like a significant aim through your work – could you talk a bit more about this? How do your Education and Outreach activities expand on this aim in different contexts (e.g. your workshop with Product Design students at Central St Martins University)?

**JG:** Empathy plays a really large part in what I do. It’s funny I hadn’t really thought about using the word ‘empathy’ when I first starting doing it, it was very much an experiment as to how well I could communicate an experience that I had, and then it very organically turned into something that’s referred to as an ‘empathy project’. And empathy has become really key. And I guess that’s where the training and the outreach has come from, I think with the raising awareness and empathy and also the cathartic nature of the process, I think that’s what has meant that we’ve, a bit by accident, moved into education and outreach. I’ve had quite brilliant feedback from medics about it, because their taught in a very textbook way – and there are things that help them to understand and use empathy as part of their practice but I think that *In My Shoes* is something that takes that one step further.

I work with medics in different ways – sometimes I do demonstrations. So we’re looking at doing a demonstration at a department in Oxford University that use technology. A lot of paramedics have seen it but that’s mostly been because I’ve gotten to know a few and they’ve set it up. But that’s something else we’re really interested in exploring. And the Metropolitan Police we’re looking at working with. So a lot of doors have opened, and I think that’s because a lot more empathy is needed in the world. I think we’ve gotten quite caught up in learning by formula; you learn to be policeman, you learn to be a medic etc. This brings a more unusual approach to understanding others.

I’m really interested in making pieces for 2-3 people, where they come out having had the same experience from different perspectives. If we were to do that on *Waking In Slough* we’d have the paramedic etc. We experimented with that in an audio piece and it worked really nicely. We tested it out on some friends and it’s something we’re exploring further; and how many people we can bring in to see it from the outside as well. People watching the pieces from the outside, it’s actually quite immersive for them. I thought it would be really boring – I’ve done it as a demonstration and the biggest audience we’ve had is 500 people and that was at the New York Academy of Medicine; we did it as a presentation, with one person wearing the goggles and then showing what they were seeing through the goggles on a large screen. We had great feedback from that, so we’ve been experimenting how we can bring in more people to experience it. Because it’s quite alarming to watch someone having a seizure, you want to reach forward and help but you don’t know if you can because it’s a theatre piece, so I quite like the idea of playing around with that.

**LJ:** How do you evaluate your work and what does success look like on a project for you?

**JG:** Obviously from speaking to people; I take notes and learn every time. It’s been a really great way of me to learn about diverse audiences because most of the people would never think about going to the theatre; they wouldn’t be interested in that. They wouldn’t necessarily listen to stories on the radio. I have hundreds of emails from people that have been to see what I do, saying about the impact. I got nearly 90 from the *Lumen* and another event that week, from people whose friend’s had been to see it etc. I get emails from my mentees parents saying ‘thank you’, so I do collect feedback in quite an informal way and I do have a set of questions that I ask but not in a really formal way.

**LJ:** What are you working on at the moment?

**JG:** I am working on a piece with a young man called Freddie and it’s still in the very early stages. We’re currently exploring how we’re going to go about it, and what’s important. And it’s going to be about gender transition. We’re really interested in experimenting with different accessible ways to share his experiences. He writes a lot for the *Guardian* and he is very good at communicating. He’s very sure of who he is and what he’s about. So we’re currently in the process of identifying particular experiences that he’s had and talking about exactly what he wants to get across and how he sees it coming together. That’s the process we’re in at the moment. We’ve got to know each other quite well over the last few months and I’m really excited about making it. I think it’s going to be really informative of my future work, I think it’s going to be a very different piece because he’s a filmmaker and a writer and because he does a lot of activist work […]

With this piece I think we’re going to do more than one. Something that I’ve learnt from *Waking In Slough* is that we can make it longer, and that also gives us an opportunity to start charging for tickets, thinking about it from a business sense. It’s quite hard to charge for tickets for a ten-minute experience, and it works well in a festival environment and other environments, but turning it into a piece that is long enough to charge for – and also exploring ways to turn it into an experience that starts before you get to the venue, exploring ways to make it an experience after with something for you to take away, so really playing around with how to make it more substantial in terms of what you take away. I made a piece called *London In My Shoes* and that was about being a vulnerable adult living in London, and that was a three-piece experience about having a brain injury and we designed that for Thames Festival. The reason why I don’t do that one so much is because it needs more facilitators and it doesn’t fit in my handbag so I can’t carry it around. For that experience you close your eyes, and then you’re on a roof top going through another experience and then you close your eyes and then you open them again and you’re outside a station holding a box of cakes because you woke up in a stranger’s house and got him to help you bake cakes for your granny the next morning. So it’s a collection of three experiences, so we’re talking about doing that together. And then also looking at making online content so people can go away and lookup/read more about him, more about his experiences, maybe put a film online. So playing around a bit with how I can mete out what I do and make it accessible to larger audiences. And maybe we do and audio-visual piece and an audio piece. I’m looking forward to exploring this with him (Freddie) because he’s very confident and speaks very publicly and openly.

We have very similar aims in our work, and it’s about challenging people’s pre-conceptions, raising awareness, communicating what it’s like to be in his shoes. He speaks quite strongly about the questions that he’s asked and the inappropriate things people say to him and other people that are going through gender transition. We actually want to answer those questions without people asking them, in a way, and also to help them to think about what it might be like to be asked those questions. Because some of the examples that I’ve learnt through spending time with him, and seeing him do public speaking and working with others is that they get asked questions that you would not ask someone you’d known for 10 years about their genitalia and their sexual preferences, so it’s a bit about that, and how would that feel? And maybe try and think about the way you talk to people. It’s very much about human rights in general.

**LJ:** Have your priorities as an artist changed or developed since your first piece of work? If so, in what direction?

**JG:** *In My Shoes* is going to be my key project for the next couple of years at least I think. I want to create a library of pieces. I’d also like to make pieces that aren’t about mental health and disability. Going back to pulling in people that wouldn’t necessarily be interested in disability and mental health. Working with an astronaut’s another one we’ve been exploring. I really like the idea of having a collection of pieces that is big enough to run our own event, maybe with other artists that are making similar work.

I’m really excited by technology and how it’s advancing, and I’m looking for potential technical partners. Away from the dreamy ’I want to save the world’ part of me, I’m thinking about finances; how to turn what until now has been a project into a sustainable business. I’m currently building up a team to make it possible. I’ve got to really think about accessing larger audiences, more diverse audiences. […] I’m talking to a guy in San Francisco about creating an app. Which is quite fun. But I feel like that takes away so much of what I do (using the cardboard HMDs).

**LJ:** How important is liveness in your work?

**JG:** That’s something I’m playing with; in the development process it’s been really important -to see how people respond, how people follow, how people react. And I think it still is important. I think adding a human face (e.g. the paramedic) helps with the immersion. It takes it one step away from being a computer game. Because we’re so used to technology – we’re so used to watching things on our own. We’re going to get more and more used to video goggles and cardboard goggles. The liveness is important but in terms of a business strategy and keeping up with the times I’ve got to not cling onto it. I’ve got to be quite realistic about the fact that technology is changing really quickly, and if I want to be cutting edge in terms of the technology I use I’ve got to be open.

**LJ:** Are there any further comments that you’d like to make about your work that we haven’t explored in our discussion?

**JG:** I think that something that has played a huge part is my health, and exploring my own abilities, and challenging them and testing them. And working very closely with other people, I think that’s been really helpful. And I think that something I’m quite interested in is how different reactions are going to be when I show the work of other people. Because I think that the fact that it’s me sharing my story, in a public space, with me standing there that plays a large part in the work, so I think that’s the next challenge to make people really feel for the piece. A really great way to buy a hug is to share an experience or a story, because people come and find me in the theatre and talk to me, and hug me and they want to ask me questions. So it’s about how I can give that sort of interaction, immersion and tenderness. I’ve learnt a lot about people from doing this project. I’ve learnt a lot about how presenting this to people has affected my relationships; people I’ve worked with in the industry etc. I feel like it’s been really good for my relationships and quite good for me exploring who I am. I’m really curious about how I can make people become involved when the person who made it isn’t there.

Especially with the educational work, because the Q&A is so important I feel like the people I make it with will need to be there – and is that true? Do they need to be there? How do I do that gracefully? I think it’s going to be a bit of a challenge. But I think that one of the main reasons we’ve had such great feedback is because I’m there, so they can see the person whose shoes they’ve been in, they can ask me questions etc. I think the human face, human interaction is really important.

It’s been really cathartic for me to sit onstage and be asked lots of questions, sit onstage in front of 500 people when I hadn’t done public speaking before, and be asked questions about something that was quite challenging, but also cathartic and to get that amount of warmth from an audience. So yeah, I’m just wondering if other people would find it as helpful as me. So I think it’s going to be a bit of an adventure, and of course I’ll have to have the right sort of support from professionals, I don’t want to risk hurting anyone or challenging them more than they can cope with.

**Appendix 2**

**Transcript of a personal interview with Marte Roel (BeAnotherLab), 7 May 2015**

**Liam Jarvis:** How did the idea for *The Machine To Be Another* come about?

**Marte Roel:** That’s a very good question – I think there’s not really a moment when the idea comes about. I think it’s a process of discussion, of communication, of research that finally becomes a tangible idea. It was three of us that were working and living here in Barcelona in the world of the arts and also cognitive science. I was working with Daniel, one of the members and co-founders of the team, in a project that used telepresence for different purposes than those of ‘The Machine’. It was his project and I was helping him. Then Philippe (co-founder of the team) saw a performance that Daniel presented. He said to Dani that he had been thinking about developing a project that created exponential change in the world and was interested in collaborating with us. So we started working together. Soon after the idea for implementing *The Machine To Be Another* came about as a tool for building empathy, to see how the world is seen through the eyes of someone else. It was in order to create empathy among individuals and try to better understand others and ourselves as part of a complex system. All of us were inside a network of artists, technologists and creatives; which really helped to push the project forward.

**Liam Jarvis:** I notice that there is quite a diverse range of skills and experiences in your team – do you consider the project an ‘arts project’, a ‘science project’ or an ‘arts-science’ project, and do these distinctions matter to you?

**Marte Roel:** I think that for me personally, they are different ways of knowing and one of them is perhaps more pragmatic; it serves more for the purposes of our society – which is the scientific way of knowing. But I think that’s not necessarily good for the benefit of society and our harmony within an ecosystem. I do think that both of them are just different ways of knowing, both of them are valuable and I don’t think the distinction necessarily matters – I think that it matters in a pragmatic rather than an epistemic way. That’s my personal perspective. There seems to be a hierarchy where the scientific knowledge is more important than the artistic way of knowing and depending on the context of how we present our work, I think it matters in terms of from where you want people to listen. For me one of the really important aspects of this work is that we are really focused on the experience of people, on their real-time experience rather than on measuring a specific behavioural change. I think there are behavioural changes but we’re not trying to find statistical models of how people react, we’re just trying to really put the weight on the embodied experience.

**Liam Jarvis:** What do you think are the most significant challenges that you have faced in developing *The Machine To Be Another*?

**Marte Roel:** I think they change. They have been changing throughout the collaboration. At first it was support and attention; we were working for a while without getting much support or attention. A lot of the challenges have been technological development, just because we are a team that was not tech. savvy (but now we are more so). After I left to Mexico a bit more than two years ago, two new people joined the team, both of whom were very supportive in the technological part. I think that we have had different challenges. Right now I would say that it’s communication: having a more clear identity of what we are as a team. I think that’s our current challenge.

**Liam Jarvis:** One of the things that fascinated me about *TMTBA* is the diverse contexts in which it is being used – do these different contexts present particular challenges in terms of your own identity as a collective?

**Marte Roel:** It’s a bit paradoxical in a way – it’s fascinating to have this capacity to be flexible and we have had the opportunity to be in contexts that I never imagined we’d have interest from. Our discourse has been changing from an artistic discourse a little bit more towards a scientific discourse. This just happened increasingly from the type of relationships that we were having, from the type of contexts where were presenting. Because I think there is, as I said before, an increasing hierarchy of the type of knowledge that matters in the world, let’s say. So yes, we have struggled. Sometimes we present ourselves too much as a neuroscience project, where we actually just derive some of the protocols from neuroscience and we do some behavioural research, but neuroscience today uses measuring tools that we have never really explored, or at least not widely explored. So I think that we have certainly this problem of not finding a very clear identity, but it happens in systems, it happens in persons and I think that we are little by little finding more stable ground and I think that’s our current challenge and our mission.

