Postphenomenological Performance: Bodily Extensions in Interactive Art

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Biography

I am an AHRC (Arts and Humanities Research Council) student at the University of Glasgow and have recently completed my PhD thesis on postphenomenology in cinema, new media art and computer gaming. My work explores the composure of narrative between the body and technology across these contrasting media.

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Abstract

This paper explores the extension of the body through the technological architecture of interactive art installations. It incorporates and builds upon Don Ihde's postphenomenological philosophy of technology to argue how tools extend and limit the human body. This work expands upon Ihde's hypothesis to consider how technologically mediated bodies adapt to and co-create interactive experiences. Through a methodological framework of postphenomenology, this work uses Jeffrey Shaw's *The Legible City* (1988) and Dennis Del Favero's immersive artwork *Scenario* (2011) as case studies.

Through application of Ihde and an interview I conducted with Del Favero in 2014, this paper examines how the body is mediated, extended and reduced into his artwork through motion sensing technology. It also considers Ihde's concept of bodyhood as well as his specific ideas on human-technology relationships, which I argue can be broken down as a way to consider the composition of interactive art. Overall this paper considers the human body's negotiation with technology as an interface that co-composes experientiality where users become postphenomenologically extended in interactive environments.

Keywords: body, interactive art, postphenomenology, technology, Don Ihde, Dennis Del Favero, Jeffery Shaw.

Introduction

This paper explores extensions of the human body in interactive artwork environments, considered through the postphenomenological framework of Don Ihde's philosophy of technology. The paper builds upon Ihde's postphenomenology to consider how experience is formed in interactive spaces through the gestures and behaviours of bodily movement. The discussion explores how the body co-creates meaningful experiences by interfacing with a technology and how such experiences can reveal what a body is. This paper analyses Jeffrey Shaw's *The Legible City* (1988) and Dennis Del Favero's *Scenario* (2011), both of which are digital interactive and immersive artworks that use the body to structure and co-evolve a unique experience. Within each artwork, a user's body becomes virtually assimilated into the immersive world through the performance of their movement, causing the artwork to unfold in a particular way. Shaw's artwork extends the body through a stationary bicycle and a screen while *Scenario* utilises motion-sensing technology. Within this latter artwork emphasis is thus shifted from the screen to the moving body that is sensed by the technological architecture of the space, revealing a specific relationship between the body and space of the installation. The argument incorporates the author's interview with Del Favero to consider how a body, within an interactive space, becomes a postphenomenological performance.[1]

[1] An earlier version of this article appeared in the *International Journal of E-Politics* 8.2 (2017)

Postphenomenology

Adapted from Maurice Merleau-Ponty's concept of phenomenology, which explores the structure of human experience between the world and a sensing body, Don Ihde's postphenomenology considers relationships between bodies and technologies, and how technologies change bodily experiences. This is an area of research that can be traced back as early as 1877, when Ernst Kapp's *Grundlinien Einer Philosophie Der Tecknik* (*Philosophy of Technology*) (Kapp, 1877) was published. Within that work, Kapp traces the evolution of tools, which as he argues, developed from the appearance and functionality of the human body. As Kapp states, humans have limited capacities in terms of vision, muscular strength or storable information, and consequentially overcame such limitations through tools, which should be considered as replacements for human organs, rather than an extension or supplement (Brey, 2000). As Kapp argues, tools were intended to replace human organs, and as such, were designed on human organ functionality. 'The bent finger becomes a hook, the hollow of the hand a bowl' (Mitcham, 1994, p.24), while various technologies from swords, oars, rakes or spades evoke the positions of human arms, hands and fingers (Mitcham, 1994, p.24). As Pasi Väliaho writes, this is what Kapp refers to as *organ projections*, 'in which our corporeal apparatus, the inside, becomes exteriorized in technical objects' (Väliaho, 2010, p. 80). Following Kapp, Väliaho explains how 'the eye [is] an organ modulated through its projection in the *camera obscura*, whereas the nervous system is recreated through its projection in the electro-magnetic telegraph' (Väliaho, 2010, p. 80). These technological projections of the body are established from 'the Greek word *organon*, which means both a part of the body and a tool' (Väliaho, 2010, p. 80).

Many have closely followed this line of inquiry; Peter Sloterdijk argued that, 'humans have already been strongly shaped by technology' (Koops et al., 2013, p. 97). Marshall McLuhan famously declared in *Understanding Media: The Extensions of Man,* that, '[a]ny invention or technology is an extension or self-amputation of our physical bodies, and such extension also demands new ratios or new equilibriums among the other organs and extensions of the body'(McLuhan, 1964, p. 49). This is something that Ihde takes up, as he considers the extensions, limits and engagements that the human body experiences with and through technological devices.

