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Keeping it Real: Encountering Mixed Reality in igloo's *SwanQuake: House*

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Abstract

This paper employs the writings of early twentieth-century phenomenologists to examine physical/virtual dualism a century later. It considers the nature of embodied experience in mixed reality environments through an analysis of the author's encounter with igloo's art installation *SwanQuake: House*. The paper reflects on post-Cartesian approaches to the body and new media, noting the resistance of the language of philosophy to the articulation of mixed reality as a concept. If the language of the field constructs dualism, and the cyborgian unitization of human/technology invokes responses of horror or pity, are we prepared socially or culturally to inhabit mixed reality environments as embodied beings?

Key words:

Embodiment; Phenomenology; Mixed reality; Performance; Installation art; Virtual worlds; Avatar; Cyborg

We have to reject the age-old assumptions that put the body in the world and the seer [sic] in the body, or, conversely, the world and the body in the seer as in a box. Where are we to put the limit between the body and the world, since the world is flesh?

(Merleau-Ponty 1968:138)

What if the world is not flesh, but binary code? What if the body is a digital avatar, placed in a virtual world, controlled by a see-er? What if the world and the body are in a box (or visual display unit), into which the see-er gazes? Where are we to put the limit between the body and the world now?

Introduction

According to new media philosopher Mark Hansen (2006: 5), 'all reality is mixed reality'. He makes this claim on the phenomenological grounds that the body functions as the primary mode of access to the world, with the crucial proposition that this is the case regardless of the type of 'reality' that might be under discussion. By this argument we should be able to

eschew distinctions between virtual and physical realms, since any realm-based categorisation of realities becomes subordinate to the fundamental *experience* of reality as defined by ‘the constitutive or ontological role of the body in giving birth to the world’ (ibid.). If this is the case then attempts to categorise any form of reality, for whatever reason, should acknowledge the commonality of embodied experience regardless of other distinctions.

This paper follows Hansen by taking a phenomenological perspective on the body in mixed reality environments. It explores the significance of this through the lens of the art installation *SwanQuake: House* (igloo, UK, 2008), which I encountered in the V22 Gallery in East London, September 2008. *SwanQuake: House* was created by Ruth Gibson and Bruno Martelli, co-founders and core artists of the interdisciplinary performance company, igloo. The V22 showing was created as a site-specific work, consisting of four basement rooms where physical and virtual elements were entwined in various ways. The paper presents an analysis of my encounter with this work, arguing that physical/virtual dualism is deeply embedded in embodied experiences of mixed reality.

Context

Towards the end of the twentieth century, Western society lamented the loss of the body to technology, or searched cyberspace for the disembodied mind. Movies such as *Tron* (Lisberger, USA, 1982), *The Lawnmower Man* (Leonard, USA, 1992) and *The Matrix* (Wachowski, USA, 1999) presented worlds in which humans lost their bodies to machines via virtual realities. Hubert Dreyfus (2001) declared that cyberspace was the place where Descartes might yet make his last stand. New media theorists Bolter and Grusin (2000: 238) described the body as a medium that ‘both remediates and is remediated’, citing performance artist Stelarc’s description of the body as a ‘structure’ or ‘an object for designing’ through technology (p.240).

However, since the turn of the twenty-first century there has been a shift away from this Cartesian perspective (see Young & Whitty 2010). Immersive approaches to performance and new media have tended to acknowledge the sensate engagement of the viewer, often involving them as participants in the unfolding of the work through their interactions with it, e.g. Sarah Rubidge’s *Sensuous Geographies* (2003), Paul Sermon’s telematic installation series (1992 to present) and KMA’s interactive light installations in outdoor public spaces (2005 to present). This approach has become increasingly viable as audiences have grown more conversant with interactive technologies and they become less concerned with the question, “How is it done?” (Palmer & Popat 2007). New media philosopher Jeff Malpas (2009: 136) argues that ‘the virtual does not constitute an autonomous, independent or

'closed' system, but is instead always dependent, in a variety of ways, on the everyday world within which it is embedded.' Hansen's model of mixed reality resonates with Malpas' argument, but goes further to place embodied experience at the heart of all realms, including the virtual, so that dependency is no longer relevant and instead all reality is relational to embodied experience.