**Liam Jarvis:** What kinds of methods are available for measuring empathy and are these tools that you use?

**Marte Roel:** Yes, there are different tools for measuring empathy. There’s actually a recent paper that came out this week by the group of Henrik Ehrsson, using brain scanning for measuring embodiment. I think that we should do this kind of research - unfortunately we haven’t really had the chance to do it and the proprioceptive and motor part of it makes it difficult to implement physiological measurements. On the other hand, there are other behavioural observations that we could consider as well as some questionnaires. The ideal would be to measure behavioural changes in the medium to long term, rather than right after the experience. Unfortunately, until recently, all of the people in the team had another job – we hadn’t been working on this full-time. And the ones that are working on this full-time now are incredibly busy trying to sort other things out. We have much more projection than we have financial stability. We don’t even have two Oculus Rift DK2s of our own in the team. This is something that amazes most people but we actually do not have them and this makes it difficult for us to do any sort of experiments. I work at the University in Mexico City and I cannot work with my students because I do not have the equipment around these experiments. We have thought of protocols, we have started doing some research, but I think the only advancement in terms of measuring that we have done is qualitative research in the field. Wherever we present the work we try to talk to people; it’s really been by talking to people that we have found that a lot of them do find some sort of empathy towards the other person, they feel more related, they feel a certain type of care towards the other person – and it is yet to see what is creating this sensation. We have music in the experience, so it might even be the music. There are many different factors and variables that in a controlled experiment shouldn’t be there. But it’s been a very fast year for us and we haven’t been able to cope with everything that’s going on. I think that for the next year or so our focus would be more on research - Another thing that has prevented us from doing research is that it’s 6 people working on this in 6 different countries, and for the experiment to work properly you need at least 4 people; one participant and 3 other people or 2 participants and 2 other people, at least – plus equipment, and it’s not easy for us to find 4 people that can be helping us throughout the week without any funding.

**Liam Jarvis:** What are the structures of funding that sustain or support the work that you do?

**Marte Roel:** For us it has been very difficult to find support, not only because of the structures or the social structures, but because of our team structure, because of our organisation, because of the fact that we are six different people with the same position – there is no hierarchy in our team, and sometimes it’s more difficult to organise things. I think it’s better, we are happy with the way it is, but sometimes we get offers or opportunities from institutions and not all of us agree with their missions so we cannot take those grants. So far we have really been supporting ourselves from our savings or from events that don’t really pay – they pay a little bit of money for a few weeks but for six people it’s really nothing. So we are not really making money. We have been working independently for over 3 years now. And maybe this is the year where we have made a little bit more money but it has all gone into debts and buying equipment that we didn’t have, and these sorts of things. Hopefully in the next year we will be a bit more focused on application for research grants/development grants. But first I think we have to be clear about the mission and identity of our group. We are actually having a meeting here in Barcelona, where the six of us will meet for a week to discuss what are we going to become and what do we want as individuals and as a group, and how are we going to do it?

**Liam Jarvis:** In terms of the way that you work as a group do you work democratically and all have an equal stake in the company?

**Marte Roel:** Yes, we do – but it’s also difficult to have the six of us in a meeting. For fundamental decisions yes, but sometimes the sort of decisions that are more immediate, we cannot wait to have everyone’s response because it makes the process much slower - I think it’s better in a way, but it’s not more efficient that’s for sure. There is no hierarchy; there is a democracy, but sometimes for some more practical or immediate decisions we don’t really wait for the whole team, no.

**Liam Jarvis:** I was interested to learn more about how you collaborated with neurologists in order to design rehabilitation and diagnosis systems as part of the *Medicine Hack Day* in Madrid. Could you tell me more about that?

**Marte Roel:** Unfortunately, I’m not the right person to answer this because I was not in the event – but I think it’s a gathering, a hackathon where people from different disciplines gather and among them there were a few neurologists; I think this links a little bit into our working process which is talking to communities that are maybe foreign to us, like neurologists, and talking about their systems, or tools, or possibilities - letting them explore it [TMTBA]. It can be in a field or maybe in a social context, how would a community, the indigenous community in Mexico for example, use this tool in whatever way they want? Whether it’s for empathy etc. I think that we really found some applications that we hadn’t thought of before – we thought about body image, but not about body dysmorphia which was what we were exploring then.

**Liam Jarvis:** How do you decide which communities to approach and in which contexts you might use *TMTBA*?

**Marte Roel:** I don’t know if I have a concrete answer, I would say it just happens; sometimes we meet people in events, sometimes people write, sometimes we find an application, sometimes someone in our team has a friend who is doing something similar. I think it really varies. Now we are at the point where we have to sometimes sacrifice some of the opportunities that we find because we cannot really accept every offer. But it just happens. We were recently in Italy like a month ago in a post-cinema festival – it’s one of the only Universities in Europe that has a Porn studies programme. I didn’t even know that the field existed; I mean that there are academic fields for everything pretty much, but I never thought that a porn studies programme existed in a University at a doctoral level. There was someone contacting us for a film festival, we got there and found out that a big part of the festival was dedicated to porn studies. We ended up hanging out with a community that we never thought of. Yesterday we were participating in the creative commons film festival here in Barcelona, and we went to the opening. The opening was the premiere of this documentary film called *Yes We Fuck*, which is about people with different types of functional diversity and their sexual lives, for example. Now we’re going to be giving a workshop there and some of the participants of the film will be assisting the workshop. I don’t know what will happen in the workshop but I think these sorts of collaborations and introductions to new contexts just happen and we are very fortunate, or at least for me that’s the most beautiful thing about being part of this project – we have so many different conversations with people that we never imagined.

**Liam Jarvis:** In working with very diverse kinds of communities that are perhaps unfamiliar on the first encounters, what are the particular sets of challenges you face and strategies to get to know the community?

**Marte Roel:** We have a philosophy of starting any conversation with a deep listening exercise – we start by listening to the community, and looking at they want to offer and what we can give to them. But really starting more from an ethnographic standpoint – we get immersed into the community, we try to have a conversation and then we start exposing our ideas. One of the most interesting events that the team has participated in, and it I wasn’t part of it, was a workshop for the Somali diaspora from all over the world in wales last year. About 100 young writers and storytellers from Somalia gathered to share their stories, to create bonding, a shared identity of this community that has been displaced. […] At the end of the workshop they offered TMTBA to them to try it, and play with it, and think about it and brainstorm on their own. So I think that’s our model generally, we offer something that people can play with and something that people can feel ownership about.

**Liam Jarvis:** How easy do different communities find it to work with *TTMTBA* for the first time?

**Marte Roel:** I think so far it’s not as easy as it should be – we’re working hard to make it easier, to make better documentation. Right now, we basically show people it is possible to do it. The people that have replicated our work are generally in universities and in contexts where they are more familiar with these types of tools. So we generally offer to be with them in the process – it’s actually quite easy but you need quite a bit of hardware, and to know the connections. I can say that it’s easy for me and I know that for a tech. person it’s as simple as it possibly gets, but for people that are not into this world it’s certainly not that easy. And I think that we definitely have to make it more user-friendly for people to build their own systems.

**Liam Jarvis:** I notice from your website that you make *TMTBA* available for dissemination online (to be printed in 3D). What is your philosophy on open-source knowledge?

**Marte Roel:** If we didn’t make this open-source we would probably be making more money, but our mission is to create a tool for building empathy and research on identity and the self, and I think that the only way we can really make this tool reach the masses is by having them replicate it, and the only way in which we can have this sort of knowledge really grow and go into places that we cannot envision is by creating it open for other people. We have a non-commercial license which means that you can replicate it - it’s not for commercial uses. This allows for communities and independent researchers to build their own. If it’s for commercial use we’d then have to talk about it in a different way. I think that we, or at least me, I think of ownership and authorship in a– I don’t really believe in that. I think that ideas are born in a context and in our interaction with a context, and I think that this idea is really humanity’s – we all have thought of *The Machine To Be Another* in a way. I think it’s an idea that is out there - we are not the first ones to use this technological setup. I think the embodiment part and the protocols we use for creating the embodiment, these things are what we create but I don’t really believe in ownership or authorship in a traditional way.