As Ihde observes, both tools and bodies are everywhere, pervasive across our lifeworld. Throughout Ihde's *body* of work (that includes twenty-two books published between 1973-2016) the concept of the human body and its relationship with technology, has remained the focal point of the author's attention. Within his writings, Ihde considers how different technologies change, adapt, correct, limit and extend (in a McLuhanesque way) the functionality and ontology of human experience. From eyeglasses that correct and extend human vision to bicycles and automobiles that change our bodily sense of speed through transportation, Ihde deliberates upon how a technological apparatus restructures the corporeality and subjectivity of a human user in a postphenomenological way.

Ihde's postphenomenology is inspired by the phenomenological philosophy of Martin Heidegger and Merleau-Ponty, each of which posit a number of ideas about the human body and how its engagement with tools shape and modify experience. Within this paper I adopt Ihde's philosophy to consider how a body and technology interface with one another to construct an

interactive experience, utilising three of Ihde's main postphenomenological ideas. First I consider Ihde's concept of how a technology simultaneously extends and limits the corporeal body of the user. Second, I incorporate Ihde's specific human-technology relationships (which I describe below) as a way to breakdown and analyse the artwork into postphenomenological components. Third, I adopt Ihde's understanding as to what a body is.

How Does Technology Extend and Limit a User?

The influence of technology upon a user can be considered using Merleau-Ponty's well-known example of how a blind man's cane becomes an extension of touch, providing 'a parallel to sight' (Merleau-Ponty, 2002, p. 165). As Ihde asserts, such an extension is always balanced by a synchronous reduction. The cane user can feel the textured hardness of the pavement through the cane technology but cannot experience its greyness of colour (Ihde, 2002, p. 7). Neither can the user feel the sensation of the pavement's warmth or coldness through the cane. The tool therefore filters certain phenomenological sensations while enhancing others. This specific relationship between bodies and tools is something that Ihde considers in all human-technology relationships. The telephone for example is a common tool that simultaneously reduces human-to-human contact as it filters visual, haptic and olfactory sensations to just an abstract voice. But this reduction is balanced with a sense of amplification as the tool extends the voice across any geographical distance, allowing two people miles apart to conduct a fluent conversation in real time. According to Ihde (Ihde, 1990, p. 76), the concept of amplification/reduction is evident in all technological mediations, especially embodiment relationships, where a

technology will 'withdraw' into its user during use, allowing its user to act or see through the embodied device.

This is what Ihde and Andy Clark refer to as 'transparency' to consider how a technology becomes incorporated with an organic host, enabling new opportunities and methods of acting and thinking upon a world. As Clark highlights, the term transparency originates from Heidegger's hypothesis of 'transparent equipment' (Clark, 2010, p. 10), a term meaning to see through such equipment to a particular job at hand. A pen for example (as Clark notes) is not the focus of a writer's attention (Clark, 2004, p. 38) but is rather a biological dovetailing technology (Clark, 2004, p. 28) that the user acts through and is extended by as the pen withdraws into the bodily grip and movement of its user. However if the pen should run out of ink, an awareness of the technology is perceptibly bought to light. This is an example of Heidegger's concept of 'ready-to-hand' and 'present-at-hand' (Heidegger et al., 2010). Although influenced by Heidegger, Ihde finds these terms to be reductive for the multiple types of human-technology relationships that exist within the lifeworld. Consequentially, Ihde builds upon Heidegger's terms by offering four distinct human-technology relationships to update the Heideggerian terminology.

Ihde's Human-Body Relationships

Ihde's human-body relationships consist of: embodiment, hermeneutic, alterity and background relationships (see Figures 1-4). Embodiment (Fig. 1) denotes a perception or experience *through* a technology as a tool synthesises with a body in a particular way. The embodied connection is constituted through the cane, eyeglasses, writing utensils, or any other type of technology that is positioned between body and world, providing the body with some form of technological extension where we act or perceive through the artefact. In this paper, this includes a bicycle (*The Legible City*) and motion sensing environments (*Scenario*). A hermeneutical relationship (Fig. 2), in contrast to the embodiment relationship of seeing *through* a technology, is an experience *of* a technology. Hermeneutic therefore pertains to a technology that we read, such as screens, clocks, thermometers, maps, books, or any other tool that marks a separation between a body and a technology. An alterity relationship (Fig. 3), unlike the first two examples, is a case in which a technology (from the perspective of the human) seemingly takes on a life of its own. Artificial intelligence for instance, would be a contemporary example of this. A more traditional one might be (from a human perspective) the erratic path a spinning top toy might travel. Finally background relationships (Fig. 4) are the encounters that humans have with a technology in the periphery of their awareness.

Household lighting is a domestic instance of the 'fringe awareness' (Ihde, 1990, 109) that this technology has in relation to a human user. Other familiar examples are the very homes we live in, which condition the way residents move about space, as the home technology shelters its inhabitants from the natural elements of the world. As Ihde asserts, background relationships do 'not usually occupy focal attention but nevertheless [condition] the context' (Ihde, 1990, p. 111) for the human user. Within the interactive artworks that follow, I primarily use the first three of Ihde's human-technology relationships by considering them as separate.