Yet, despite these clear positions on the post-Cartesian nature of mixed reality, there remains a deeply embedded assumption in the language of these philosophers that, while the systems are not 'closed', virtual worlds are dependent upon and thus subordinate to the physical world. This prioritization of the physical world maintains the body at the core of experience, and thus able to play its ontological role in the construction of reality, in Hansen's terms. However, it also tends to reinforce a form of subtle dualism that was appropriate to virtual reality technologies, but might be less useful in a world where physical and virtual elements refuse to be separated so neatly (e.g. digital telecommunications, social networking, satellite navigation). Mixed reality remains an awkward term, which in itself implies dualism through the concept that two or more things are required to make a mix. Artist and digital performance producer Ghislaine Boddington (2009) uses the term 'blended' reality in an attempt to suggest a more intimate connection, but the dualist implications remain in the sense that blending is still a form of mixing – if perhaps a more thorough one. However permeable it might be, a membrane or 'hypersurface' (Giannachi 2004) appears to stay in place between physical and virtual, due to the separate natures of their existence as flesh and digital information. We know the virtual by its alterity to the physical (Idhe 2002).

Donna Haraway's influential 'cyborg' is perhaps closest to the concept that we are seeking, despite its early conception in 1991. Haraway argues that the cyborg ignores its dualist origins in human and technology, and instead it is 'resolutely committed to partiality, irony, intimacy and perversity' (1991: 151). She defines cyborgs as 'unified' entities, and thus the dualist language is removed; but she proposes that this very unity makes them 'monstrous and illegitimate.' (p.154). If the language of the field continues to construct dualism even when the intention is to avoid it, and the cyborgian unitization of human/technology invokes responses of horror or pity in contemporary fiction, are we prepared socially or culturally to inhabit mixed reality environments as embodied beings?

This paper utilizes my experiences of *SwanQuake: House* in order to examine an embodied perspective on mixed reality environments. It borrows from Merleau-Ponty's attempts to overcome the deeply embedded body-mind dualism of the early 20th century to attempt a parallel dismantling of physical-virtual dualist thinking in a 21st century world. The paper

begins in the realms of existing analyses of bodily engagement with virtual worlds, but then pursues the post-Cartesian perspective further to ask what might happen to the experience of a fleshly body when the everyday world itself becomes a mixed reality. Yet despite the conscious effort to shift perspectives, repeatedly the argument struggles with a subtle institutionalized dualism that appears to be inherent within the language and philosophy of new media and performance.

Methods

It is a sunny afternoon in early September, and I have come to a backstreet in East London to experience igloo's SwanQuake: House. I know little about the installation except that it involves computer game aesthetics, and I am faintly apprehensive about what awaits me. I knock on the door of an old warehouse building, and Bruno Martelli opens it. He leads me to the top of a flight of stone steps, and I walk cautiously down into the semi-dark basement. Crumbling brickwork is exposed where the paint is peeling, and door-less frames lead off into other rooms. The air is damp and cold, clammy on my sun-warmed skin. Incongruously, in the middle of this room are positioned a chair and a wooden dressing table with a wide mirror. I sit down and look into the mirror. I see a London underground station platform next to a burning train on the line, and I realise that I am looking into a virtual world through the eyes of an avatar. The dressing table is bare apart from a trackball flanked by two buttons. Experimenting, I find that I can make my avatar turn, walk forward and jump using the simple controls. Settling in the chair and fastening my thin summer jacket against the chill of the basement room, I set off to explore this virtual world. [1]

Although this paper refers in some detail to igloo's *SwanQuake: House*, the research is not about that artwork specifically. The analysis focuses on a thick description of my experiences of that artwork (see the paragraph above for the opening section of that description), in order to access my embodied perspective in the moment of encounter. Thick description is used widely in qualitative research as a method to capture 'the thoughts and feelings of participants as well as the often complex web of relationships among them' (Ponterotto 2006: 543). Whilst it is often employed as a mode for ethnographers to report their observations of participants, it is also a useful method for researchers to record their own embodied experiences for analysis.

For the purposes of this research, I experienced *SwanQuake: House* as a visitor to the artwork, remaining in the installation for approximately forty-five minutes. During that time, I made no attempt to record my experiences. After I left the installation, I wrote on a notepad

for about an hour, describing everything that I recalled about my experiences. Two days later I transferred my hand-written notes into a computer document for safe storage. I returned to the description three months later to examine what the writing revealed of the 'complex web of relationships' (ibid.) that I had experienced between my embodied being, my avatar and the environment. I noted points where my use of language and vocabulary recorded those relationships by way of first/third-person references, reports of agency, spatial location of self and deictic markers, together with references to physical or emotional responses. Each of these points in the text was considered individually, and then similar points were collated and compared for consistency in the use of vocabulary or style of narrative. Moments of emotional response were examined for correlation between emotions and related actions. Accounts of agency were analysed in relation to first/third-person and spatial references. The findings from these interpretative strategies were examined in relation to theories of phenomenology, particularly those established before virtual worlds or mixed reality became a common part of our lived experiences in the Western world (e.g. Merleau-Ponty 1968, Husserl 1999 [1907]). These early phenomenologists were engaged in their own struggle with Cartesian dualism embedded in their society, language and cultural experiences, and thus they provide an interesting perspective on contemporary experiences of mixed reality.