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1. A body transfer illusion is the illusion of owning a humanoid body-part (e.g. a rubber hand) or a whole-body (e.g. a VR avatar) other than one’s own. This field of research is sometimes referred to as ‘body ownership’ or experimental ‘embodiment’. As I will expound in Chapter 3, body transfer illusions are induced through the manipulation of visual perspective in combination with the distribution of correlating somatosensory signals. [↑](#footnote-ref-2)
2. National Theatre Wales’s *Bordergame.* [↑](#footnote-ref-3)
3. Punchdrunk’s *"… and darkness descended”*, Aaron Reeves’ *Dead Arise*, *The Generation of Z: Apocalypse*. [↑](#footnote-ref-4)
4. il pixel rosso’s *The Great Spavaldos*. [↑](#footnote-ref-5)
5. Ontroerend Goed’s *Internal.* [↑](#footnote-ref-6)
6. Shunt’s *Amato Saltone.* [↑](#footnote-ref-7)
7. Analogue’s *Re-enactments.* [↑](#footnote-ref-8)
8. differenceEngine’s *Heist.* [↑](#footnote-ref-9)
9. Blast Theory’s *Uncle Roy All Around You*. [↑](#footnote-ref-10)
10. BeAnotherLab’s *The Machine To Be Another.* [↑](#footnote-ref-11)
11. Metis Arts’s *3rd Ring Out*, Ontroerend Goed’s *Fight Night*, The Enlightenment Café’s *New* Atlantis, Coney’s *Early Days (of a better nation)*. [↑](#footnote-ref-12)
12. For example, in the successional one-on-one performances of You Me Bum Bum Train and Look Left and Look Right (*You Once Said Yes*). [↑](#footnote-ref-13)
13. David Rosenberg’s *Contains Violence*. [↑](#footnote-ref-14)
14. Badac Theatre’s *The Factory* immersed its theatre-going audience in an experience that simulated the individual stages of the killing process in the gas chambers, provoking fierce debate and discussion as to the theatrical limits of casting an audience as the prisoners in the re-staging of a traumatic historical event. The performance took place in a series of underground beer cellars at The Pleasance Courtyard during the Edinburgh Fringe Festival in 2008. I return to this example in my ‘Conclusion’ (6.2) to critique ‘immersive theatres’ that replicate historic inequities of power, positioning audiences as obedient re-enactors of the suffering of others. [↑](#footnote-ref-15)
15. Elam is quoting from Nicholas Rescher’s *A Theory of Possibility* (1975). [↑](#footnote-ref-16)
16. In *The Pleasure of Being: Washing, Feeding, Holding* (2010-‘11). [↑](#footnote-ref-17)
17. In *Held* (2006). [↑](#footnote-ref-18)
18. In *Salon Adrienne* (2005-‘07) and *Foot Washing for the Sole* (2008-‘12) respectively. [↑](#footnote-ref-19)
19. This is one of numerous productions in which the company masks its spectators; e.g. *Faust* (2006), *The Masque of the Red Death* (2007), *Sleep No More* (2011) etc. [↑](#footnote-ref-20)
20. Memory deficits such as anterograde and retrograde amnesia have been studied by psychologists, biologists and clinicians for over 100 years (e.g. Théodule Ribot’s *Les Maladies de la Mémoire* (1881)). [↑](#footnote-ref-21)
21. The results of the procedure were later detailed in a scientific paper published in the *Nature* journal by Annese et al, entitled ‘Postmortem Examination of Patient H.M.’s Brain Based on Histological Sectioning and Digital 3D Reconstruction’ (2014). [↑](#footnote-ref-22)
22. In regards to ‘science plays’, Kirsten Shepherd-Barr’s *Science on Stage: From Doctor Faustus to Copenhagen* (2006) offers a useful study of play texts from the Renaissance to the present. [↑](#footnote-ref-23)
23. I should note the caveat that since 2008 Punchdrunk’s Enrichment programme has engaged with immersive approaches to learning for school children. Furthermore, in 2016 the company are partnering with Magic Me and Anchor care homes to create a bespoke experience for intergenerational audiences. [↑](#footnote-ref-24)
24. I will return to the notion of ‘proprioceptive drift’ in my examination of the rubber hand illusion paradigm in 3.4.2. [↑](#footnote-ref-25)
25. While ‘proprioceptive drift’ has been widely used as a proxy for the feeling of subjective body-ownership in the RHI paradigm, studies such as Marieke Rohde et al’s ‘The Rubber Hand Illusion: Feeling of Ownership and Proprioceptive Drift Do Not Go Hand in Hand’ (2011) have suggested exercising caution in making this assumption; this scientific study suggests that there may be no direct causal connection between the feeling of ownership and proprioceptive drift, and that there may be different underlying mechanisms at play. [↑](#footnote-ref-26)
26. I will return to this specific definition of ‘immersion’ in section 2.3, ‘Common Usage of ‘Immersive’ and ‘Immersion’: Etymologies and Definitions’ (on page 71). [↑](#footnote-ref-27)
27. I use the term ‘body ownership’ in accordance with Manos Tsakiris’s definition in the chapter ‘The Sense of Body Ownership’ (2011), in which he states that ‘body ownership refers to the special perceptual status of one’s own body, which makes bodily sensations seem unique to oneself, that is, the feeling that ‘my body’ belongs to me, and is ever present in my mental life’ (Gallagher 2011: 181). [↑](#footnote-ref-28)
28. I should acknowledge that the relationality of science and technology have been abundantly examined in the discourse of philosopher Gaston Bachelard (1884-1962) who first used the compound term ‘technoscience’, which subsequently appears in the writings of Gilbert Hottois and sociologist Bruno Latour.appears October ience of tremoly cience'urse of udience.mission body illusion to explored the first-person experience of tremo [↑](#footnote-ref-29)
29. There are numerous scientific papers exploring impairments of body ownership; notable examples include Karnath et al’s ‘Awareness of the Functioning of One's Own Limbs Mediated by the Insular Cortex?’ (2005), Vallar and Ronchi’s ‘Somatoparaphrenia: A Body Delusion. A Review of the Neuropsychological Literature’ (2009) and Heydrich et al’s ‘Illusory Own Body Perceptions: Case Reports and Relevance for Bodily Self-consciousness’ (2010). [↑](#footnote-ref-30)
30. Roy Salomon et al’s paper ‘Full Body Illusion is Associated With Widespread Skin Temperature Reduction’ (2013) suggests that during a full body illusion participants experience a strong reduction of body temperature. This finding might indicate that the ‘illusion’ of owning an avatar effects low level mechanisms and actually changes the way one processes one’s own ‘real’ body. [↑](#footnote-ref-31)
31. In Peter Zachar’s *A Metaphysics of Psychopathology* (2014), he notes that certain psychiatric disorders have historically transitioned in understanding from the real to the imaginary (e.g. multiple personality disorder) and from the imaginary to the real (e.g. post-traumatic stress disorder), evidencing how such distinctions have provoked contention and arguing towards an ‘imperfect community model’ of diagnosis to avoid relativism and essentialism. [↑](#footnote-ref-32)
32. A task that has been undertaken abundantly elsewhere by authors who have paralleled developments in science with different performance/acting traditions, such as Jane Goodall’s *Performance and Evolution in the Age of Darwin: Out of the Natural Order* (2002), Jonathan Pitches’ *Science and the Stanislavsky Tradition of Acting* (2006), Paul Johnson’s *Quantum Theatre Science and Contemporary Performance* (2012), Andrew Sofer’s *Dark Matter: Invisibility in Drama, Theater, and Performance* (2013) and Nicola Shaughnessy’s *Affective Performance and Cognitive Science: Body, Brain and Being* (2014), to name a few examples. [↑](#footnote-ref-33)
33. In theatrical parlance, the maxim ‘une tranche de vie’ (‘a slice of life’), coined by French playwright Jean Jullien, defined a key aspiration of 19th century theatre to depict naturalistic representations of real life onstage. [↑](#footnote-ref-34)
34. Edmund Husserl (1859-1938) had discussed the relation of subjects to other subjects or ‘intersubjectivity’ in *Méditations Cartésiennes: Introduction à la Phenomenologie* (1931). In *Intersubjective Temporality: It’s About Time* (2006), Lanei M. Rodemeyer argues that via Husserl’s approach, one’s recognition of other subjects remains based on one’s own consciousness – thus, Rodemeyer questions ‘can I ever understand the otherness of the other, if I can only understand her on the basis of myself?’ (2006: 7). Rodemeyer suggests that understanding empathy is inextricable from this question – I am arguing in this thesis that body transfer illusions represent one strategy to engender the possibility of experiencing one’s physical self as an otherness. [↑](#footnote-ref-35)
35. Popper argues towards a scientific methodology based on ‘falsifiability’ in *The Logic of Scientific Discovery* (first published as *Logik der Forschung* in 1934, and published in English in 1959). [↑](#footnote-ref-36)
36. The study of affect theory is a vast area of research enquiry; the development of this field is largely attributed to Silvan S. Tomkins (1911-1991) who argued in *Affect, Imagery, Consciousness* (1962) that the affective system is the ‘primary motivational system’ (6). A resurgence of interest in the role of affect as a mediator in different kinds of behaviour was plotted by Bert S. Moore and Alice M. Isen in *Affect and Social Behavior* (1990). [↑](#footnote-ref-37)
37. Lawrence Shapiro states that a dynamical system is any that changes over time, and correspondingly dynamical systems theory is the ‘mathematical apparatus that describes *how* systems change over time’ (2011: 116) [italicised for emphasis]. Notably, Esther Thelen and Linda B. Smith applied dynamical systems theory to cognitive phenomena in *A Dynamic System Approach to the Development of Cognition and Action* (1994). [↑](#footnote-ref-38)
38. Giacomo Rizzolatti and Corrado Sinigaglia’s *Mirrors in the Brain: How Our Minds Share Actions and Emotions* (2008), provides a comprehensive guide to mirror neurons and the implications that their discovery presents to how we understand the functioning of the brain. [↑](#footnote-ref-39)
39. Psychologist James J. Gibson introduced the term ‘affordances’ in his article ‘The Theory of Affordances’ (1977), and more comprehensively expounded this theory in *The Ecological Approach to Visual Perception* (1979). [↑](#footnote-ref-40)
40. ‘Image schemas’ refer to structures in our cognitive processes that establish patterns of understanding. The term is comprehensively explained by Mark Johnson in *The Body in the Mind: The Bodily Basis of Meaning, Imagination, and Reason* (1987). [↑](#footnote-ref-41)
41. James’s core thesis concerned the sequence through which an emotion is experienced. For James, emotion is the bodily change that directly follows the ‘perception of the exciting fact’ (James 49). Mitchell notes that James’s contention influenced Stanislavsky’s work on physical actions, in the pursuit of developing the acting craft toward ‘the accurate embodiment and transmission of human emotions’ (Mitchell 231). [↑](#footnote-ref-42)
42. Stanislavsky addressed ‘emotion memory’ most notably in *An Actor Prepares* (1936). [↑](#footnote-ref-43)
43. Neuroscience in this instance substantiates antecedent claims such as Denis Diderot’s argument in *The Paradox of Acting* (first published posthumously in 1830) that in order to move the audience the actor must remain unmoved; ‘Actors impress the public not when they are furious, but when they play fury well [...] What passion itself fails to do, passion well imitated accomplishes’ (108). [↑](#footnote-ref-44)
44. Gilles Fauconnier and Mark Turner’s *The Way We Think: Conceptual Blending and the Mind’s Hidden Complexities* (2002) provides a comprehensive study of conceptual blending as a theory of cognition and its constitutive principles. [↑](#footnote-ref-45)
45. First wave cognitive science, which Lawrence Shapiro defines as ‘standard cognitive science’ in *Embodied Cognition* (2011), limited its investigations to processes within the head ‘without regard for the world outside the organism’ (Shapiro 27). [↑](#footnote-ref-46)
46. ‘Postdramatic theatre’ is a term that has been widely deployed by many theoreticians since being introduced by Hans-Thies Lehmann and expounded in his seminal book *Postdramatic Theatre* (2006) to describe theatre practices that operate ‘beyond drama’ at a time ‘‘after’ the authority of the dramatic paradigm in theatre’ (Lehmann 27). [↑](#footnote-ref-47)
47. An introductory book on the cognitive foundations of plays, acting and spectating can be found in Bruce McConachie’s *Theatre & Mind* (2013), part of a series by Palgrave Macmillan that is intended to introduce interdisciplinary studies in theatre and performance to a wider readership. [↑](#footnote-ref-48)
48. In an essay (published in *Aeon* magazine) entitled ‘Your Point Is?’ by journalist Steven Poole, he states that ‘it is and has always been the job and the glory of science to fly in the face of common sense. If a theory that is robustly supported with evidence conflicts your common sense, you had better adjust the latter’ (‘Your Point Is?’). [↑](#footnote-ref-49)
49. This focus on reconstructing the experience of the ‘other’ accords with Emmanuel Levinas’s (1906-1995) discourse on ethics – as Nicholas Ridout argues in relation to Levinasian ethics, ‘modern philosophy replaced God with the self. Levinas would replace the self with the other’ (Ridout 2009: 53). [↑](#footnote-ref-50)
50. The playwright Jean Jullien coined the phrase ‘fourth wall’ to describe a boundary that was ‘transparent for the public, opaque for the actor’ (qtd. in Chothia 1991: 25). Although as I will discuss in section 1.2, Diderot’s criticism similarly called for an imaginary ‘wall’ to separate the visual field between performers and spectators. [↑](#footnote-ref-51)
51. ‘Diderotian’ pertains to Denis Diderot (1713-1784), the influential eighteenth century art critic and philosopher. I progress to a more detailed discussion of Diderot’s anti-theatricality in section 1.4. [↑](#footnote-ref-52)
52. Freda Chapple and Chiel Kattenbelt argue that a ‘significant feature of contemporary theatre is the incorporation of digital technology into theatre practice, and the presence of other media within theatre productions [...] intermediality is associated with the blurring of generic boundaries, crossover and hybrid performances, intertextuality, intermediality, hypermediality and a self-conscious reflexivity that displays the devices of performance in performance’ (‘Key Issues in Intermediality in Theatre and Performance’, 2006: 11). [↑](#footnote-ref-53)
53. The ‘subjective character of experience’ refers to Nagel’s idea that because certain organisms have conscious experience, consequentially there is ‘something it is like to *be* that organism’ (159). [↑](#footnote-ref-54)
54. Both the title and concept of Sublime & Ridiculous’s *In My Shoes*, a series of interactive documentary performances and a case study examined in Chapter 4, speaks explicitly to Ramachandran’s interest in bridging an epistemic divide between a neurological subject’s unique experience and their extended circle of support. [↑](#footnote-ref-55)
55. The full transcripts of these interviews are documented in the Appendices (259-274). [↑](#footnote-ref-56)
56. Helen Nicholson and Baz Kershaw in *Research Methods in Theatre and Performance* (2011) examine the language game of applying the prefixes ‘multi-’/‘inter-’/‘trans-’ to describe the interactivity of skills, methods and methodologies in performance/theatre research. They suggest that ‘interdisciplinary’ theatre practices require ‘the combined *tekhne* (or know-how) of other disciplines to create the in-between (or liminal) qualities of performance’ (7). ‘Trans-’ in Nicholson and Kershaw’s lexicon pertains to the ‘result’ or ‘effect’ of a performance that destabilises or challenges established disciplinary boundaries. They go so far as to term performance studies as an ‘anti-discipline’ or *quasi*-discipline on account of the fact that related practices have a ‘propensity for querying boundaries’ (7-8). By this logic, the practices I examine in Part Two are ‘inter’-disciplinary in the making process, ‘trans’-disciplinary in their effects, and inherently anti-disciplinary. [↑](#footnote-ref-57)
57. Davis and Postlewait note that the word ‘theatricality’ has a relatively short history, first coined in English in 1837 (2003: 2). [↑](#footnote-ref-58)
58. This useful study examines the radical rejections of the theatre from modernist writers, designers, composers, film makers etc. The authors argue that ‘anti-theatre’ might be understood as a branch of meta-theatricality; thus new forms emerged from the theatre’s tendency towards ‘self-commentary’ and ‘self-reflection’ (15). [↑](#footnote-ref-59)
59. In *Minimalism: Origins* (1993) by Edward Strickland, ‘Minimalism’ is suggested to denote ‘a movement, primarily in postwar America, towards an art – visual, musical, literary, or otherwise – that makes its statement with limited, if not the fewest possible, resources, an art that eschews abundance of compositional detail, opulence of texture, and complexity of structure’ (7). In *Minimal Art: The Critical Perspective* (1990), Frances Colpitt asserts, more specifically, that ‘Minimal art describes abstract, geometric painting and sculpture executed in the United States in the 1960s’ (1). Colpitt’s book addresses a range of issues that were introduced by this movement, such as a shift in the process of art making; minimal art introduced different approaches to the art studio process, favouring ‘industrial, non-art materials and the manufacturing process’ (7). [↑](#footnote-ref-60)
60. ‘Happening’ is a term coined by Allan Kaprow (1927-2006) in the late 1950s to articulate his unique events that were shaped by audience participation; ‘Body movements, recorded sounds, spoken texts, and even smells could be an artist's materials. A Happening is an unfolding narrative, juxtaposing people, objects and events to create unexpected interactions’ (‘Allan Kaprow’). [↑](#footnote-ref-61)