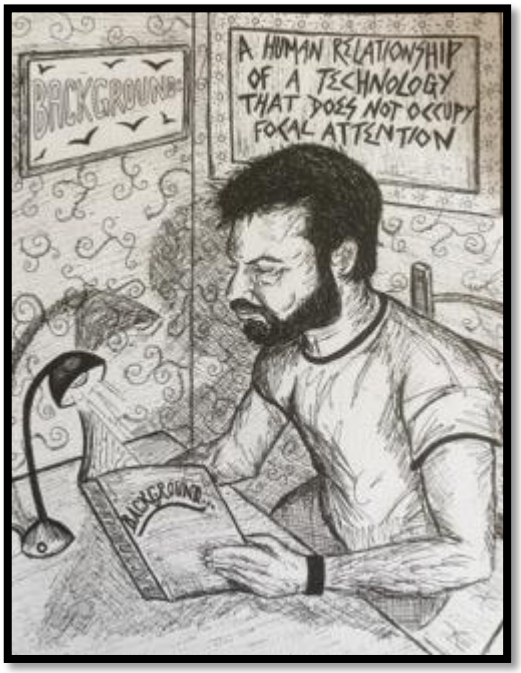

Figure 1: Embodiment Relation

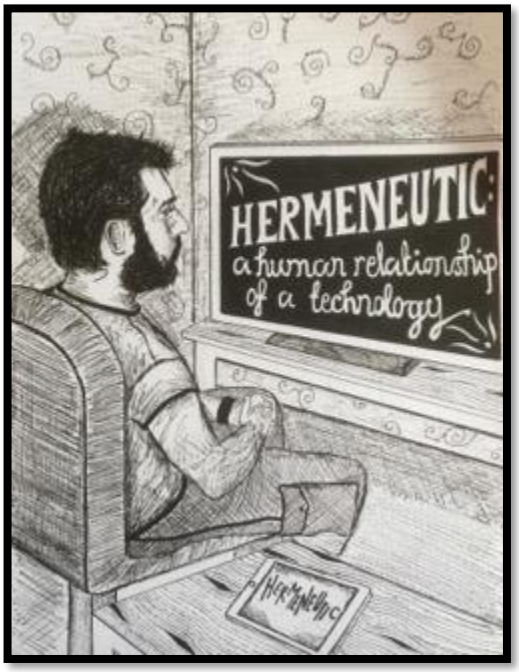

Figure 2: Hermeneutic Relation

Figure 3: Alterity Relation

Figure 4: Background Relation

What is a Body?

As stated above, this paper adopts Ihde's reasoning as to what a body is. According to Ihde, a body is something that is simultaneously solid and virtual, motile and cultural (Ihde, 2002, p. xi). His understanding of a body is divided between the breathing, sensing, perceptual and emotive being-in-the-world, or biological body that he calls *body one*. This is juxtaposed with *body two*, which denotes a culturally constructed representation of body; such as the messages we give out to others by the way we dress our bodies, comport ourselves and behave in society. By way of an example, Andrew Feenberg (writing about Ihde) notes how the blind man's cane 'does more than sense the world; it also reveals [to others] the man as blind' (Selinger, 2012, p. 191).

Using Ihde's human-technology relationships, I will consider next how a user's bodily engagement within an interactive art space composes the

experience. I am particularly concerned with Ihde's understanding of the embodiment relationship, of which the idea of simultaneously being extended and reduced (amplification/reduction) is a subset, in addition to his thinking of what a body is.

The non-neutrality of technology

In *Technology and the Lifeworld: From Garden to Earth*, Ihde asserts that technologies are not neutral (Ihde, 1990, p. 141). Instead they have the capacity to form 'technological intentions.' As Ihde states, 'technologies, by providing a framework for action, […] form intentionalities and inclinations within which use-patterns take dominant shape' (Ihde, 1990, p. 141). These intentionalities, as Peter-Paul Verbeek explains, 'play an active role in the relationship between humans and their world' (Verbeek, 2006). Verbeek goes on to note how 'these intentionalities are not fixed properties of artifacts' (Verbeek, 2006) but rather 'get shape within the relationship humans have with these artifacts' (Verbeek, 2006). In doing so, technologies change naked human-world relationships. Through this understanding, intentions, beliefs, desires and meanings obtain their shape by the technologies that occupy the in-between fields. To illustrate Ihde's preliminary concepts, he argues that naked unmediated relationships break down thus:

Human ⟶ World

In phenomenology the human can be thought of as an experiencer, and the world an environment that is experienced. The arrow stands for the direction of focus

or intentionality (in Edmund Husserl's sense of the term)[2] directed towards the world of something, which in this instance will be the world of interactive art. As Ihde explains,

> directed actional involvement with a world is not only one-directional, however, it is also reflexive or interactive. Phenomenology interprets intentionality as not only a distance from and involvement with world, but as *reflexive* with respect to world. This is to say […] what we eventually come to know of ourselves is strictly reciprocal with what we come to know of the world. Without world there would be no self; without self, no experience of the world (Ihde, 1983, p. 53).