SwanQuake: House

Whilst my thick description provides some detail about the artwork itself, it is necessarily fragmented as it reflects the process of personal experience. A thin description is therefore required to familiarise the reader with *SwanQuake: House*. *House* is part of igloo's ongoing *SwanQuake* project, which combines three-dimensional computer graphic environments and motion-capture driven characters. All of the works in igloo's *SwanQuake* series are constructed by an interdisciplinary team, led by computer programmer Martelli and dancer/choreographer Gibson. In each piece the viewer uses a games controller to navigate through themed environments, and to interact with the avatars 'to create new performances / performance spaces' (deLahunta 2007: 6).

Viewers coming to see *SwanQuake: House* were given little information in advance and no instructions about what to do. The installation was in the basement of an old building. It consisted of four rooms and a short corridor with interconnecting empty doorways. The walls were damp brick, bare or clad in places with flaking plaster and peeling paint. The floor was concrete, partially covered by some old segments of carpet. The main room contained a dressing table console and chair, with a widescreen high definition display screen instead of a mirror (see Fig. 1). The screen showed a virtual world in which the viewer could explore

several themed environments (e.g. a fictional London underground train station, a volcanic valley, an old house, a large empty room). Transitions between environments were made by teleportation, or by in-game 'death'. The dressing table console had a trackball and two buttons embedded in the centre of the wooden surface. The trackball moved the viewpoint within the virtual world, and the buttons controlled forward movement and jumping so that the viewer could navigate through the world. In some environments, there were animated characters whose movement had been motion-captured from Gibson and other dancers.

This was rendered onto models designed to look like Gibson herself (see Fig. 2). The choreography was intentionally looped and fragmented, causing the characters to jerk or freeze in transitions between movements. These characters did not respond to the viewer's presence, and faded to invisibility if approached closely.

The other basement rooms contained digital elements also. At the end of the corridor, an old-fashioned oval mirror frame hung on the wall, housing an oval display screen that showed part of the virtual world. In one of the rooms, the walls had been overlaid with full-size texture maps printed from images of the original walls (see Fig. 3). A low atmospheric sound track played throughout the installation. Viewers had the choice to remain at the dressing table console for as long as they wished, or not to use the console at all. They could wander through the basement at will and stay in the installation as long as they liked.

The blending of physical and digital elements lies at the heart of this installation, and it was the embodied experience of this blend that caused me to question the nature of what it means to be embodied in mixed reality. In my analysis, I focus first upon my thick description of sitting at the dressing table console in order to establish my relationship with my avatar in the virtual world, before considering how this affects and is affected by my relationship with the physical world. (And already there is a Cartesian split in my explanation of the throughline of this paper.)

Figure 1: Gibson | Martelli (igloo) - *SwanQuake: House* (2008) Computer installation with sound, V22 Gallery London. The dressing table with trackball and two buttons, located in the basement room. [Copyright: igloo]

Figure 2: Gibson | Martelli (igloo) - *SwanQuake: House* (2008) Computer installation with sound, V22 Gallery London. Animated dancers using motion-captured movement. [Copyright: igloo]

Figure 3: Gibson | Martelli (igloo) - *SwanQuake: House* (2008) Computer installation with sound, V22 Gallery London. The texture-mapped room. [Copyright: igloo]

Perspective and Nullpoint

Let us return to the quotation at the beginning of this paper. Merleau-Ponty describes the 'age-old assumptions' where see-er (or conscious mind), body and world are separated, and the see-er experiences the world from within or behind the body. It could be argued that this is precisely the position of the player in the average video-based computer game, where the avatar is experienced through the screen from a first-person or third-person perspective. In first-person perspective, the player sees the virtual world as if through the eyes of the avatar; effectively the screen functions as the avatar's eyes. In third-person, the player's point of perspective floats somewhere behind (and often slightly above) the avatar, so that the avatar's body is in the centre foreground of the frame of vision. Different players have different perspectival preferences, and some swap between perspectives according to the nature of the task that they are attempting in the virtual realm.