61. In *Performance Art: From Futurism to the Present* (2001), RoseLee Goldberg offers a useful definition of the performance art agenda; ‘Live gestures have constantly been used as a weapon against the conventions of established art’ (7). Goldberg suggests that the live performances associated with movements such as the Futurists, Constructivists, Dadaists and Surrealists, are often overlooked as a result of a preoccupation with the ‘art objects’ produced by these movements. However, Goldberg asserts that ‘it was more often than not the case that these movements found their roots and attempted to resolve problematic issues in performance’ (7). [↑](#footnote-ref-62)
62. Allan Kaprow was one of Cage’s students. The lineage of the ‘Happening’ can be traced back to an untitled performance event that took place at Black Mountain College (North Carolina, United States), inspired by Cage’s reading of Antonin Artaud’s *The Theatre and Its Double* (first published as a collection of manifestos in 1938) in which he describes ‘événements’ or ‘Happenings’ (Govan 23-24). [↑](#footnote-ref-63)
63. Performance art practices were borne out of an enduring hostility towards theatre as a system of cultural production. While some of Marina Abramović’s more recent work has embraced artifice (e.g. her collaboration with Robert Wilson on *The Life and Death of Marina Abramović*), in 2010 she stated that ‘to be a performance artist, you have to hate theatre [...] Theatre is fake… The knife is not real, the blood is not real, and the emotions are not real. Performance is just the opposite: the knife is real, the blood is real, and the emotions are real’ (O'Hagan, ‘Interview: Marina Abramović’). [↑](#footnote-ref-64)
64. Notably, ‘Art and Objecthood’ was published in the same year that French literary critic Roland Barthes’s *The Death of the Author* (1967) appeared in the American journal *Aspen*. Barthes argues against literary criticism's tendency to correspond a definitive interpretation of a text to the author’s biography, radically prioritising the impressions and ‘writerly’ capacities of the reader, and an unstable multiplicity of interpretations (‘*signifiance’*) over the singular intentions of the writer. [↑](#footnote-ref-65)
65. Some radical suggestions to include the spectator in the frame of the performance included gluing audience members to their seats (their efforts to get free becoming the spectacle), offering free tickets to spectators who are ‘notoriously unbalanced, irritable, or eccentric and likely to provoke uproars’, and sprinkling the seats with dust to make spectators ‘itch and sneeze’ (Marinetti 129). Evidently Marinetti’s manifesto is one consisting largely of antagonistic strategies, cruel practical jokes and provocations towards confrontation as a way of activating what he deemed as ‘passive’ audiences. [↑](#footnote-ref-66)
66. Fried argues that the presence of the literalist work is a ‘theatrical effect’; a ‘*stage* presence’ (155). [↑](#footnote-ref-67)
67. My choice of wording here references a taxonomy for site-based work published in Fiona Wilkie’s ‘Mapping the Terrain: A Survey of Site-Specific Performance in Britain’ (2002). Wilkie cites Wrights & Sights who differentiate site-based work as either an ‘existing performance text physicalized in a selected site’ [sympathetic], a ‘performance generated in a series of like sites’ [generic] or a ‘performance specifically generated from/for one selected site’ [specific] (150). [↑](#footnote-ref-68)
68. I should note that historical declarations of the ‘end of art’ have been persistent, erupting alongside the Dadaist ‘readymade’, Pop Art’s commodity-as-art form and Conceptual Art’s banal detritus; a popular anecdote seized upon by the Stuckists to illustrate the disappearance of the art from the ‘artwork’ was when Damien Hirst’s installation of piles of ashtrays, coffee cups and empty beer bottles was famously disposed of by cleaner Emmanuel Asare who mistook the artwork for ‘rubbish’. American critic Arthur Danto declared the ‘end of art’ in his essay of the same name in 1984. Following in the Hegelian tradition, Danto argued that the post-historical nature of art post-1960s had necessitated the declaration of its end. Adjacent to these developments were pronouncements of the ‘end of art theory’ in edited volumes such as Victor Burgin’s *The End of Art Theory: Criticism and Post-modernity* (1986). In the 1990s, Jean Baudrillard described art as a ‘null and void’ transaesthetic in *The Conspiracy of Art* (1996), while Danto offered a comprehensive reformulation of his ideas in *After the End of Art: Contemporary Art and the Pale of History* (1997). Post-millennium, American critic Donald Kuspit argued that art had been replaced with what Alan Kaprow had termed as ‘postart’ in *The End of Art* in 2005; this book was published over twenty years after Danto’s essay which shares the same title, indicating that declarations of the ‘end of art’ are an ongoing concern. [↑](#footnote-ref-69)
69. The emergence of modes of practice ‘in-between’ different art forms have been widely discussed in essays such as Silvio Gaggi’s ‘Sculpture, Theater and Art Performance: Notes on the Convergence of the Arts’ (1986). [↑](#footnote-ref-70)
70. Related to Fried’s charge of the artwork that lacks completion, Umberto Eco had defined *The Open Work* (1962) as an open-ended composition within which there are varying degrees of autonomy as to how the participant chooses to play their role. [↑](#footnote-ref-71)
71. I use the term ‘interdisciplinary’ as a short-hand, but I should note that many artists go so far as to suggest that not only are boundaries between art forms illusory, but that the same could be said of the boundaries between seemingly autonomous domains of knowledge. For example, on the relationship between science and art, artist Carsten Höller has always dismissed the concept of interdisciplinarity in his own practice; ‘Only if we think of art and science as two autonomous realms does it make sense to be interested in transgressing their borders towards the creation of an interdisciplinary field’ (Hantelmann 26). Correspondingly, BeAnotherLab, whose work is discussed in Chapter 4, describe themselves as an ‘antidisciplinary group of artists’ (‘Team’). [↑](#footnote-ref-72)
72. Relational aesthetics as a theoretical framework locates art as a ‘social interstice’ and proposes ‘new’ kinds of aesthetic judgment, whilst departing from what he considers to be art criticism that is rooted in traditionalist culture, assessing work on the basis of other outmoded concepts (Bourriaud 11). [↑](#footnote-ref-73)
73. The *Salon* was the official exhibition of the Académie des Beaux-Arts in Paris (first held in 1667). [↑](#footnote-ref-74)
74. Fried’s methodological approach is to observe a well-known painting in light of the contemporary criticisms that analyse the work in detail. He then goes on to consider other combinations of paintings and their respective critical commentaries, with the objective of seeking emergent trends and patterns in the artists’/critics’ fundamental concerns and bringing them into sharper focus for the reader. [↑](#footnote-ref-75)
75. As the title of Fried’s publication suggests, Dennis Diderot’s writings play a major role in his study of 18th century French painting and art criticism. [↑](#footnote-ref-76)
76. Fried discusses a number of works to illustrate his point, such as Greuze’s *Un Père de famille qui lit la Bible à ses enfants* (1755) which is considered in relation to the critical commentary on the painting offered by art critic Abbé de La Porte; ‘the father’s activity of reading the Bible aloud and the family’s more nearly passive occupation of listening to him read may be characterized as essentially absorptive in nature’ (10). He goes on to consider Jean-Baptiste-Siméon Chardin’s painting *Un Philosophe occupé de sa lecture* (*Salon* of 1753) and the commentary of Abbé Laugier in which Fried draws attention to the fact that, like La Porte in relation to Greuze, Laugier praises the work primarily for its ‘persuasive representation of intense absorption in reading and meditation’ (13). Fried suggests that ‘related themes of attention, obliviousness, and resistance to distraction were in the air’ (13). [↑](#footnote-ref-77)
77. Fried’s views of ‘theatricality’ were aligned with Diderot before he was aware of his antecedent. He notes that ‘when I wrote ‘Art and Objecthood’ and related essays I was a Diderotian critic without knowing it’ (‘Introduction’, *Art and Objecthood*, 2). [↑](#footnote-ref-78)
78. Fried expands on his definition of ‘anti-theatricality’ which he suggests emerges in his books and essays on French painting as ‘a structure of artistic intention on the part of the painters and as a structure of demand, expectation and reception on the part of the critics and audiences’ (50). [↑](#footnote-ref-79)
79. Fried makes a vital distinction that in Diderot’s conceptualisation of the anti-theatrical tradition, ‘drama’ and ‘theater’ were *not* interchangeable terms; ‘drama’ (a positive term in Diderot’s lexicon) according to Fried ‘absolutely precluded all suggestion that the beholder had been taken into account (no addressing the audience, falsely rhetorical gestures, symmetrical arrangement of personages, elaborate costumes); conversely, the least hint of theater turned drama into melodrama’ (‘Introduction’, *Art and Objecthood*, 48). [↑](#footnote-ref-80)
80. Particularly in light of the consideration that modes of live theatre performance have emerged that achieve precisely the illusion that Diderot called for beyond the parameters of what we might call stage ‘realism’. [↑](#footnote-ref-81)
81. Fried notes that this condition was regarded by Diderot in the *Penśees détachées* ‘as “tout voisin du sublime” (very close to the sublime)’ (100). [↑](#footnote-ref-82)
82. In relation to Hubert Robert’s painting, *Grande Galerie éclairée do fond*, Diderot launched the following criticism: ‘Do you not feel that there are too many figures here, that three-quarters of them should be eliminated? [...] I could never have avoided going and dreaming under this vault, sitting down between its columns, entering your painting. But there are too many intruders; I stop, I look, I admire, and I walk past’ (Fried, *Absorption and Theatricality*, 129). [↑](#footnote-ref-83)
83. I would suggest that this idea is reaffirmed by Fried’s self-confessed prioritisation of cinema over theatre for its absorptive properties as a medium (164). [↑](#footnote-ref-84)
84. This is a criticism that Fried denies not entirely persuasively, citing his previous writings on ‘bodiliness’ in Anthony Caro’s art (in ‘Two Sculptures by Anthony Caro’). [↑](#footnote-ref-85)
85. Clement Greenberg (1909-1994) was an American visual arts critic, and a seminal influence on a younger generation of art critics including Michael Fried and Rosalind E. Krauss. [↑](#footnote-ref-86)
86. Bourriaud is referring specifically here to artist Felix Gonzalez-Torres’s *Untitled (Arena)*, a demarcated stage set for the performance of the beholder who is issued with a Walkman to dance noiselessly in the middle of the gallery. [↑](#footnote-ref-87)
87. As Onians suggests in his ‘Introduction’, the emergence of new scientific technologies and techniques in recent decades has permitted direct access to the ‘complexity, flexibility and vitality of our mental resources’ (3). Approaches such as computed (or computerised) tomography (CT), positron emission tomography (PET) and magnetic resonance imaging (MRI), allowed an ‘increasingly fine-grained study of the brain in the 1970s and 1980s. By the 1990s functional Magnetic Resonance Imaging (fMRI) was monitoring neural activity in ‘real time’’ (2-3). [↑](#footnote-ref-88)
88. In regards to the latter commentators, the term ‘media theorists’ as I specify here encompasses theatre scholars whose research has examined practices at the intersection between theatre and virtual reality. [↑](#footnote-ref-89)
89. Artists such as Martina Seitl have acknowledged an interest in the research of cognitive neuroscientist Henrik Ehrsson. In an interview with Josephine Machon, Seitl discussed the value of new knowledge in perceptual illusions in relation to preparing the audience’s body to enter a temporary state induced by the artist (Machon 2013: 185-186). Ehrsson’s research in embodiment is more comprehensively discussed in Chapter 3 (section 3.4.3). [↑](#footnote-ref-90)
90. For example, in Judaism the ritual washing of the hands (*netilat yadayim*) or full body immersion (*tevilah*) in a bath or *mikveh*. [↑](#footnote-ref-91)
91. Machon’s emphasis on the spectating body elides with Maurice Merleau-Ponty’s ‘experiencing body’ in *Phénoménologie de la perception* (1945); ‘Perceptual perspective is *bodily* perspective. We have a world only by having a body: “the body is our anchorage in the world”’ (qtd. in Carman 11). [↑](#footnote-ref-92)
92. Inspired by the historical story of Héloïse d'Argenteuil’s affair with theologian, Peter Abélard. [↑](#footnote-ref-93)
93. I attended *Reverence* on 12 September 2007. [↑](#footnote-ref-94)
94. Gareth White has argued that ‘meaningful co-presence between performer and audience cannot happen through the architecture of mimesis’ (‘Odd Anonymized Needs’, 2009: 227), citing the dispensation of mimesis through non-matrixed performance and Grotowski’s dispensing of spectatorial distance in ‘paratheatre’. [↑](#footnote-ref-95)
95. White’s title references Herbert Blau’s chapter ‘Odd Anonymous Needs’ in *The Audience* (1990). [↑](#footnote-ref-96)
96. Additionally, Ridout examines the political economy that underlies the exchange between performer and spectator; ‘[…] in the theatre of capitalism, the reverse gaze must always acknowledge, however tacitly, an intimate economic relationship: I paid to have this man look at me, and he is paid to look. Our intimacy is always already alienated. It is a difficult intimacy’ (80) [↑](#footnote-ref-97)
97. ‘Remediation’ in Bolter and Grusin’s use of the term, refers to the ‘formal logic by which new media refashion prior media forms’ (273); in relation to body transfer illusions, the remediation of bodies concerns the concealment of the participating body and the instating of a mediatised body or ‘avatar’. [↑](#footnote-ref-98)
98. Lakoff and Johnson analyse the metaphor ‘Love is a Journey’ in *Metaphors We Live By* (1980), arguing that the expression conflates three primary metaphors: ‘A Relationship Is An Enclosure’, ‘Intimacy Is Closeness’ and ‘A Purposeful Life Is A Journey’. [↑](#footnote-ref-99)
99. Theatre critic Matt Trueman’s blog post ‘Lazy Audiences Don't Deserve to See Punchdrunk’ (2009) critiqued the now defunct *thelondonpaper* newspaper for disclosing details of *Tunnel 228*, an event that was deliberately enshrouded in secrecy. His critique was in defence of the philosophy that he identified as important to the work; ‘the more you look, the more you will find’ (Trueman 2009). In this view, the ‘depths’ of the experience must be discovered through the spectator’s commitment to seek them out. [↑](#footnote-ref-100)
100. Panoramas were sizeable paintings of landscapes that were displayed on a cylindrical surface to subsume viewers within the image. The panorama was patented by Robert Barker in 1789. [↑](#footnote-ref-101)
101. IMAX is an acronym for ‘Image MAXimum’, a film format created by the Canadian company IMAX Corporation and developed by Graeme Ferguson, Roman Kroitor, Robert Kerr, and William C. Shaw. [↑](#footnote-ref-102)
102. Bodily engagement in the act of viewing is similarly addressed in theatre scholarship by Maaike Bleeker in *Visuality in the Theatre: The Locus of Looking* (2008), in which she argues that one must ascribe the act of looking to the body or corpus, the site where the entire sensorium (and not just sight) are activated, and through which meaning is produced. Bleeker draws on “theoretical objects” (8) from the canon of critical theory and modern art, such as Jean-Paul Sartre’s peephole voyeurism, Roland Barthes’ *punctum* and Jacques Lacan’s mirror, gaze, and screen. [↑](#footnote-ref-103)
103. The three fundamental arts for Wagner were ‘dance’, ‘tone’ and ‘poetry’. [↑](#footnote-ref-104)
104. Rimini Protokoll’s ‘reality trend’ performance *Breaking News* (2007) staged the world’s live news bulletins simultaneously on numerous screens across the stage. The broadcasts were interpreted, deconstructed and re-presented by nine ‘experts’ who discuss meanings from the global image pool from their respective cultural and linguistic areas onstage. More recently the company’s multiple ‘simultaneous cinema’ pieces such as *Situation Rooms* have used portable media devices to entangle audiences in the biographical narratives of those whose lives have been shaped by the global weapons trade; on the company’s website it states that each individual audience member becomes part of a ‘re-enactment of a complicatedly elaborated multi-perspective “shooting”’ (‘Situation Rooms - A Multiplayer Video Piece’). [↑](#footnote-ref-105)
105. The term ‘hyperreality’ commonly identifies a crisis in semiotics in which consciousness is unable to distinguish reality from simulation, or fakes from originals. Notable commentators and theorists have included Jorge Luis Borges, Jean Baudrillard, Umberto Eco, Albert Borgmann, Daniel J. Boorstin and Neil Postman. [↑](#footnote-ref-106)
106. In the parallel field of video gaming, developer Ernest W. Adams critiqued the postmodern self-referential trend in games that include ‘winking’ references to remind the viewer of the medium with which they are engaged in an article entitled ‘Postmodernism and the Three Types of Immersion’ for industry website *Gamasutra* (e.g. an AI character referring to ‘buttons’ on a players control pad amidst a life and death combat situation). Medial self-referentiality might be seen as a strategy that re-surfaces the ‘user’ from the game-world. Thus, ‘immersion’ in video gaming has similarly been concerned with the audience’s mental absorption in an imaginary universe (resonating with Friedian ‘absorption’ and Grau’s classification of immersion as ‘a passage from one mental state to another’). [↑](#footnote-ref-107)