In other words, the world reflects experience or knowledge back onto the human. The world of fire for example is hot and dangerous, the human learns from experience not to put a hand directly into it. For someone to burn him or herself with fire is to take that world of fire back into one's self-experiencing. A second arrow denotes this accordingly:

[2] Edmund Husserl's phenomenology, which Ihde draws from, uses the term intentionality to describe the phenomenological relationship between a human being and external object in the world. Whereas Husserl's intentionality is primarily cognitive, Ihde considers praxis through the intentionality of tools. This is what distinguishes Ihde's postphenomenology from Husserl's phenomenology.

Once we begin to consider the role that technologies play in mediating between humans and world, the relationship changes once more:

According to Ihde, building upon Heidegger's philosophy of technology, when the world of something is mediated through a technological means, the medium alters that which is experienced both outwardly of world and reflexively of self (Ihde, 1983, p. 53-55). It is through this arrangement that I will be considering the worlds of interactive artworks, particularly how the experience of these artworks are mediated through technological interfaces and how these interfaces reflexively organise the body of the user.

I turn now to Jeffrey Shaw's seminal installation *The Legible City*, one of the most well-known artworks in media art history, to consider how the organisation of body and technology interface with one another through Ihde's postphenomenology. This particular installation has been the focus of numerous academic books and articles from key figures such as Anne-Marie Duguet, Mark B.N. Hansen and Peter Weibel. In many of these writings, such as Hansen (2004), the fusing of virtual and physical spaces is analysed to consider the place of a body in digital culture. The artwork can also be considered through Ihde's analysis of embodiment relationships where amplification and reduction coexist. The artwork itself consists of a stationary bicycle that is placed before a large screen depicting a three-dimensional city. The buildings of this city (which are modeled on actual ground plans of real cities that include Amsterdam, Karlsruhe and Manhattan) are substituted with computer generated 3D letters that are

scaled in size to the building that each letter replaces. For a user, pedaling the stationary bicycle becomes the means to navigate through this virtual world, where the lettered architecture forms words and words form sentences. The bicycle mediates the user's experience of reading, which is predominantly cognitive, to a full-bodied experience of muscular reading. The reader-rider thus takes the bike into his or her 'experiencing', in which it withdraws into their corporeality as they act or experience *through* the bike, just as a caller experiences through the telephone.

Similar to the telephone example, *The Legible City* amplifies and reduces experience for its user through its technological interface. As stated earlier, amplification/reduction is a subset of Ihde's embodiment relationship. *The Legible City* involves a reduction of the interacting body to its interacting parts, as those things that are 'sensed' or used as input by the machine. A user's range of bodily motion is reduced to the action of cycling, which is the only means to animate the onscreen imagery. The user is thus corporeally reduced to pedaling and steering, condensing a range of possible bodily actions to just two. However this reduction is balanced by the amplified effect of traversing a digital world. This is similar to how the telephone reduces the speaking subject to just a voice, while amplifying and extending the subject to instantaneously reach a geographically remote recipient.

Ihde's concept of amplification/reduction is how he asserts that technology is non-neutral, as devices such as Shaw's bike filter and mediate experiences. This is not to say that Ihde is a technological determinist. As Carl Mitcham acknowledges, Ihde 'rejects a hard technological determinism' but admits how technologies are often 'latent telic *inclinations*' (Mitcham, 1994, p.

77). This 'predispose[s] human beings to develop certain life forms over others' (Mitcham, 1994, p. 77). In *The Legible City* this telic inclination is the user's requirement to operate a bicycle in order to experience the lettered world, thus revealing the bike as a non-neutral device that a user co-creates with to make meaning. This artwork's co-creation and meaning can be considered through Ihde's concept of the embodiment relationship. 'Embodiment relations display an essential magnification/reduction structure […] Embodiment relations simultaneously magnify or amplify and reduce or place aside what is experienced through them' (Ihde, 1990, p. 76). In *The Legible City,* the bike is the technology that the rider embodies and perceives through in order to co-create an experience. As with all embodiment relationships, transparency of a technology is never pure, as its presence makes itself known through the amplification/reduction structure. This is something that I came to appreciate at the ZKM Karlsruhe, when I first experienced *The Legible City*. I soon became aware that the physical effort of cycling in the real world was being virtually transcribed before me upon a screen that corresponded to the pedaling and steering actions that I performed. Gestures from my body were being amplified from the realm of the real into the world of the virtual. This is an example of what Anna Munster talks about when she describes how 'our bodies, analog compositions that they are, can […] transform themselves and become virtual selves' (Munster, 2006, p. 114). For Munster 'analog/digital relations are interdependent rather than separate' (Munster, 2006, p. 114) allowing a trajectory or flux to extend beyond our bounded bodies into a virtual other. This is a concept shared by many; N. Katherine Hayles' analysis on the posthuman has argued that informational patterns such as email are a way that 'problematizes