This paper is primarily concerned with the first-person perspective, as the virtual world elements of *SwanQuake: House* are only available from this perspective. Martelli explains that this decision was made because he finds first-person perspective 'more embodying':

When you go to the cinema you see the film - you don't sit behind yourself looking at yourself watching the film. I've always found that third person perspective doesn't make any sense to me, and I feel disembodied. I'm not in there, I'm watching some little person in there. [2]

Martelli feels alienated when he can see the avatar that represents him in the game environment. The avatar separates him from the world in the box, rather than giving him the sensation of being 'in there'. In first-person perspective the screen functions as the see-er's eyes into the virtual world. As such the screen takes the role of a visual 'nullpoint'; a

Husserlian notion that describes ‘the center (sic) point from which the perceptual field radiates’, within which ‘the perceptual organ remains an absence or nullity in the midst of the perceived’ (Leder 1990: 13). I do not see my own eyes; I see through them to the world. Thus my eyes are my visual nullpoint, an absent nullity in themselves whilst fulfilling their role of perception. And as my eyes might be considered the visual nullpoint of my body through which I perceive the world, so the screen appears to be the visual nullpoint of my avatar into its virtual world. On one level it might appear that these two nullpoints are simply interchangeable – the nullity of my avatar’s perspective replaces the nullity of my eyes, as I gaze into the virtual realm via my avatar’s vision. But does this simply return us to the substitution of bodies akin to those dreams of the 1990s cyberpunk, where my avatar’s virtual body can replace my corporeality? It is enough to conjure up a Merleau-Pontian nightmare:

What if our eyes were made in such a way as to prevent our seeing any part of our body, or some diabolical contraption were to let us move our hands over things while preventing us from touching our own body? [...] Such a body would not reflect itself; it would be an almost adamantine body, not really flesh, not really the body of a human being. There would be no humanity.

(Merleau-Ponty 1993: 125)

Virtual reality seems to be very close to Merleau-Ponty’s ‘diabolical contraption’. The avatar’s body is invisible to my eyes (although there is the implication of substance in the virtual world as it has a shadow that looks very much like the shadow of igloo artist Ruth Gibson). I can move my avatar towards items and touch some of them, but I have no ability to make my avatar touch its invisible face or hands; they simply do not exist, even in representational form.

In his 1990 book *The Absent Body*, Drew Leder criticises the nullpoint as being an implicitly dualist concept and thereby problematic from a phenomenological standpoint, since it appears to separate the see-er and the body. Yet in 1907 for Husserl, it was a fundamental starting point for the phenomenological experience, where the perspective of the individual’s encounter with the phenomenon is the only possible form of pure knowledge (see Husserl 1999 [1907]). Screen-based worlds return us starkly to a Husserlian position, where physical and virtual are separate to the extent that my avatar is beyond my own ability to touch, even if there is a connecting membrane or umbilical cord between the two realms. Yet Martelli proposes that the first-person perspective avatar provides an embodied experience – the opposite, in fact, of the loss of humanity that Merleau-Ponty fears. Like his ‘diabolical

contraption', my avatar's body is 'not really flesh, not really the body of a human being'. However, this does not prevent me from narrating my experience of my avatar using the first-person pronoun, switching between descriptions of intentions, actions and emotional responses as if they belonged to a single body:

A teleporter takes my avatar to a high ledge over a lava-filled valley, and I experience sudden vertigo. I edge along the narrow path, keeping close to the cliff face. There is a bridge over the valley; I cross it and become temporarily lost in a maze of tunnels inside the mountain. I find my way back to the bridge, and look down into the red burning river far below. I am filled with a sudden urge to leap into the abyss – so I jump!

This paragraph from my thick description reveals the conflation of 'my' actions (performed through the avatar but claimed by my embodied experience), and my emotional responses to the avatar's situation (e.g. vertigo, fear of falling, the desire to leap). It is this conflation that provides the key to the embodiment that Martelli experiences in first-person perspective. [3] In relation to computer games, Jon Dovey and Helen Kennedy (2006: 106) refer to this process as 're-embodiment', where an embodied subject gains a further embodiment in the virtual realm through the interface and the avatar. Being both embodied and re-embodied does not imply a split subject, but rather a doubled subject. This suggests that the nullpoint creates a point of connection between virtual and physical, rather than division.