107. In Howard Rheingold’s *Virtual Reality* (1992), ‘immersion’ is defined as ‘perceptual technology’ that creates the illusion that the operator is inside a simulated ‘three-dimensional environment that surrounds him or her’ (100). For Rheingold, it is an illusion via which one might ‘enter the computer’ (113).Ken Pimentel and Kevin Teixeira have similarly argued that the primary defining characteristic of VR is ‘immersion’ in *Virtual Reality: Through the New Looking Glass* (1995). The authors equate immersion in this context with ‘inclusion, being surrounded by an environment’ and placing a participant ‘inside information’ (8). [↑](#footnote-ref-108)
108. In science fiction (e.g. *Star Trek*) the ‘holodeck’ is a room that places characters inside a simulated reality. [↑](#footnote-ref-109)
109. Other commentators had already conceived of the human as bodiless information, such as Norbert Wiener’s discussion of the possibility of translating humankind into code that can be transmitted across telephone lines in *God & Golem, Inc.: A Comment on Certain Points Where Cybernetics Impinges on Religion* (1964). [↑](#footnote-ref-110)
110. Notions of the ‘posthuman’ have been abundantly theorised. For Rosi Braidotti in *The Posthuman* (2013), posthuman theory is a ‘generative tool to help us re-think the basic unit of reference for the human in the bio-genetic age known as ‘anthropocene’’ (5). For N. Katherine Hayles, the posthuman is a ‘point of view’ characterised by four assumptions; that ‘embodiment in a biological substrate is seen as an accident of history rather than an inevitability of life’, that consciousness is regarded as an ‘epiphenomenon’, that the body is the ‘original prosthesis we all learn to manipulate’, and that there are no ‘absolute demarcations between bodily existence and computer simulation’ (1999: 2-3). The latter assumption particularly resonates with Bostrom’s simulation argument. [↑](#footnote-ref-111)
111. Put differently, the *hypersurface* is the ‘surface which brings together materiality and simulation and thereby constitutes the perfect viewing space of the real' (10). [↑](#footnote-ref-112)
112. I would note that theatre scholar Susan Broadhurst identified liminal performance in the late ‘90s as a ‘genre’ of experimental forms in *Liminal Acts: A Critical Overview of Contemporary Performance and Theory* (1999). For Broadhurst, the liminal ‘performs to the edge of the possible’ and is typified by work that combines ‘digitized technology with *corporeal* prominence’ (168). [↑](#footnote-ref-113)
113. For example, N. Katherine Hayles’ ‘The Materiality of Informatics’ (1993), ‘Boundary Disputes: Homeostasis, Reflexivity, and the Foundations of Cybernetics’ (1994), and ‘Embodied Virtuality, Or How to Put Bodies Back into the Picture’ (1995). [↑](#footnote-ref-114)
114. In Allucquére Rosanne Stone’s ‘Will the Real Body Please Stand Up?’ (1991). [↑](#footnote-ref-115)
115. In Simon Penny’s ‘Virtual Reality as the Completion of the Enlightenment Project’ (1994). [↑](#footnote-ref-116)
116. In Anne Balsamo’s *Technologies of the Gendered Body: Reading Cyborg Women* (1996). [↑](#footnote-ref-117)
117. In Martin Jay’s ‘Scopic Regimes of Modernity’ (1988). [↑](#footnote-ref-118)
118. Davies coined the portmanteau word ‘immersant’ to describe the ‘immersed participant’ exploring a virtual environment in a head-mounted display. [↑](#footnote-ref-119)
119. Sometimes called a ‘body-switch comedy’ (e.g. *The Change-Up* (2011)). [↑](#footnote-ref-120)
120. The ‘uncanny’ has been extensively examined in numerous fields, from psychology and psychoanalysis in Ernst Jentsch’s essay, ‘On the Psychology of the Uncanny’ (1906) and Sigmund Freud’s essay ‘The Uncanny’ (1919), to robotics in Masahiro Mori’s article ‘The Uncanny Valley’ (1970). Of particular relevance to the uncanny as it pertains to horror is Julia Kristeva’s notion of ‘abjection’ in *Powers of Horror: An Essay on Abjection* (1980). [↑](#footnote-ref-121)
121. I should note the caveat that some neuroscientific studies have sought to evidence that the act of reading a novel can invoke neural activity that is associated with bodily sensations, such as Lisa Aziz-Zadeh and Antonio Damasio’s theory of ‘embodied semantics’ in ‘Embodied Semantics for Actions: Findings from Functional Brain Imaging’ (published in *The Journal of Physiology* in 2008). Other scientific papers have suggested that reading a novel causes measurable changes in resting-state connectivity of the brain; see, for example, Gregory S. Berns (et al’s) ‘Short- and Long-Term Effects of a Novel on Connectivity in the Brain’ (published in the *Brain Connectivity* journal in 2013). However, the precise ‘physical transformation’ to which I refer is the audience’s sense of feeling ownership over the body of another. ‘Reading’ as a cognitive process of decoding symbols does not provoke the sensation of owning a character’s body. [↑](#footnote-ref-122)
122. In which spirits, gods or other forces assume control of a human body (e.g. *The Exorcist* (1971) by William Peter Blatty, *The Devil in Drag* (1999) by Dario Fo, *Twin Peaks* (1990-1991) by Mark Frost and David Lynch etc.). [↑](#footnote-ref-123)
123. The spiritual or philosophical concept of a soul continuing life beyond death in a new body. [↑](#footnote-ref-124)
124. When a body undergoes a metamorphosis through which it becomes older or younger (e.g. Alan Ayckbourn’s play for children, *The Jollies* (2002), and films such as *Da grande* (1987), *Big* (1988), *17 Again* (2009)). [↑](#footnote-ref-125)
125. For example, in *Bhāgavata Purāṇa* the stories of Vishnu in the form of his different avatars (e.g. Rama, Krishna etc.) [↑](#footnote-ref-126)
126. When a familiar person is replaced by an impostor who is identical in appearance (e.g. *The Body Snatchers* (1955) by Jack Finney, adapted for film in 1956, 1978, 1993 and 2007). [↑](#footnote-ref-127)
127. Genetically identical individuals manufactured artificially (e.g. the characters of Bernard 1 and Bernard 2 in Caryl Churchill’s play, *A Number* (2002)). [↑](#footnote-ref-128)
128. Copies of a person created out of inanimate matter (e.g. the golem in Jewish folklore, David Brin’s *Kil'n People* (2002) etc.). [↑](#footnote-ref-129)
129. The double of a living person (e.g. *The Double* (1846) by Fyodor Dostoyevsky, on which the film *The Double* (2013) is based; and *Who Goes There?* (1938) by John W. Campbell, adapted for film as *The Thing* (1982 and 2011). [↑](#footnote-ref-130)
130. The phrase ‘vice versa’ originates from early 17th century Latin, literally meaning 'in-turned position' (‘Vice versa’). [↑](#footnote-ref-131)
131. I use the word ‘carnivalesque’ in the Bakhtinian sense, which was most notably explicated in *Rabelais and His World* (completed in 1940 and published in 1965). The body-swap sometimes performs a similar function to the inversions of social hierarchies that take place in carnival (which Bakhtin traced back to the medieval festival of the Feast of Fools). Via the carnivalesque, individuals cease to be themselves and through the ritual wearing of costumes and masks an individual temporarily exchanges their identity for that of another. [↑](#footnote-ref-132)
132. There are notable exceptions of theatre-makers that apply tragic narrative structures in combination with VR whole-body illusions; for example, Aaaron Reeves’s *Dead Arise* is a 15 minute virtual reality performance for two participants who wear video goggles and headphones. The participants receive pre-recorded audio instructions and constant live guidance from Aaron and an assistant to become immersed in a ‘Zombie Apocalypse movie’ in which the audience/participants exit the experience when their respective avatars die within the drama. [↑](#footnote-ref-133)
133. I conducted this online search on 18 June 2015. [↑](#footnote-ref-134)
134. Such representations in fiction are not entirely without precedent; Robert Joseph White (1926-2010) was an American neurosurgeon who controversially conducted head transplants on living monkeys. But these procedures caused significant ethical objections from within the scientific community, as well as outside of it. [↑](#footnote-ref-135)
135. In *Narrative: A Critical Linguistic Introduction* (2001), Michael Toolan elaborates that a ‘cardinal function’ is a Barthesian term indicating a hinge-point in a narrative’s plot. Seymour Chatman uses the word ‘kernel’ to describe the same plot function (23-24). [↑](#footnote-ref-136)
136. I should highlight the caveat that Freytag’s analysis is by no means the appropriate analytical tool to examine modern drama, but I use it here as a shorthand to indicate a prevalent application of the body-swap in fiction. [↑](#footnote-ref-137)
137. Neurosurgeons Wilder Graves Penfield and Edwin Boldrey were the first to articulate the somatosensory map or cortical homunculus in their paper ‘Somatic Motor and Sensory Representation in the Cerebral Cortex of Man as Studied by Electrical Stimulation’ (1937); ‘homunculus’ means ‘little man’, deriving from the 17th century Latin *homin* (‘man’), the diminutive form of *homo*. According to Richard Frackowiak et al in *Human Brain Function* (2004), Penfield and Boldrey’s research in human subjects using direct stimulation of the exposed cortical surface was ‘one of the first examples of cartographic electrophysiology in the somatosensory system, in which the primary aim was to examine the spatial layout of receptive fields, or how the body’s surface was represented in the brain’. Penfield’s homuncular figure represented in his famous diagrammatic ‘became the standard by which all other investigations of localisation in the postcentral gyrus were compared’ (85). [↑](#footnote-ref-138)
138. Moore had previously critiqued the tenets of idealism in his paper ‘The Refutation of Idealism’ (1903). [↑](#footnote-ref-139)
139. However, there are neurological conditions via which an individual can come to experience their hands as independent from their thought or experience. Asomatognosia is characterised by the denial of ownership of one’s own limbs. Through the lens of this condition a hand may be understood as something external to, or not part of the ‘self’. [↑](#footnote-ref-140)
140. This idea was posed by British idealist philosopher Timothy L. S. Sprigge in his 1971 essay ‘Final Causes’, when he wrote: ‘One is wondering about the consciousness which an object possesses whenever one wonders what it must be like being that object […] To wonder what it is like being an object is to concern oneself with a question different from any scientific or practical question about the observable properties or behavior of that object or about the mechanisms which underlie such properties or behaviour’ (35). [↑](#footnote-ref-141)
141. This philosophical position is occupied in various other fields and works of literature. For example, author Anaïs Nin wrote in her novel *The Seduction of the Minotaur* (1961): ‘We don't see things as they are, we see things as we are’ (124). Related concepts include Timothy Leary, Robert Anton Wilson and George Koopman’s ‘reality tunnel’, which was coined in *Neuropolitique* (1988), and refers to the idea that access to truth is mediated by our senses, experiences, beliefs, and other non-objective factors. Related to this, Peter Wason coined the term ‘confirmation bias’ in his paper ‘On The Failure to Eliminate Hypotheses in a Conceptual Task’ published in the *Quarterly Journal of Experimental Psychology* (1960), through which significance is assigned to observations that simply confirm one’s pre-existing beliefs. [↑](#footnote-ref-142)
142. Following Nagel’s proposition, there are examples of recent research projects that have sought to reconstruct non-human embodied experiences; with Arts funding from the Wellcome Trust, Thomas Thwaites consulted neuroscientists, animal behaviorists, prosthetists and goat sanctuary workers to investigate how he might artificially create the experience of being a goat. Thwaites constructed a goat exoskeleton and journeyed across the Alps as a quadruped. The outcomes of this research are documented in his book, *GoatMan: How I Took a Holiday from Being Human* (2016). [↑](#footnote-ref-143)
143. Martin Heidegger (1889-1976) provides an account of ‘being in the world’ (‘être au monde’) in *Being and Time* (1927), his treatise that addresses the question of the sense of *being* which he argued that traditional ontology had overlooked. [↑](#footnote-ref-144)
144. In Hirstein’s ‘Introduction: What is confabulation?’, he states that the traditional definition of ‘confabulation’ contains three criteria: ‘confabulations are (1) false (2) reports (3) about memories’ (3). Critically, a confabulation is ‘to make a false claim without an intent to deceive’ (3). [↑](#footnote-ref-145)
145. Anton syndrome is a symptom of brain damage occurring in the occipital lobe. Anton’s patients, although cortically blind are unaware of their blindness, ‘typically either guessing at the appearance of objects from non-visual cues while believing that they are being perceived visually’ (Colman). The syndrome is named after Czech neurologist and psychiatrist Gabriel Anton (1858–1933) who first described it in a case study published in the journal *Wiener klinische Wochenschrift* in 1899.Print.y Aand the Rnitiation of a Freely Voluntary Actthe in 1887 on [↑](#footnote-ref-146)
146. The term ‘anosognosia' indicates the ‘denial of one's own disease or deficit’ and can be associated with different pathological conditions (Berti, ‘Anosognosia’, par. 1). According to Edoardo Bisiach and Giuliano Geminiani, the first historical description of anosognosia was reported by Seneca in *Liber V*, *Epistula IX* (‘Anosognosia Related to Hemiplegia and Hemianopia’). Anna Berti identifies that the first appearance of the term ‘anosognosia’ in neurological literature was in J. Babinski’s ‘Contribution à l'étude des Troubles Mentaux dans l'hémiplégie Organique Cérébrale (Anosognosie)’(1914). [↑](#footnote-ref-147)
147. Split brain syndrome is produced by a surgical procedure that was first performed on humans in the 1930s and involved ‘severing the corpus callosum in order to prevent epileptic seizures spreading from one hemisphere to another’ (Bayne 277). [↑](#footnote-ref-148)
148. Korsakoff syndrome is named after Russian neuropsychiatrist Sergei Korsakoff (1854–1900) who published several papers in 1887 on a disorder which occurs in conjunction with peripheral neuritis. According to Derek Russell Davis, in modern use ‘Korsakoff syndrome’ refers to ‘a group of symptoms—known alternatively as the amnesic syndrome—which includes inattentiveness, memory defect for recent events, retrograde amnesia and other disorders of recall and recognition, and disorientation in time, place, and situation’ (Davis, par. 1). [↑](#footnote-ref-149)
149. Capgras syndrome is the ‘delusional misidentification of familiar people, usually relatives or friends, who are believed to have been replaced by exact doubles or impostors’ (Colman). The syndrome is named after French psychiatrist Jean Marie Joseph Capgras (1873–1950), and is first described in a paper co-authored with Jean Marie Joseph Reboul-Lachaux (1894–1935) called ‘L’llusion des "Sosies" dans un Délire Systématisé Chronique’ (1923). [↑](#footnote-ref-150)
150. ‘Experimental’ precisely because, as Ramachandran claims, ‘we are not yet at the stage where we can formulate grand unified theories of mind and brain. Every science has to go through an initial “experiment” or phenomena-driven stage – in which its practitioners are still discovering the basic laws – before it reaches a more sophisticated theory-driven stage’ (*Phantoms in the Brain* 4). [↑](#footnote-ref-151)
151. The surface field was further sub-divided into ‘exteroception’ (receptors that are sensate to stimuli external to an organism) and ‘interoception’ (receptors that are sensate to internal bodily operations that are largely alimentary in function). [↑](#footnote-ref-152)
152. Berthoz suggests that there are five key sensory receptors that contribute to one’s sense of movement; *visual* receptors (which detect ‘shifting images of the visual world on the retina, the position of objects in space, shape, color, and so on’), *vestibular* receptors (located in the inner ear and comprised of three semi-circular canals (horizontal, anterior vertical, and posterior vertical) and the otoliths), *cutaneous* receptors (which detect skin pressure and friction), *muscle* receptors and *joint* receptors (26). [↑](#footnote-ref-153)
153. Wade suggests that the phenomenon was previously known to scientists and physicians such as Ambroise Paré (1510-1590), René Descartes (1596-1650) and William Porterfield (1696-1771). [↑](#footnote-ref-154)
154. In biology, ‘deafferentation’ refers to the ‘interruption or destruction of the afferent connections of nerve cells, performed especially in animal experiments to demonstrate the spontaneity of locomotor movement’ (‘deafferentation’). In neuroscience, the term is more broadly used to refer to a disorder of bodily awareness that involves the ‘loss of tactile and proprioceptive information’ (de Vignemont, Table 1). [↑](#footnote-ref-155)
155. To briefly indicate the scope of Ramachandran’s early research on visual perception, his scientific experiments have ranged from investigations into the role of visual experience in the development of stereopsis or depth perception in lambs (‘Cells Selective to Binocular Disparity in the Cortex of Newborn Lambs’ in 1977), ‘quirks’ in the human visual system through which when a viewer perceives motion they extract salient features and fill in the gaps between ‘frames’ (‘The Perception of Apparent Motion’ in 1986) and how different channels in the visual system which analyse ‘colour, ‘form’, motion and depth’ are pieced together to create a unified picture of an object (‘Interaction Between Colour and Motion in Human Vision’ in 1987). [↑](#footnote-ref-156)