thinking of the body as a self-evident physicality' (Hayles, 1999, p. 27). Brian Rotman claims likewise, stating that email and other electronic communication channels change a user into a parallel form of self in which their electronic presence exists virtually beside their organic flesh body (Rotman, 2008). Ihde focuses upon the duality of the body in terms of *body one and body two* as a real and a virtual body in which the virtual (VR) body is an extension of the real life (RL) here-body.

Munster claims that virtualization is 'an expanding and contracting field of differentiation, an enfolding of matter by informational incorporeality' (Munster, 2006, p. 114). This is a concept that overlaps with Ihde's and can be applied to *The Legible City*, as the installation simultaneously expands and contracts the rider's corporeal techniques and bodily awareness amid an aura of informational code. As the rider pedals the bike, muscular effort is churned into informational code, with its effect presented before him or her upon the screen. As I discovered during my experience an increase in leg speed propels the visual rapidity of letters and a physical decrease slows them down. But I also found that, as much as the cyclist is projected into the virtual world and in a sense extended by the technology of the interface, he or she is also inhibited by it. As previously explained, my bodily movement was constrained *only* to pedaling and steering, decreasing a range of possible bodily actions to just these two. This experience of amplification/reduction was also transcribed into the lettered world before me. Letters took on amplified significance in this artwork as alphabetical symbols, map markings, buildings and images. The method of reading became amplified in this artwork, expanded from the cognitive practice that is bounded by the rules of scanning a page from left to right, top to bottom.

Instead I could travel in any direction, co-creating new meanings as I went, or even traveling through letters themselves. In doing so, however, the sentences became more abstract and the meaning reduced. It also became evident that in order to read the words within this virtual world, I had to slow my pedaling down so that I could take the words in, thus amplifying my cognitive understanding through corporeal reduction.

Through this understanding of the artwork, my body underwent several experiences at once. Amplification and reduction occurred within this network of discursive practice in the form of an embodiment relationship. Additionally I experienced a distinctly separate experience of reading the screen through a hermeneutical relationship. As I studied the digital letters, cognitively arranging them into some order or meaning, a hermeneutical relationship influenced my bodily action. This is where I tried to steer the bike to follow a particular sentence. Thus a hermeneutic relationship governed embodiment, while simultaneously, my embodiment relationship generated the hermeneutic letters. Both of these relationships plus alterity come together in Del Favero's *Scenario*, where postphenomenological performance co-creates a different type of experience.

The co-authoring interface of *Scenario*

Dennis Del Favero's *Scenario* is a digital interactive artwork that enables its users to interface with imagery in an immersive story setting. Originally *Scenario* was intended as a way to test the formation of meaningful relationships between humans and technology by generating 'innovative research in the field of machine learning and artificial intelligence (Favero and Barker, 2010). Within the artwork, Ihde's embodiment, hermeneutic and alterity relationships are identifiable as users become transparently immersed and extended into a digital event through the artwork's motion-sensing technology. Created at the Centre for Interactive Cinema Research (iCinema) at the University of New South Wales, this artwork calls upon the participation of five active users to simultaneously enact physical performance. This involves walking around the projection space and following screen characters in order to structure and mobilise the story. The artwork takes place in a 360-degree cinematic space called an AVIE (*Advanced Visualization and Interaction Environment*). This auditorium is a 3D projection environment containing a cylindrical screen, ten metres across and four metres high. It is a mixed reality environment, a meeting place where five corporeal users and ten digital screen characters converge. Six pairs of stereoscopic projectors within the AVIE give the illusion that these characters inhabit the same space as the users. This is strengthened by the use of 3D glasses and a custom-built audio system.

As noted above, the origins of *Scenario* was to test out the formation of meaningful relationships between humans and technology. The result of this transaction between a human user and digital character in *Scenario* is what Del Favero refers to as a *co-evolutionary narrative*. In a paper by Neil Brown, Barker

and Del Favero, this term is defined as 'a narrative that *evolves* or *emerges* based on a relationship formed between a human user and a digital agent able to respond autonomously' (Brown et al., 2011).