Not not me

Husserlian nullpoints exist between sensing and sensation; seeing and being seen, touching and being touched. Let us consider the well-rehearsed phenomenological exercise of touching one's left hand with one's right hand; the organ of sensing recedes from the field of sensation, with the nullpoint always between the two (i.e. the skin recedes as a sensed organ when it is engaged in the act of sensing). It is the reflective relationship between seeing and being seen, touching and being touched, that orientates our embodied experience in the world. The process of reflection locates us in a world that is made of the same material as our bodies – cut from the same cloth. In a virtual environment, the world is made of a different material from my fleshly body, but it matches the binary code body of my avatar. Thus my avatar's body gives me access to that world. Its binary body is indeed a point between sensing and sensation, but the sensing and sensation are mine: my avatar stands on the high ledge overlooking the lava flow, whilst I see the drop and feel the vertigo with my flesh. I am doubled - flesh and binary code. I do not see my avatar in the first-person perspective, but *neither do I notice its absence*, as it recedes naturally through its function as my nullpoint of perception in the virtual world.

Critical to the question of embodied experience is Martelli's desire to be 'in there'. 'There' in the virtual world indicates a relationship to 'here', the place where my fleshly body registers sensation (including emotion) and continues to be my ultimate sensory nullpoint. When I experience being 'in there' then I am both outside and inside the box. My avatar is not me; it is a piece of digital information. But somehow it is also not 'not me', in that I control and conflate its actions with my own, and I experience physical responses aligned to those actions. This modelling chimes closely with the description of the actor's performing body offered by performance theorist Richard Schechner:

Schechner is fond of quoting the child psychologist Winnicott's formulation, 'from *me* to *not-me* to *not-not-me*,' to express [the] process of theatrical maturation. The *me*, the biological-historical individual, the actor, encounters the role given in the script, the *not-me*; in the crucible of the rehearsal process a strange fusion or synthesis of *me* and *not-me* occurs.

(Turner 1982: 120-1)

The maturation of myself as player is that the fusion occurs between *me* (the see-er) and *not-me* (the avatar), to create the *not-not-me* by which I gain presence in the virtual world. Tom Boellstroff (2008: 129) explains that 'avatars make virtual worlds real, not actual: they are a position from where the self encounters the virtual'. My avatar makes the virtual world real, in that it enables my body to encounter that world through embodied experience that embraces it as part of my reality. The nullpoint of my vision remains the eyes of my fleshly body, but I gain a second nullpoint from the avatar, which I acknowledge as *not-not-me*, encompassed by my non-Cartesian self like the layers of an onion. The virtual world remains 'there', as my ultimate nullpoint remains 'here', but I encounter 'there' from 'here' at the centre point of my multi-layered embodied presence. Both are part of my reality as I experience them simultaneously from my perspective as a single embodied entity.

I can

So far I have focused on the sensory mode of sight. Yet seeing is only part of the experience; it is action that performs the key function in mapping mixed reality, creating a sense of agency across realms. Agency is created by the ability to affect by my actions. Merleau-Ponty (1993: 124) explains:

Everything I see is on principle within my reach, at least within reach of my sight, and is marked upon the map of the 'I can.' Each of the two maps is complete. The visible world and the world of my motor projects are both total parts of the same Being.

To expand on Schechner, the virtual world is in the box, and the see-er is simultaneously not-in and not-not-in the virtual world. However, things within that world are included on the see-er's map of 'I can' through the awareness of agency granted by the presence of the avatar. Experientially, the virtual world is part of my 'Being' (and hence my reality) because everything in it is within my reach via my avatar. Hansen acknowledges the essential function of embodied agency in the construction of all types of reality. He proposes that 'motor activity – not representationalist verisimilitude – holds the key to fluid and functional crossings between virtual and physical realms' (Hansen 2006: 2). My ability to achieve motor projects is more critical to affirming my embodied presence than mere visual contact. It is the difference between looking through a window into a locked room, and having a key by which I may enter that room. The way in which I relate to the items or people in the room is heavily determined by my ability to reach them, if I choose to do so.

It is important here to note that motor projects in *SwanQuake: House* are accomplished via the physical control of my avatar. Simple controls are used to facilitate maximum ease of control for visitors with a wide range of gaming experiences. The trackball and button operation do not map directly to the avatar's movement, but the correlation between motor activity and action outcome is learnt quickly. Over the time that I explored the virtual environment, I grew increasingly adept at moving my avatar as I became accustomed to the controls. The avatar became incorporated as part of my sensory equipment, layering its nullpoint and motority onto my field of reference. Simultaneously my sensibility was mediated as if the avatar's nullpoint was my nullpoint (hence the vertigo that I experienced when the avatar stood on the narrow ledge). It was my choice to jump my avatar off the edge of the cliff, and the physical sensation of falling was felt in my stomach, even though my body remained comfortably seated in the chair, as I experienced the fall through my avatar's eyes. Such sensations of falling whilst being seated will be familiar enough to anyone who has seen a film of a rollercoaster ride on an IMAX cinema screen. Yet the level of agency in computer games enables the same sensation to be re-produced strongly on a small screen, since the fall is preceded by an awareness that falling is possible if I make a mistake in moving carefully – or if I choose to jump. My presence in the avatar's actions is enough to reciprocate the consequences of those actions upon my physical experience. We are conjoined. The human is in the machine, or perhaps more accurately the machine is brought within the reach of the human body, extending my embodied experience from 'here' to

'there'. My digital avatar couples with my fleshly body as it fulfils its ontological role of giving birth to my experience of reality.