156. Ramachandran has been widely published, contributing over 180 papers to scientific journals (‘About V.S. Ramachandran’). Notably, he has also written extensively within the tradition of the popular science book, in works such as *Phantoms in the Brain* (1998), *The Emerging Mind* (2003), *A Brief Tour of Human Consciousness: From Impostor Poodles to Purple Numbers* (2004) and *The Tell-Tale Brain: A Neuroscientist's Quest for What Makes Us Human* (2010). These publications demonstrate his interest in making neuroscientific discovery accessible to a general readership. [↑](#footnote-ref-157)
157. This is most notably explored in Hume’s *A Treatise of Human Nature* (1739). [↑](#footnote-ref-158)
158. A series of seminal neuroscientific experiments were conducted in the 1980s by Benjamin Libet. Libet examined the readiness-potential (RP) or ‘Bereitschaftspotential’ in live human subjects; RP is the measure of activity in the motor cortex in the lead up to voluntary muscle movement. Libet discovered that the unconscious brain activity of the RP leading up to subjects' movements began on average around 800 milliseconds *before* the subject was aware of a conscious intention to move. His findings are documented in ‘Time of Conscious Intention to Act in Relation to Onset of Cerebral Activity (Readiness-Potential): The Unconscious Initiation of a Freely Voluntary Act’ (1983), and ‘Unconscious Cerebral Initiative and the Role of Conscious Will in Voluntary Action’ (1985). Some commentators have used Libet’s findings to argue that consciousness is epiphenomenal. Print.y Aand the Rnitiation of a Freely Voluntary Actthe in 1887 on [↑](#footnote-ref-159)
159. Some suggest that the term ‘body image’ was coined by the Austrian neurologist and psychoanalyst Paul Schilder in his book *The Image and Appearance of the Human Body* (1935). The term ‘schema’ was first introduced by P. Bonnier in ‘L’Aschématie’ (1905) to refer to the spatial organization of bodily sensation. However, the term ‘body schema’ was introduced by Henry Head and Gordon Holmes in their scientific paper ‘Sensory Disturbances From Cerebral Lesions’ (1911). According to Head and Holmes, ‘body schema’ primarily refers to the representation in the brain of ‘organised models of ourselves’ which they term ‘schemata’ (189). [↑](#footnote-ref-160)
160. In Arvid Guterstam, Giovanni Gentile, and H. Henrik Ehrsson’s paper ‘The Invisible Hand Illusion: Multisensory Integration Leads to the Embodiment of a Discrete Volume of Empty Space’, published in the *Journal of Cognitive Neuroscience* (2013). [↑](#footnote-ref-161)
161. In Arvid Guterstam, Zakaryah Abdulkarim and H. Henrik Ehrsson’s paper ‘Illusory Ownership of an Invisible Body Reduces Autonomic and Subjective Social Anxiety Responses’, published in *Scientific Reports* (2015). [↑](#footnote-ref-162)
162. Importantly, the threat to participating subjects in these experiments is never actual, but rather the visual appearance of threat as I will identify in section 3.4.3. [↑](#footnote-ref-163)
163. Amy Cook has similarly challenged Coleridge’s axiom in relation to theatre spectatorship on the basis that it ‘presumes that disbelief is the default position from which we depart in order to make sense of the fiction onstage’ (2013: 86). She argues that the truth-value of a story is not assessed prior to reacting (2013: 86). [↑](#footnote-ref-164)
164. More comprehensive studies on these neurological syndromes can be found in S. Nightingale’s ‘Somatoparaphrenia: A Case Report’ (1982), Edoardo Bisiach, Maria Luisa Rusconi, Giuseppe Vallar’s ‘Remission of Somatoparaphrenic Delusion Through Vestibular Stimulation’ (1991), Peter W. Halligan, John C. Marshall and Derick T. Wade’s ‘Unilateral Somatoparaphrenia After Right Hemisphere Stroke: A Case Description’ (1995), and G. Vallar and R. Ronchi’s ‘Somatoparaphrenia: A Body Delusion. A Review of Neuropyschological Literature’. (2009). [↑](#footnote-ref-165)
165. Todd E. Feinberg et al report in their paper, ‘The Neuroanatomy of Asomatognosia and Somatoparaphrenia’ (2009), that in some cases body-parts of somatoparaphrenia patients may be ‘treated like a child, given a nickname, or treated like a separate person with a separate identity’ (276). [↑](#footnote-ref-166)
166. Beyond the RHI paradigm, other embodiment experiments have sought to test whether humans and non-human primates could judge if what they are seeing is their own body part or another’s by presenting body-parts as an external object projected onto a screen: for example, in Marc Jeannerod et al’s experiments of self-recognition reported in ‘The Mechanism of Self-Recognition in Humans’ (2003). Other related experiments sought to make the task of self-attribution more complex by introducing delays between the movement and visual feedback (Franck et al. 2001), or by rotating the viewed image of the subject’s body-part (Van den Bos and Jeannerod 2002). [↑](#footnote-ref-167)
167. Examples include: K. C Armel and V. S. Ramachandran’s ‘Projecting Sensations to External Objects: Evidence From Skin Conductance Response’ (2003), H. H. Erhsson, C. Spence and R. E. Passingham’s ‘That’s My Hand! Activity in Premotor Cortex Reflects Feeling of Ownership in a Limb’ (2004), M. Tsakiris and P. Haggard’s ‘The Rubber Hand Illusion Revisited: Visuotactile Integration and Self-Attribution’ (2005), and M. Longo, F. Schüür, M. P. M. Kammers, M. Tsakiris, and P. Haggard’s ‘What is Embodiment? A Psychometric Approach’ (2008). [↑](#footnote-ref-168)
168. It should be noted that there are scientific papers that support the notion that a subject can possess a ‘supernumerary hand’, which is ‘characterised by less disownership of the real hand and a stronger feeling of having two right hands’ (Guterstam, Petkova and Ehrsson 2011). [↑](#footnote-ref-169)
169. Similarly, the claim that a healthy subject can ‘disown’ their body and ‘no longer perceive it as part of themselves’ has been made by scientists using VR embodiment experiments (Guterstam and Ehrsson, 2012: 1037). [↑](#footnote-ref-170)
170. In ‘Experiencing Ownership Over a Dark-Skinned Body Reduces Implicit Racial Bias’ (2013), Lara Maister, Natalie Sebanz, Günther Knoblich and Manos Tsakirisa report the results of two RHI experiments in which Caucasian participants experienced the feeling that a dark-skinned hand belonged to them. The researchers subsequently measured whether this could change their implicit racial bias against people with dark skin. The results published in this paper suggest that illusory ownership can be an effective way to change negative implicit attitudes towards certain marginalised groups. This is one example of how RHI is being tested for its potential to mobilise positive behavioural changes by precipitating the kind of embodied learning that fiction has only been able to represent (e.g. the protagonist of Ignatius Donnelly’s novel *Doctor Huguet* (1891) cited in 3.2). In 4.8, I refer to a related scientific experiment conducted by Tabitha C. Peck et al, the results of which were published in a paper entitled ‘Putting Yourself In the Skin of a Black Avatar Reduces Implicit Racial Bias’ (2013). [↑](#footnote-ref-171)
171. A Likert scale, named after psychologist Rensis Likert (1903-1981), is a psychometric scale used in research that employs questionnaires. [↑](#footnote-ref-172)
172. Sweating is controlled by the sympathetic nervous system and is an indication of psychological or physiological arousal to a stimulus. Skin conductance response (SCR) (sometimes termed as galvanic skin response) is a method of testing that provides a measure of emotional and sympathetic responses. [↑](#footnote-ref-173)
173. Whilst the ‘threat’ in the context of these embodiment experiments is simulated, it is precisely because the subject’s sympathetic response receives the ‘threat’ as actual that an SCR reading is generated. [↑](#footnote-ref-174)
174. This study tested a group of blind and sighted (but blindfolded) subjects via a multisensory body illusion called the ‘somatic rubber hand illusion’. Participants experience that they are touching their own right hand with their left index finger, when they are touching a rubber hand with their left index finger while the experimenter synchronously touches their right hand. The results suggested that ‘the sighted participants experienced a strong illusion, whereas the blind participants experienced no illusion at all’ (1). [↑](#footnote-ref-175)
175. The authors note anecdotal evidence of individuals who felt as though a robotic arm was like their own when ‘viewed from a first person perspective via cameras mounted on the robot and when the movements of the robot's arms reproduce the person's movements in real time’ (7). A more comprehensive investigation providing a cognitive neuroscience informed model for explaining how illusory ownership of limbs and entire bodies might be evoked in tele-operator systems can be found in Slater and Perez-Marcos et al’s ‘Towards a Digital Body: The virtual arm illusion’ (2008). [↑](#footnote-ref-176)
176. *Medium* is an internet blog site where registered users share ideas and stories. [↑](#footnote-ref-177)
177. Frederique de Vignemont’s paper ‘Body Schema and Body Image—Pros and Cons’ (2010) examines the interchangeable usage of the terms ‘body image’ and ‘body schema’ in neurology. Vignemont identifies that there is a *dyadic taxonomy* that differentiates the terms, in which body schema ‘consists in sensorimotor representations of the body that guide actions’, whereas body image ‘groups all the other representations about the body that are not used for action, whether they are perceptual, conceptual or emotional (body percept, body concept and body affect, cf. Gallagher, 2005)’ (670). ‘Body image’ is the more heterogeneous term, since it can be applied to ‘one's own body and to someone else's’, it’s both non-conceptual (body percept) and conceptual (body concept) etc. (671). [↑](#footnote-ref-178)
178. Gauntlett describes the performance as a ‘one-to-one’ performance (Reiff-Pasarew), though this is a slight misnomer as while there is one audience member, the performance is enacted by Jane and other volunteers who construct a multi-sensorial environment around the participant. [↑](#footnote-ref-179)
179. I avoid the use of the word ‘patient’, since S&R do not apply medical terminology to the subjects with which they collaborate even when working in medical contexts – the interest is in empowering the subject to construct and convey their own sense of self to others. [↑](#footnote-ref-180)
180. The full transcript of my interview with Jane Gauntlett is located in Appendix 1 (260-269). [↑](#footnote-ref-181)
181. A brief survey on the *Video Glasses* price comparison website on 9 February 2015 indicates that the HMD technology used in *Waking in Slough* (Vuzix Wrap 920 Video Eyewear) can be obtained for £199.99 (‘Vuzix AV920 62” Video Glasses’). [↑](#footnote-ref-182)
182. For example, The Roundhouse (London), The Basement (Brighton), Battersea Arts Centre (London) and the Gulbenkian Theatre (Kent). [↑](#footnote-ref-183)
183. Examples include University College London, City University, Central Saint Martins, New York University, Columbia University. [↑](#footnote-ref-184)
184. For example, the New York Academy of Medicine. [↑](#footnote-ref-185)
185. For example, Manor Gardens. [↑](#footnote-ref-186)
186. The *Mail Online* and *BBC News* reported on the robbery which left Jane critically injured in articles published on 5 March 2007 (‘Cyclist Jane Wakes From Coma After Moped Muggers’ Attack’) and 6 March 2007 respectively (‘Moped Robbery Appeal Sparks Calls’). Subsequently, a television appeal to find Jane’s muggers was broadcast on the BBC’s *Crimewatch UK* programme. [↑](#footnote-ref-187)
187. This is documented in Louise Jury and Anna Davis’ *London Evening Standard* article entitled, ‘Muggers Left Me For Dead But Now I’m Producing My First Play’ on 25 January 2008 and the *BBC News* article, ‘Bike Attack Victim Produces Play’ on 30 January 2008. Jane’s difficult process of recovery was also reported by *Mail Online* journalist Victoria Lambert on 17 February 2008, in which she was interviewed 12 months after the attack (‘How I Learnt to Walk and Talk Again After My Brutal Mugging’). [↑](#footnote-ref-188)
188. BAW is defined on The Dana Foundation website as ‘the global campaign to increase public awareness of the progress and benefits of brain research’ (‘Brain Awareness Week’). [↑](#footnote-ref-189)
189. The aim of the exhibition, stated on the LBP website, is to achieve a ‘greater depth of understanding of what it is like to live with a neurological disorder’ (‘The Beyond Series: Beyond Seizures’). The broader remit of the LBP is ‘exploring brain science through the arts’ (‘London Brain Project’). [↑](#footnote-ref-190)
190. iPod touch® is a trademark of Apple Inc. [↑](#footnote-ref-191)
191. Edits were used to reduce the amount of walking required by the immersant and where authentic interactions with environments are too complex to recreate or require fixed elements in a space (which would negatively impact on the mobility of the piece). Jane noted that previously they had reconstructed the linear journey walking from the platform into the carriage in real-time, but it ‘killed the immersiveness of the experience’ (Gauntlett, ‘Personal Interview’). Thus, filmic edits in this context function strategically to maintain the illusion of immersion within another’s body. [↑](#footnote-ref-192)
192. Scientific studies have identified that the pre-ictal brain state in epilepsy can be associated with changes in premonitory features. For example, in Sheryl Haut et al’s ‘Clinical Features of the Pre-ictal State: Mood Changes and Premonitory Symptoms’ (2012), the authors suggest that ‘many of the [pre-ictal] features reported in epilepsy lie in the neuro-psychiatric domain, including behavioral and mood changes (such as feeling irritable or emotional) or cognitive changes (such as impaired concentration). Other reported symptoms include malaise, nausea, hunger and thirst, headache and sleep disturbance’ (Haut et al 419-420)those with epilepsy spend the a passengerure ()me in the e of epilepsy can .ithose with epilepsy spend the a passengerure ()me in the e of epilepsy can lepsy [↑](#footnote-ref-193)
193. According to Haut et al, those with epilepsy spend the majority of the time in the ‘interictal’ or bassline brain state. It is prior to the onset of seizure that a pre-ictal or ‘prodromal’ state may occur which can lead to clinical seizure (‘ictal state’), and is frequently followed by a post-ictal state (415). [↑](#footnote-ref-194)
194. The repositioning of a subject to a third-person vantage point on their own experience has notable imbrications with both the artificially induced out-of-body experiences of Ehrsson et al cited in 3.4.3, and with the exploration of post-traumatic dissociative conditions that I will examine in Analogue’s multi-perspectival audio performance *Re-enactments* in my ‘Conclusion’ (6.2). [↑](#footnote-ref-195)
195. As I identified in 3.4.3, Petkova, Zetterberg and Ehrsson’s scientific research suggests that body transfer illusions have limited effect on blind participants (‘Rubber Hands Feel Touch but Not in Blind Individuals’ (2012)), and thus these methods are not without limitations. [↑](#footnote-ref-196)
196. ‘Symptomatic epilepsy’ refers to cases in which the symptoms of epilepsy are ‘due to damage or disruption to the brain’ (NHS, ‘Conditions: Epilepsy’). In Jane’s case the symptoms are attributable to the attack that she suffered in 2007. [↑](#footnote-ref-197)
197. Significantly, the word ‘pregnable’ etymologically originates from the Latin *prehendere* meaning ‘seize’. Accordingly, body-ownership illusions cannot be seized by intellectual thought, just as a seizure cannot be prevented by conscious awareness of its onset (‘Pregnable’). [↑](#footnote-ref-198)
198. The PMLD Network is an organisation in the UK committed to ‘improving the lives of children and adults with profound and multiple learning disabilities’ (‘About Us’). The organisation’s website provides a downloadable PDF document which offers a definition of profound and multiple learning disabilities (PMLD) (‘About Profound and Multiple Learning Disabilities’). PMLD is characterised by individuals who have more than one disability, a profound learning disability, additional sensory or physical disabilities, difficulty communicating, complex health needs or mental health difficulties, and who may require high levels of support and present challenging behaviours (‘Who Are We Campaigning For?’). [↑](#footnote-ref-199)
199. BAL recommends hacking a PlayStation®Eye camera. [↑](#footnote-ref-200)
200. OpenFrameworks is an ‘open source C++ toolkit designed to assist the creative process by providing a simple and intuitive framework for experimentation’ (‘About’, *OpenFrameworks*). [↑](#footnote-ref-201)
201. Pure Data is an ‘open source visual programming language […] to create software graphically, without writing lines of code (‘Home’, *Pure Data*). Brmsnesic assumption in mtic paradigm in theatre’ [↑](#footnote-ref-202)
202. Engadget Expand is a free event that gives tech enthusiasts the opportunity to hear on-stage discussions and demos from technologists and scientists. [↑](#footnote-ref-203)
203. Some neuroscientific studies have placed participants in the body of a digitally constructed avatar, whereas ‘The Machine’ allows users to see themselves in the remediated body of a real person via video feeds (similar to Ehrsson’s experiments cited in 3.4.3). [↑](#footnote-ref-204)
204. Fab Lab Barcelona hosted BeAnotherLab as part of a short-term residency to develop *The Machine To Be Another*. With the support of project leader Lana Awad, Fab Textiles created a wearable wooden vest that is adaptable to the variable sizes of different users. The Lab also helped develop the hardware system to provide stereoscopic vision that is adjustable to the body of different performers (‘THE MACHINE TO BE AN [↑](#footnote-ref-205)
205. OTHER\_ HARDWARE DEVELOPMENT’).