When users first enter the space, they are met with the slow notes of a piano composition followed by the sound of an eerie voice. The voice welcomes the participants to come forth, and as they do, their movement triggers the imagery of large floating disembodied eyes, portrayed upon the circular panoramic screen. The voice instructs the users to choose an eye, which the participants do by moving towards one (if the user does not comply an eye will choose them). Following this, a light-coloured digital humanoid figure mounts the top of each eye and leads the user through a 3D labyrinth of atmospheric locales. This journey begins with the sound and imagery of falling rain as participants are led through shadowy passageways that appear to move as if they (the user) are traversing the space. Occasionally the humanoid *guide* stops in their tracks to pick something up, showing it to their human followers. These exhibited objects are smooth bloodless body parts that appear to have once belonged to another humanoid character before something or someone fragmented it. Here the users are supposed to encounter a sense of mystery, atrocity and criminality. This is assisted by the dark ambient tones of these strange backdrops, designed to coerce a sense of uncanniness and foreboding in each participant's body. This is heightened, as Del Favero and Barker (2010) explain, by the way users experience 'the ambiguity of the sensory objects that surround [them]' juxtaposed with sensations that are 'relatively familiar as [they] can see [their] own physical bodies and the bodies of the other users'.

Within the third part of the artwork, the users are transported to a clearing in a forest. Scattered about this bucolic setting are more body parts, and off to one side a shadow of a large human figure is portrayed. The users learn through the voiceover that this silhouette and the limbs littered in front of it belong to a colossal baby. The five participants are then assigned the task of reassembling the child back to wholeness. The means to perform this task involves each light-coloured character developing into an avatar and mirroring each of the participant's movements and gestures. The avatars beckon to the users, asking them to help. The users must then move around the space, locating the body parts before returning them to the figure of the child through this process of avatarial mimicry.

This restorative task is made difficult by dark shadow characters, programmed with artificial intelligence to autonomously block the user's light avatars and impede the child from repair. This process transpires through infrared cameras within the AVIE that senses movement and feeds this data into a software programme called iTRACK (Favero and Barker, 2010). iTRACK works in the *background* of the artwork by communicating each user's body motion data with the digital characters, 'which then reason[s] about an appropriate course of action to take' (Favero and Barker, 2010). The dark characters are programmed to hinder movement by obstructing the light avatar's path to the child. Making approximately five thousand decisions a second (Del Favero interview, 2014), the dark characters independently learn and respond to the user's movements in order to debilitate their corporeal efforts. If dark succeeds, the space collapses into blackness followed by the imagery of raining ash to symbolise the burning out of the child's life. If on the other hand the users

succeed by outsmarting the machine, the child comes to life and walks through the surrounding forest as snow begins to fall, a symbolisation of renewal (Barker, 2012a).

As Edward Scheer has identified in his analysis of *Scenario,* the broken child is pivotal to the artwork through its symbolic evocation of Jacque Lacan's concept of the fragmented body (Scheer and Sewell, 2011). In Lacanian psychoanalysis the development of a child's ego in the mirror stage, in which the child perceives itself as a whole for the first time and begins to forge an identity, is fuelled by the desire to escape its previous and vulnerable existence as an assemblage of fragmented limbs. As Scheer identifies by way of Malcolm Bowie's writings on Lacan, 'the body once seemed dismembered, all over the place, and the anxiety associated with this memory fuels the individual's desire to be the possessor and the resident of a secure bodily 'I'' (Bowie, 1993, p. 26). The restoration of the infant's body is therefore more than just a game but is rather a story of what it means to be a body. In an interview I conducted with Del Favero he elaborated on this:

> a baby goes through a process of having to put itself together. To become a person you have to be able to articulate not only your intention to move your arm but actually recognise that your arm is attached to your body. To do that requires an imaginative function. You are human. You are putting a body together in the virtual world [the baby] but you are also putting *your* body together with the help of the virtual characters. Your behaviour in the space changes what happens and it [the space] changes you (Del Favero interview, 2014).

Del Favero's description is indicative of Hansen's portrayal of body-brain activity in VR environments in the sense that there is a dynamic coupling between body and image, where the body transforms the medium as the medium transforms the body (Hansen, 2004, p. 186). Del Favero's exposition is also symptomatic of body ecology in terms of how parts connect to and relate to one another, and how in Brian Massumi's sense of affect, bodily movement always fills an incorporeal space of potentiality. Massumi (2002) describes affect as a virtual co-presence of potentiality that is integrated into humans as bodily beings. He asserts that, 'the body is as immediately abstract as it is concrete; its activity and expressivity extend, as on their underside, into an incorporeal, yet perfectly real, dimension of pressing potential' (Massumi, 2002, p. 31). In other words, affect is a virtual threshold of potentiality that a physical body converges with. Affect can therefore be considered a virtual, incorporeal space for potential action and incorporeal possibility, such as the multitude of actions a human body is capable of. As Massumi states,

> [w]hat is being termed affect […] is precisely this two-sidedness, the simultaneous participation of the virtual in the actual and the actual in the virtual, as one arises from and returns to the other. Affect is this two-sidedness *as seen from the side of the actual thing*. […] Affects are *virtual synesthetic perspectives* anchored in (functionally limited by) the actually existing, particular things that embody them. The autonomy of affect is its participation in the virtual. […] Affect is autonomous to the degree to which it escapes confinement in the particular body

> whose vitality, or potential for interaction, it is (Massumi, 2002, p. 35).