Separation

Yet there were times when my digital and fleshly bodies did not function in tandem. In my thick description, I recalled two such encounters with virtual dancers:

I move along the platform and up into the station. By the escalators, I see a woman dancing – slowly turning, stepping, occasionally jittering or flicking between positions. She ignores me completely. I approach her, but she fades as my avatar gets close. When I turn around, she is there again.

My avatar drifts upstairs where I find another dancer, apparently trapped in a tiny room, but unconcernedly going through her glitchy moves and ignoring me. I try to get her attention but she is oblivious to my avatar's existence and fades away as it approaches her too closely.

In both cases, I refer to my avatar in the first person up until the point where the virtual dancer fails to sense its presence. In that moment, my perception is separated from that of my avatar and I refer to it in the third person, as the reflective process of sensing and sensed is not completed. My embodied experience of that virtual world is interrupted, as my avatar ceases to function as a visual nullpoint – it sees, but is not seen. Simultaneously, my attempts to move close to the woman are foiled, and my agency is broken. I cannot reach her and she does not see me, and therefore I am not present. In my momentary lapse of presence, my avatar is cut off in the virtual realm, separated from my embodied experience.

A more fundamental separation takes place when my avatar 'dies':

I go back past the train and walk along the tunnel, but I move my avatar too close to some sparking electric cables, and the screen dissolves into brilliant white for a few seconds. I emerge from the whiteness into a large silvery grey room with no windows or doors. Did I die? Is this heaven?

This paragraph reveals two different modes of embodied agency – the first-person avatar and myself as controller of the avatar. There is also a flickering between items in the virtual realm and the physical realm. I realised when I read back over my description that this flickering occurred most frequently when there was some conflict or disquiet in my experience of mixed reality. In this paragraph, the intention and emotion are acknowledged

as mine throughout, as my reality is constructed by my embodied experience. Yet in the first phrase my intention is channelled through my avatar's motility, and in the second phrase my intention sits outside of my avatar. The fact that I fail to fulfil my intention not to touch the cables (with apparently dire consequences) causes separation between my embodied agency and the avatar. The unintended connection of the avatar's body and the virtual cables reflects the avatar's digital materiality as being part of that virtual world. My agency is removed to my physical body, which is where my description places it as I narrate myself into the role of external controller. This separation is similar to that which occurred when I was unable to approach the female dancer, but here the separation is more complete. I was unable to see my avatar in the virtual world since I was in first-person mode, but I was aware of it because I saw through its eyes and acted through its body – our shared nullpoint. In the instance that the screen turns white, that shared nullpoint is temporarily lost and my invisible avatar ceases to exist for me. I no longer look through its eyes into a virtual realm. Instead I see the screen, rendered now solid and impenetrable, where previously it had been functioning as a largely porous interface through which I could bridge physical and virtual worlds.

Psychologists Garry Young and Monica Whitty explain that it is not unusual in moments of debilitation to experience loss of intimacy between mind and body:

I do not experience a *lack* of intimacy; rather, what is made salient (to me) is its sudden *loss*. The salience of this loss is a measure of the discrepancy between how it is that I now experience myself and how I should experience myself. For the comparison to be meaningful – that is, salient as loss – the underlying sense of ownership ('mineness') within the experience must remain.

(Young & Whitty 2010: 216)

When a limb is removed by accident or surgery, the patient experiences loss of that limb, sometimes even to the extent where he or she might feel pain in it or experience a phantom limb. The limb is still 'mine', even though it is gone. The avatar is not experienced in the same way. Temporarily, as the screen dissolves into brilliant white, I am left without sensory access to my avatar, devoid of any reference (including visual connection with the digital body as object) that allows me to experience the 'mineness' of that body, or even its existence. In Young and Whitty's terms, I experience a *lack*, rather than a *loss*. The dysfunction of my avatar's relationship with its virtual world has attracted my attention to the avatar, and thence to the lack of avatar and thus to the lack of access to the virtual world. No longer able to invest in my avatar's nullpoint, I see the screen rather than experiencing the

virtual world. I regain the 'mineness' of my avatar only once I regain visual contact and am able to re-establish the link between my intention and the avatar's action. The critical point here is not that physical and virtual realms were separated but that, under certain circumstances, my embodied perception of reality suddenly ceased to include the virtual world. One might suggest that my perception returned to its default setting.