     BeAnotherLab acknowledges the support of SPECS (Synthetic, Perceptive, Emotive and Cognitive Systems Group), Pompeu Fabra University, Master of Digital Arts Pompeu Fabra Barcelona and Fab Lab, Barcelona for the development of this experiment (‘Gender Swap – Experiment with The Machine to Be Another’). [↑](#footnote-ref-206)
206. For example, Skolnick Weisberg et al’s study in the field of cognitive neuroscience, that evidenced a bias from the layperson towards psychological studies that contained neuroscience information (cited on page 31), and the top-down epistemological agenda that I argue that the ‘cognitive turn’ introduces into theatre scholarship by using hard-science to validate artistic practices (cited on page 32). [↑](#footnote-ref-207)
207. CULTURUNNERS is described as a ‘multidisciplinary gathering of artists, designers, filmmakers, scientists, curators, and scholars whose practices inspire novel approaches towards cross-cultural exchanges specific to the United States and the Middle East. Together, they will collaboratively share, develop, and test creative communication technologies and narrative techniques’ (‘CULTURUNNERS AT MIT’). [↑](#footnote-ref-208)
208. The United Nations Alliance of Civilizations (UNAOC) was established in 2005 by Kofi Anan. The mission statement of the UNAOC describes the organisation as ‘an entity that would assist in diminishing hostility and promoting harmony among the nations’ (‘Who We Are: About Us’, *UNAOC*). [↑](#footnote-ref-209)
209. Implicit Association Tests, such as the commercially available *Implicitly* by Hogrefe Ltd., are used to ‘help uncover our unconscious biases and their likely impact on behaviour’ (‘Implicitly – Implicit Association Test’). [↑](#footnote-ref-210)
210. The Creative Commons website states that in regards to their ‘ShareAlike’ licenses, users can ‘share’ (‘copy and redistribute the material in any medium or format’) and ‘adapt’ (‘remix, transform, and build upon the material’), but in the event that users ‘remix, transform, or build upon the material’ they must distribute their contributions ‘under the same license as the original’ (‘Attribution-NonCommercial-ShareAlike 4.0 International (CC BY-NC-SA 4.0)’). [↑](#footnote-ref-211)
211. The full transcript of my interview with Marte Roel is located in Appendix 2 (270-274). [↑](#footnote-ref-212)
212. Analogue received a Wellcome Trust Small Arts Award in October 2013. The award was to fund the R&D process which, consistent with the awards aims stated on the Trust’s website, sought to find ‘new ways of working’ and to ‘investigate and experiment with new methods of engagement [with science] through the arts’ (‘Arts Awards: What Are Arts Awards?’). [↑](#footnote-ref-213)
213. The Raspberry Pi is described on the raspberrypi.org website as a ‘low cost, credit-card sized computer that plugs into a computer monitor or TV, and uses a standard keyboard and mouse’ (‘What is a Raspberry Pi?’). [↑](#footnote-ref-214)
214. A Lilliput 669GL-70NP/C/T 16:9 aspect ratio HDMI 7” touch-screen monitor. [↑](#footnote-ref-215)
215. The case mounted on the glove houses a motor with an integral gearbox (a 50:1 MFA large single ratio motor gearbox). [↑](#footnote-ref-216)
216. Audio Technica AT-M50WH Studio Monitor Headphones. [↑](#footnote-ref-217)
217. This work subsequently toured to the *Pulse* Festival at the New Wolsey Theatre (8 June 2013), the *Latitude* Festival (19-21 July 2013), and the *Transform* festival at the West Yorkshire Playhouse (29 March 2014). [↑](#footnote-ref-218)
218. In *Memory and Amnesia: An Introduction* (1997), Alan J. Parkin states that anterograde amnesia refers to ‘difficulty in acquiring new information’, while retrograde amnesia is a disorder via which an individual ‘cannot remember things he or she knew prior to the precipitating illness or trauma’ (1997: 68). [↑](#footnote-ref-219)
219. Clive Wearing’s story has featured in several televised documentaries, notably *Equinox: Prisoner of Consciousness* (1986) and *The Man with the 7 Second Memory* (2005). Deborah Wearing’s book *Forever Today: A Memoir of Love and Amnesia* (2005) offers a personal and comprehensive account of the story of their relationship through Wearing’s life-changing illness. Neurologist Oliver Sacks’s book *Musicophilia: Tales of Music and the* Brain (2007), which investigates clinical studies to illuminate the relationship between music and unusual brain disorders, includes Wearing’s story in Chapter 15: 'In the Moment: Music and Amnesia' (187-213). [↑](#footnote-ref-220)
220. Other comparable memory tests are *The Rivermead Behavioural Memory Test* (RBMT), originally published in 1985 (Wilson, Cockburn, & Baddeley). This test was designed to ‘(a) predict everyday memory problems in people with acquired, non-progressive brain injury and (b) monitor change over time’ (‘Rivermead Behavioural Memory Test - Third Edition (RBMT-3)’). [↑](#footnote-ref-221)
221. In an interview with Oliver Sacks published online in 2007, he notes that Wearing’s musical memory was ‘untouched’ by his condition; ‘he was able to sing, he was able to conduct a choir, he was able to conduct an orchestra with great sensitivity […] although within 10 seconds of conducting the choir he’d have no memory of it, he’d recognise no-one in the choir and he would return to the state of terrible confusion and fear which he was in’ (‘Oliver Sacks - *Musicophilia* - Amnesia and Music’). [↑](#footnote-ref-222)
222. This is a question I have posited in my ‘Director’s Note’ in the play text of *2401 Objects*; ‘what would the experience of a theatre performance mean for an audience of anterograde amnesics (knowing that within minutes of the curtain call the experience would have ceased to exist)?’(*2401 Objects*, ‘Directors’ Note’, 12). [↑](#footnote-ref-223)
223. Shapiro argues that a branch of embodied cognition that he terms ‘conceptualization’ seeks to affirm this proposition (e.g. scientists such as Francisco J. Varela, Evan Thompson and Eleanor Rosch). [↑](#footnote-ref-224)
224. My use of the term ‘applied’ in relation to performance practices signals a broader field of theoretical discourse that I do not intend to repeat significantly here. However, noteworthy contributions in this area include Helen Nicholson’s *Applied Drama: The Gift of Theatre* (2005), Tim Prentki and Sheila Preston’s *The Applied Theatre Reader* (2009), and James Thompson’s *Performance Affects: Applied Theatre and the End of Effect* (2009). I use the term in concordance with Helen Nicholson’s definition of applied practice to refer to ‘activity that primarily exists outside conventional mainstream theatre institutions, and which are specifically intended to benefit individuals, communities and societies’, and may further be characterised by ‘interdisciplinary and hybrid practices’ (3). [↑](#footnote-ref-225)
225. Sacks notes that English neurologist John Hughlings Jackson used the term ‘reminiscence’ to describe a similar phenomenon in relation to epilepsy (136-137). [↑](#footnote-ref-226)
226. West cites Stern and Hurtig as the original source of this information in their publication *The Comprehensive Management of Parkinson’s Disease* (1988). Numerous secondary manifestations of the disease are also indicated; those that relate to excessive movement include blepharospasm (‘spasm of the eyelids’), festinating gait (‘short, quick, tottering steps; appearing to constantly fall forwards’), cogwheel rigidity (‘muscle relaxes and stiffens intermittently giving a jerky movement’) and dystonia (‘muscle spasm’). Losses pertaining to movement include incoordination, micrographia (‘writing difficulties’), impaired upgaze dysphagia reflex (‘difficulty in swallowing’), masked facies or hypomimia (‘expressionless face’) and freezing (3). [↑](#footnote-ref-227)
227. *Parkinson’s Disease: Studies in Psychological and Social Care* (1999) edited by Ray Percival and Peter Hobson provides a comprehensive overview of the key diagnostic features of PD. [↑](#footnote-ref-228)
228. In terms of the kinds of data gathered, as I will discuss in section 5.3.4, all of the participants who took part in the user-testing consented to participate in a recorded interview immediately following their experience of *Transports*. These qualitative interviews gave participants a space to expand on their associations with PD and to respond critically to the experience of the installation. [↑](#footnote-ref-229)
229. J. William Langston and Jon Palfreman wrote a detailed report in *The Case of the Frozen Addicts* (1995) concerning six patients in San Francisco in 1982 who developed the symptoms of PD shortly after using MPTP (a