Consequently, a body is put together with every move it makes in a process of continuous becoming. This interaction is what defines the co-evolutionary narrative of *Scenario*, which can be considered a conversation between human and computer. As Andrew Stern states, '[b]y making the computer *listen* to the audience (the first half of reactivity), *think* about what it heard (autonomy), and then speak its thoughts back to the audience (the second half of reactivity), the artwork can have a dialogue, a *conversation* with the audience' (Stern, 2001).

This conversation of *Scenario* between the digital characters and the human users relies upon embodiment, hermeneutic and alterity relationships through the way that the iTRACK system detects motion, translates it into digital data and responds accordingly. By taking Ihde's technology relationships into consideration, this interaction breaks down even further. In terms of an amplification/reduction structure, *Scenario* sets out a specific relationship for the user, whereupon his or her corporeality is detected and reduced into code,[3] then instantly projected into the circular screen, amplifying the user's body into a parallel form of self. This parallel body becomes the means to experience a parallel narrative of the child who will either live or die based upon how users perform, once tethered (in a virtual capacity) to their avatars.

In addition to embodiment (through motion sensing) and the hermeneutic relationship of reading the screen, the postphenomenological

[3] Other bodily senses are also reduced within this experience, such as smell, touch and a different appreciation of time. Barker (2012b) discusses this concept of temporality in interactive art in more detail.

experience of *Scenario* also incorporates an alterity and background relationship. Aside from the background of the AVIE which conditions the user's space and how they move in it, along with the background of the iTRACK system as it communicates body motion with the programming of the digital characters, the experience of the artwork is also one of alterity, that is of sharing a space with something anterior to the self, or trying to come to terms in a shared space with the other. Ihde describes alterity as a relationship in which the human user encounters a form of otherness, which is seemingly independent and autonomous. This is the difference, as Ihde argues, between driving a car and riding a spirited horse. The first responds to your commands and is embodied while the latter has a life of its own that is unpredictable. Both modes of transport put the driver and rider in an embodiment relationship where they experience the road *through* the car or horse. But whereas a car malfunction indicates a mechanical lack of response in the vehicle, a lack of response in a spirited horse exceeds malfunction as disobedience (Ihde, 1990, p. 99). Computer games are another example of alterity, in which the player is pitted against the autonomy of a virtual character or scenario that they must outperform. Through alterity play there is, as Ihde states, 'the sense of *interacting with* something other than me, the technological *competitor.* In competition there is a kind of dialogue or exchange. It is the quasi-animation, the quasi-otherness of the technology that fascinates and challenges. I must beat the machine or it will beat me' (Ihde, 1990, p. 100-01).

This is the form that *Scenario* takes as the dark characters achieve sophisticated quasi-independence by responding to each of the player's movements. The dark characters interpret each human's gestures and

counteract them in order to prevent the baby being assembled. This alterity provides each participant with physical and emotive intentionality through a physical performance of conscious and unconscious motivation, which Del Favero explained in our interview.

> We started with the notion of trying to find a way to allow users to interact with intelligent characters. How do we provide viewers with sufficient motivation or affect/identification to actually want to participate? […] We were interested in how viewers are motivated inside this technical space [*Scenario*] and the connection between your unconscious motivations and your physical behaviour, because that's what this technology is trying to grapple with. It's trying to engage with your motivations and your motivations are both things that you are aware of but by and large they're things you're not aware of. They play out on the peripheral of your unconsciousness (Del Favero interview, 2014).

The desire to save the child during the restorative process serves as a reminder of the performing role of the caring parent or nurturing adult, which as Del Favero commented, is an intrinsically primal and human response to a child in distress (Del Favero interview, 2014). If a user goes above and beyond to save this child from anguish, or alternatively is indifferent to the whole affair, these conscious or unconscious feelings are presented physically within the space, revealed through the user's bodily endeavours.

Later in our interview, Del Favero discussed how the idea of concealed

desire and the conflation of unconsciousness buried within the conscious subject is thematised within the structure of this work, which is also inspired by the notorious Josef Fritzl case of 2008. As Del Favero explains,

> we came across the story of Fritzl early on because we wanted to deal with human desire or what motivates people – more often than not it is something they're not aware of. We liked the idea in the Fritzl story of the house, which was two houses in one: the underground house and the above ground house, the house of crime and the house of a family. The (Fritzl) house was a machine, another technology. And if you looked at this architecture, this machine from one perspective all you could see was a normal family life but then if you changed perspective it became something else, a bit like an electron being either a wave or a particle. It depends on how you interact with that architecture, that's how the story evolved (Del Favero interview, 2014).

Here Del Favero indicates the notion of how corporeality affects content and vice versa. This idea is even more pronounced when Del Favero and Barker highlight how the imagery of *Scenario* gets under the skin of the user, which as they state, can be clearly seen.