Doubling

I noted above that the digital materiality of my avatar was highlighted by its interaction with the virtual cables. In Merleau-Ponty's words (1968: 137), 'the body belongs to the order of the things [objects] as the world is universal flesh'. There were numerous occasions in *SwanQuake: House* when material differences in 'the order of things' were brought to the forefront. The world of this artwork was not experienced as 'universal flesh', but a combination of flesh and binary code, each with its own rules. It was possible to navigate between those realms, but the installation was also designed to merge them and at times the resulting experience was uncomfortable, causing the 'flickering' mentioned in the previous section. I experienced this again when I left the dressing table console and went to explore the other rooms in the basement.

I turn off the corridor into a smaller room. At once I feel strange, although there is nothing in the room but the bare, peeling walls. I move closer to a wall, and the feeling gets stronger. I touch the surface, which feels oddly smooth, and I realise that the walls are not the same as the rest of the basement. They appear to be images of walls, printed at full size but at a low resolution, and placed over the original walls. As I look closer, they appear out of focus as my eyes try to make sense of the pixelated print. By now, I am uncertain what is real and what is not. The feedback from all of my senses is telling me that the real and virtual worlds are bleeding into each other, and I am disorientated.

Sensory confusion between physical and virtual occurs as my body tries to rationalise these experiences. My fleshly body is accustomed to experiencing the objects in the world as following certain laws of physics, to which my body is also subject as a part of the material of the world. I find the room with the fake walls to be disconcerting because my eyes attempt to focus the blurring caused by the low resolution printing. The digital reproduction of the wall images causes a distortion of the visual norm, disrupting my usual processes of vision and drawing attention not to my eyes, but to the uncanniness of the walls. They look real in that their colour and texture resembles the rest of the basement, but the relationship between my vision and the printed walls does not behave normally, because my body and the walls no longer belong to the same 'order' – the world ceases to be universal flesh. I have the

sensation that the world feels estranged, because in that moment my body is not of this world. Martelli reports that this texture-mapped room causes most visitors to the installation to feel uncomfortable, although many never work out why they feel discomfited. [4]

It was the moments of collision between virtual and physical that had the strongest impact on my embodied experience of the installation. One such moment occurred when I was exploring the virtual house environment with my avatar:

Across the room I find a teleportation device, and my avatar is transported to an old, empty house. The paint is peeling to expose the brickwork, and the small rooms look dark and damp. My skin crawls, as the visceral feedback from the physical basement matches the visual cues from the virtual world. I flick my eyes up into the corner of the physical room and then back into the virtual room, and the two look almost identical. I shiver.

The dark, damp basement room coincides with the dark, damp look of the virtual house. In that flick of my eyes, the visual nullpoint of the avatar is compared with the visual, tactile and olfactory experience of my sensate body, and the sensory data matches. Perhaps one might expect that match to make me feel more comfortable, since avatar and body are experiencing similar states. Whilst body and world were estranged by the lack of consensual behaviour in the texture-mapped room, here body and avatar receive corresponding sensory information from both virtual and physical realms. However, my embodied experience was one of disconcertion to the point of causing the physical shiver to run up and down my spine.

In her book on *Virtual Theatres*, Gabriella Giannachi envisages the meeting place between the physical and the virtual as the 'hypersurface' (Giannachi 2004: 99). She defines hypersurfaces as places of exchange, fleeting intertextual strata in which dialectical opposites interact and continuously contaminate one another. She proposes that the hypersurface is a place where 'the viewer can *double* their presence and be in both the real [physical] and the virtual environments simultaneously' (ibid: 95, original italics, my insertion). Things happen twice at the hypersurface, so for example I make a motor-action with my fleshly body and it causes a motor-action with my avatar. With a little practice, I come to experience the two actions as being one, even if they do not map physically (e.g. I press a button to make my avatar jump). Giannachi's description of the hypersurface is closely related to the doubling or re-embodiment described by Dovey and Kennedy. However, like Dovey and Kennedy's description, it assumes a separation of virtual and physical environments. Similarly, Hansen's definition of mixed reality refers to 'crossings' between virtual and physical realms, indicating separation as a key part of the definition of these

realms. In the separated relationship, these dialectical opposites interact and influence each other. Giannachi describes how individuals who have participated for lengthy periods in telematic communication (i.e. via projected images of their bodies) can experience some disorientation when returning to 'the unmediated world of their own [bodies]' (ibid: 107). The nullpoints of my avatar and my fleshly body overlap and contaminate each other, for example, leading me to have emotional responses to my avatar's circumstances.