     synthetic analogue of heroin). [↑](#footnote-ref-230)
230. The AAFP website states that it is ‘one of the largest national medical organizations, with more than 115,900 members nationally and internationally’ (‘About the American Academy of Family Physicians: Our History’). [↑](#footnote-ref-231)
231. The article considers tremor as a symptom of many disorders, including Parkinson's disease, essential tremor, orthostatic tremor, cerebellar disease, peripheral neuropathy and alcohol withdrawal. It elaborates that: ‘Frequency [of tremor] can be divided into three categories of oscillations per second: slow (3 to 5 Hz), intermediate (5 to 8 Hz) or rapid (9 to 12 Hz). Amplitude may be classified as fine, medium or coarse, depending on the displacement produced by the tremor about the fixed plane. A coarse tremor has a large displacement, whereas a fine tremor is barely noticeable’. [↑](#footnote-ref-232)
232. According to an online publication by Parkinson’s UK entitled ‘Symptoms and Lifestyle: Tremor and Parkinson’s’ (April 2013), tremor caused by PD can be either a ‘resting tremor’ or an ‘action tremor’. The latter occurs while undertaking a motor task, which is the kind that is replicated within *Transports*. [↑](#footnote-ref-233)
233. For example, Taha Khan et al’s ‘Quantification of Speech Impairment in Parkinson's Disease’ (2012), ‘Cepstral Separation Difference: A Novel Approach for Speech Impairment Quantification in Parkinson's Disease (2014) and Sabine Skodda et al’s ‘Progression of Voice and Speech Impairment in the Course of Parkinson's Disease: A Longitudinal Study’ (2013). [↑](#footnote-ref-234)
234. The prevalence of the disease’s effect on the voice has led to the development of unconventional diagnostic tools, e.g. low-cost voice-based tests that evaluate the accuracy of speech signal processing algorithms (dysphonia measures) to predict PD symptom severity using speech signals (Tsanas et al). Such advances represent an objective, non-invasive and self-administered tool with the aim of detecting the disease and measuring its progression. Similarly, recent research has also evidenced how in-built accelerometers in consumer smartphone technologies can afford individuals the possibility of accurately distinguishing Parkinson’s disease (PD) using self-administered tests of gait and postural sway (Arora et al). [↑](#footnote-ref-235)
235. In L. J. Findley et al’s ‘Tremor, the Cogwheel Phenomenon and Clonus in Parkinson's Disease’ (1981), the term ‘cogwheel phenomenon’ is attributed to Camillo Negro in ‘Le Phenomena "dela Roue Dentee"’ (1928). The characteristics of the cogwheel phenomenon are described in James W. Lance et al’s ‘Action Tremor and the Cogwheel Phenomenon in Parkinson's Disease’ (1963): ‘passive movement of a joint in the affected limbs of a patient with Parkinson's disease encounteres [sic] increased resistance, termed "rigidity," and there is good evidence that this is dependent upon hyperactive stretch reflexes in the muscles concerned’ (98). [↑](#footnote-ref-236)
236. Correlating with this exercise, there has been extensive exploration of muscular tension in the field of performer training. Notable pedagogy includes Jacques Lecoq’s ‘seven levels of tension’ discussed in Lecoq’s *The Moving Body: Teaching Creative Theatre* (2009), *Theatre of Movement and Gesture* (2006) and Simon Murray’s *Jacques Lecoq* (2003), Rudolf Laban’s work on ‘efforts’ (discussed in *Effort: Economy of Human Movement* (1947)), Martha Graham’s Graham Technique™ (discussed in Marian Horosko’s *Martha Graham: The Evolution of Dance Theory and Training 1926-1991* (1991)) and Eugenio Barba’s Theatre Anthropology and Odin Teatret training (taught at the International School of Theatre Anthropology (ISTA)). While not explicitly concerned with muscle tension, Daniel Stern categorises human affordances as ‘forms of vitality’ in *Forms of Vitality: Exploring Dynamic Experience in Psychology, the Arts, Psychotherapy, and Development* (2010). This category describes ‘felt experience of force – in movement – with a temporal contour, and a sense of aliveness, of going somewhere’. Put differently it is the means by which the content of movement takes on ‘phenomenal form’ (84-93). [↑](#footnote-ref-237)
237. Analogue first used the ‘Wizard of Oz’ methodology while developing a project entitled *Living Film Set* as part of a Theatre Sandbox commission in 2010. Theatre Sandbox is ‘a commissioning scheme for theatre makers to research and develop experimental performance works that use pervasive media technologies’ (Warburton 3). The scheme was designed and delivered by iShed and funded by Arts Council England. [↑](#footnote-ref-238)
238. The term has since been widely used in fields such as experimental psychology, ergonomics and usability engineering. [↑](#footnote-ref-239)
239. In German theatre/opera a comparable design process might be the ‘Bauprobe’, meaning the first inspection or ‘repetition of construction’, in which a mock-up of a set design is created in a performance space to evaluate the design prior to the final construction. However, ‘Wizard of Oz’ testing as a non-theatre term involves observing a participating audience and places the focus on evaluating user interactions with a system. [↑](#footnote-ref-240)
240. A survey of more than 2,000 people was commissioned by Parkinson's UK in 2013. The BBC reported that this survey indicated that: ‘Nearly half of those with Parkinson's face regular discrimination, such as having their symptoms mistaken for drunkenness’ (‘Parkinson's Sufferers 'Face Regular Discrimination'’). [↑](#footnote-ref-241)
241. Coincidentally, developments in the field of healthcare have recently seen a company called GyroGear, based at Imperial College in London, produce a ‘stability device’ called the GyroGlove. This is an intelligent glove with built in gyroscopes that are purposely designed to proportionally stabilise hand tremor in those with Parkinson’s. The company’s website claims that their early testing ‘demonstrates significant reduction of tremors of over 80%’ (‘GyroGlove’). Unlike *Transports* which is intended to simulate tremor as a communication tool, this rather represents a direct intervention with an accompanying smartphone app. that gathers quantifiable data as to the progress of the tremor which can be reviewed by users and their doctors. [↑](#footnote-ref-242)
242. Key coverage included a filmed report for Reuters entitled ‘Installation Simulates Parkinson's Symptoms’ by Suzannah Butcher, published online on 7 December 2014. Sandrine Ceurstemont’s article on *Transports* for *New Scientist* entitled ‘What it’s Like to Have Parkinson’s for 15 Minutes’ was published on 19 November 2014. The *YouTube* video of *Transports* that accompanied this article online (entitled ‘Body Illusion Lets You Experience Parkinson's’) has attracted 22,996 views as of 27 July 2015. Further articles in scientific publications included the article ‘New technology allows medical professionals to step into their patients' shoes’ in *Science Daily* on 3 November 2014. The Raspberry Pi website also featured *Transports* in the article ‘PARKINSON’S DISEASE BODY ILLUSION’ by Liz Upton (Head of Communications at the Raspberry Pi Foundation). [↑](#footnote-ref-243)
243. Following this period of research, a work-in-progress iteration of the project was tested with audiences as part of the Oxford Samuel Beckett Theatre Trust Award’s (OSBTTA) *The Finalists* festival in October 2012 (under the working title *Everything Must Leave Some Kind of Mark*). It was subsequently commissioned by Shoreditch Town Hall, culminating in an initial run of the finished work in October 2013 and a further run of performances in January/February 2014. [↑](#footnote-ref-244)
244. StageCaller was developed as a software solution for generating live sound effects onstage (e.g. a phone ringing). On the StageCaller website the makers note that this technology avoids the necessity in contemporary sound design for ‘practicals all over the stage, or faking it from nearby sources’, replacing antecedent technologies such as TeleQ™ (‘StageCaller: Home’). [↑](#footnote-ref-245)
245. Crouch’s argument draws on Bert O. States *Great Reckonings in Little Rooms* (1985), in which he had surveyed things that resist being either signs or images in theatre practice (e.g. fire, water, clocks etc.). Beyond the semiotic approach that all that is onstage is a ‘sign’ (in the tradition of the Prague linguists), States had argued that certain kinds of signs achieve their vitality ‘not simply by signifying the world but by being of it’ (States 20). [↑](#footnote-ref-246)
246. A full account of Ramachandran’s approach to working with patients with phantom limb pain is offered in section 3.4.1. [↑](#footnote-ref-247)