> We have observed that users tend to move in *Scenario* in a much slower and deliberate manner than in real world interactions. This may be [… that] the users' movements are affected as they

> attempt to regulate physical movements to the movements of the characters on the screen, as they follow the users around the space. [Also] because the users are innately aware that they are being closely watched and that all of their movements are being given significance, they may tend to reason more thoroughly about the consequences of their otherwise 'natural' movements, which produces these slow, deliberate movements, largely designed to 'test' their effect on the digital characters (Del Favero interview, 2014).

The sensing technology of the interface has real observable effects on the user's movement. Users move more slowly around the space as the digital pace of the machine interrupts and conducts the flow of natural bodily rhythm. The users' movements are thus reduced corporeally while simultaneously amplified and extended into the avatarial onscreen bodies. This is the very essence of Ihde's amplification/reduction concept that is revealed through the user's postphenomenological engagement with the technology. Through Ihde's postphenomenology a user becomes extended and embodied into the artwork of *Scenario*, a notion that is reaffirmed by Del Favero who explained to me how the artwork utilises four '*E*'s in the form of: *expanse, embedment, embodiment and enactment.* The *embodiment* occurs as the human's whole body interfaces with the environment of the AVIE, allowing them to become *embedded* as code in the digital architecture. The user is thus *expanded*/*extended* into this codified space in which their presence, *embedded* in the narrative flow, becomes a fertile ground to *enact* meaning-making as co-authors and *embody* an interactive narrative. Each user simultaneously experiences reading his or her body upon

the screen as it affects actions and the direction of the story, along with the experience of *being* a body within this immersive space, interlocking Ihde's human-technology relationships of alterity, hermeneutical and embodiment into one. Through an embodiment relationship, a user interfaces with the motion-sensing technology to become extended into the artwork, which he or she hermeneutically reads while trying to best the alterity of the AI adversaries. Following Ihde, the result of this embodiment and extension is simultaneously balanced with reduction, which keeps a user's body grounded in the actual world.

Conclusion

In this paper I have demonstrated how Ihde's human-technology relationships can be employed to consider how a user's body is technologically extended and reduced and how in turn this relationship (in a non-neutral capacity) affects the content of an interactive art installation. By adopting a postphenomenological methodology, I have discussed interactive artworks through Ihde's human-technology relationships, beginning *with The Legible City* that makes use of an embodiment relationship through a bike and a hermeneutical relationship of reading a screen. I then considered *Scenario*, which intensifies this structure with an added portion of AI alterity. Ihde's postphenomenological relationships, as I have shown, can be mixed in different ways to afford users with a new understanding of distinct experiences of meaning-making.

As Ihde's relationships increase, so too does the complexity of the interface and in turn the possibilities of the experience. *The Legible City*, which is

an abstract experiment with narrative, is distinct from *Scenario*, which, with three relationships, gives users the power to unfold what Brown, Barker and Del Favero term, *'a co-evolutionary narrative'*. *Scenario*, as the authors assert, is a narrative that evolves through a user's embodied interactions, which, in a postphenomenological sense, become regulated by alterity and hermeneutical cues.

What this suggests is that the non-neutrality of technology can also be used as a way to devise or study the content of interactive structures through the changeability and arrangement of these human-technology relationships. Furthermore, embodiment relationships (the main ingredient present within both of these artworks) can be subdivided even further into the amplification/reduction structure. Movement and gesture in the third act of *Scenario* works by users being amplified into the imagery through an avatar that extends movement through motion sensors. At the exact moment of these motion sensors extending corporeality, they also reduce it, represented through the adversaries of the dark sentinel characters that attempt to block a user's mobility and gesticulation. Ihde's concept of amplification/reduction is therefore revealed in the technology of the artwork. The structure between dark and light characters is again emblematic of the user's body within the interface, as movement is both physically reduced in terms of natural rhythm (observed by Barker and Del Favero) and reduced to code in order for users to be amplified as a parallel form of self, present both inside and outside of the screen as a performer and spectator of the content.

In this sense content mirrors form, particularly when we consider how the notion of amplification/reduction is pivotal to an interactive structure,

because it helps to establish a corporeal/incorporeal or actual/virtual dichotomy that each of these works are predicated upon. Solid bodies and the incorporeal space of potentiality that they slide into are what these artwork interfaces set up, thus enabling the content to become interactive, giving the user the ability to choose a particular path to cycle through in *The Legible City*, or to rescue or neglect the child in *Scenario*, which in turn leads to different outcomes.

Ihde's postphenomenological framework thus enables us to see how tools extend and reduce the human body, as apparatuses get under our skin, and affect both the user and an event through specific human-technology relationships. Through the interactivity of these relationships, particularly the embodiment relationship, users become simultaneously extended and reduced in a postphenomenological way, a way that temporarily changes a user through a tool to enact a postphenomenological performance.

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