Doubling of this nature enables us to extend our embodiment into virtual worlds. It does not usually draw attention to itself, but rather tends to assist in the background disappearance of the fleshly body, projecting our presence and agency into the virtual representation. It acknowledges the influence of virtual space on the fleshly body too, in the return journey across the hypersurface, and it appreciates the ways in which those crossings can result in a process of continuous re-embodiment negotiated between the two realms of virtual and physical. The hypersurface is thus revealed as a model of alterity, reliant on disjuncture between physical and virtual in order to exist as a place of crossings and exchange.

According to the analysis proposed by Don Ihde (2002) in his phenomenological approach to new media philosophy, the technology is both 'quasi-me' and 'quasi-other'. His configuration of human-technology-world suggests a linear relationship in which technology sits between me and the world. Yet in that moment in the damp basement, I experienced a fundamental disruption of the disjuncture by which I am normally able to define the difference between 'I' and 'other'. Technology and the world were experienced as congruous phenomena with no distancing interface to mediate. The lack of alterity caused the relationship to feel uncanny, as my attention was drawn simultaneously to both my avatar's perspective and my own bodily senses. For a moment I found myself to be not a doubled subject but a split subject. I experienced the 'real' as existing twice, in the virtual and the physical realms. I propose that such a split is caused by my deeply inherent Cartesian response to a mixed reality world – even when language ceases to be a factor in the moment of embodied experience, I am not yet ready to be a cyborg and I reject the unitization of physical/virtual experience.

Universal Flesh

I argued in the introduction that we might be able to eschew distinctions between virtual and physical realms, since any realm-based categorisation of realities becomes subordinate to the fundamental embodied *experience* of reality. However, as I conclude I find myself suggesting that this approach may be glossing over some issues that only an analysis of embodied experience in mixed reality could reveal. My experiences of the installation when I sat at the dressing table console conformed with those described by the philosophies of

technology in alterity relationships to my fleshly body. There I, as the 'see-er', was safely outside the box, whilst my virtual body and the world were inside the box. Even when I experienced myself as 'not-not-in' the box, there was a level of separation to my engagement with the world in the box, as evidenced in the plural negatives. In this case two negatives do not make a positive.

Doubling is a neat theory, as it allows equal status to the physical and the virtual realms, whilst keeping the two clearly separated. Even Hansen's proposal that embodied experience effectively produces the reality of the body does not offer an alternative to the doubling theory since doubling incorporates embodied experience, providing a point of connection across the disjuncture between physical and virtual realms. My experiences of 'flickering' and experiential confusion occurred when the box no longer neatly provided the interface or hypersurface, or whatever kind of divisive frame we wish to place between physical and virtual. The lack of disjuncture between the two (in my shivery moment of experiencing physical and virtual damp, dark rooms) attracted my attention sharply to the point where I expected that disjuncture to be, and I sensed a division *where no division was implied by my embodied experience*. In that moment, my Cartesian dualist perspective interrupted my body's ontological role in constructing my reality. Perhaps I am not ready to eschew distinctions between physical and virtual realms just yet.

This paper has suggested that there is a built-in dualism in current theories and philosophies of the body and technology, perhaps along the lines of Husserl's nullpoint, which was radical in its time but is critiqued for its Cartesian tendencies now. Merleau-Ponty's concept of 'universal flesh' was formed before physical/virtual dualism was ever an issue, but it does shed light on the problem to some extent. My body is made of the same substance as the physical world – it shares in the universal flesh. But my body is fundamentally different to the substance of the virtual world. If the physical and the virtual combine then I propose that the human body will tend to split them apart again through its own material engagement in the search for universal flesh. The inability to find alterity causes discomfort, just as the unification of human/technology causes Haraway's cyborg to seem 'monstrous and illegitimate' to the human. We understand the ways in which the flesh of the physical world works, but we have not yet absorbed the ever-changing rules of mixed reality. It is not our bodies that have become cyborg, but the world in which we live. We need to develop theories and practices that help us to learn how to experience embodied encounters in, and to be part of, the diverse flesh of a mixed reality world.

Notes

1. All italicized paragraphs are taken from the author's thick description of her experience of *SwanQuake: House* in 2008.
2. Bruno Martelli in interview with author, 20 October 2009, igloo office, London.
3. It is not uncommon for players to conflate actions and emotions in a similar manner when recounting experiences of third-person perspective computer games.
4. As Note 2.

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