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Postphenomenological Performance in Interactive Narrative

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ABSTRACT

This paper addresses the performance of bodies through a postphenomenological framework developed by Don Ihde. Through his theory, I will argue how performance is central to the stories of two recent interactive artworks: Dennis Del Favero's Scenario (2011) and Blast Theory's A Machine to See With (2010). Both artworks are distinct interactive narratives that utilize the human body in different ways. In each experience, it is essential for the user's body to perform with a technology in order to move the story through a sequence of events. In doing so the user as a performing body co-authors the story by interfacing with a technology in a specific way. My readings of the artworks are based on interviews that I have conducted with each of the artists. I pair these accounts with Ihdeian analysis to explain how different types of technologies and different uses of a technology break down into different human-technology relationships. I use these relationships to show how the story in each artwork is mobilized through the body of the participant as a postphenomenological performance.

KEYWORDS

Art, Body, Don Ihde, Interactive, Phenomenology, Postphenomenology

INTRODUCTION

This paper explores the extensions of the human body in interactive artwork environments, which is considered through the postphenomenological framework of Don Ihde's philosophy of technology. Through this framework this paper builds upon Ihde's postphenomenology to consider how narrative is formed in interactive spaces through the gestures and behaviours of bodily movement. This work discusses how the body co-creates meaningful experiences by interfacing with a technology and how such experientially reveals what a body is. This paper analyses Dennis Del Favero's *Scenario* (2011), a digital interactive and immersive narrative artwork that uses the body to structure and co-create a fictional experience. Within this work a user's body becomes virtually wired into the immersive world through the performance of their movement. Emphasis within this cinematic experience 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 narrative, body and space of the installation. Using and building upon Ihde's framework this paper also incorporates original interview material with Del Favero to consider how a body, within an interactive space, becomes a postphenomenological performance.

Postphenomenology

Don Ihde's postphenomenology considers the relationship between bodies and technologies. 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 to 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 has argued that, 'humans have already been strongly shaped by technology' (Koops et al., 2013, p. 97), while Marshall McLuhan has 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 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 Maurice Merleau-Ponty, each of which posit a number of phenomenological 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, narrative experience. I then build upon these ideas, with my own original contribution of using Ihde's hypothesis to consider how elements of story are formed between a user's body and a technological environment, transcending an audience spectator to a postphenomenological performer.

This paper discusses an interactive art installation through an interview I have conducted with the artist, while 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.

With this in mind, I return to point one: how does a technology both extend and limit a user? This can be considered using Merleau-Ponty's well-known example of how a blind man's cane becomes an extension of touch, which provides '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, the concept of amplification/reduction is evident in all technological mediations, especially embodiment relations, 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 Heidegger's concept of 'ready-to-hand' and 'present-at-hand'. 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.

This brings me to the second postphenomenological method I adopt within this paper: the incorporation of Ihde's divergent body-technology relationships. Ihde's four main human-technology relationships are: embodiment, hermeneutic, alterity and background. As a way to understand these relationships, beyond the description that follows, illustrations for each of these terms are presented in Figure 1, Figure 2, Figure 3, and Figure 4. Embodiment (Figure 1) denotes a perception or experience through a technology as a tool synthesises with a body in a particular way. The cane example, 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, is what constitutes the embodiment relation. In this paper this includes artworks that use a bicycle (*The Legible City,* 1988) and motion sensing environments (*Scenario*).

A hermeneutical relation (Figure 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 relation (Figure 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 relations (Figure 4) are the encounters that humans have with a technology in the peripheral of their awareness. Household lighting for example is a domestic instance of the 'fringe awareness' (Ihde, 1990, p. 109) that this technology has in relation to a human user. Other familiar examples of this background relation are the

Figure 1. Embodiment relation

Figure 2. Hermeneutic relation
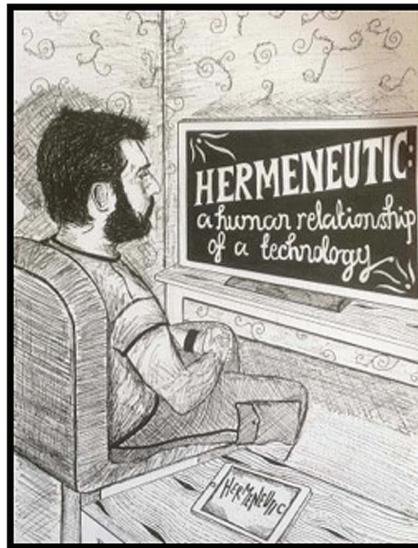
very homes we live in, which conditions the way residents move about space, as the home technology shelters its inhabitants from the natural elements of the world. As Ihde asserts background relations do 'not usually occupy focal attention but nevertheless [condition] the context' (Ihde, 1990, p. 111) 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 components, which when mixed in different ways, afford new types of narrative experiencing.

Lastly, 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. His understanding of a body bifurcates between the breathing, sensing perceptual and emotive being-in-the-world, or

Figure 3. Alterity relation

Figure 4. Background relation
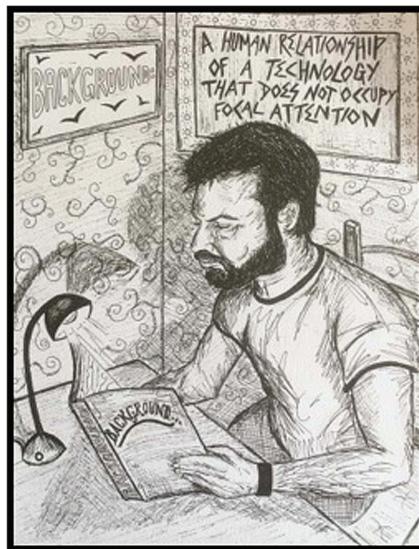
biological body that he calls body one. This is juxtaposed with body two, which denotes a culturally constructed representation of body; such as the messages we give out to others by the way we dress our bodies, comport ourselves and behave in society. By way of an example, Andrew Feenberg (writing about 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, particularly his understanding of the embodiment relation to which the idea of simultaneously being extended and reduced (amplification/reduction) is a subset of, in addition to his thinking of what a body is, I consider how a user's bodily engagement

within an interactive art space composes a fictional experience. I surmise that interactive narrative, in comparison with a traditional understanding of narrative, where only one possible outcome can achieve fruition, is an amplified version of narrative insomuch that different story branches are available to the user depending on their engagement with a technology. This in turn reduces the body to behave and move in a particular way, which is (non-neutrally) inclined by the technology.

Furthermore, I discuss how interactive art installations work through different measures of Ihde's human-technology relationships. This enquiry is primarily based on Dennis Del Favero's *Scenario*, which incorporates embodiment, hermeneutic and alterity relations through a digitally immersive space that uses motion sensing with artificial intelligence. Before this I introduce the idea of embodiment relationships through Jeffrey Shaw's renowned installation, *The Legible City* (1988).

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) and instead have the capacity to form 'technological intentions.' As Ihde states, 'technologies, by providing a framework for action, … form intentionalities and inclinations within which use-pattern take dominant shape' (Ihde, 1990, p. 141). These intentionalities, as Peter-Paul Verbeek highlights, '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:

$$\text{Human} \longrightarrow \text{World}$$

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) 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 their hand directly into it. For someone to burn his or her self with fire is to take that world of fire back into one's self-experiencing. A second arrow denotes this accordingly:

$$\text{Human} \rightleftarrows \text{World}$$

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

$$\text{Human} \rightleftarrows \text{Technology} \rightleftarrows \text{World}$$

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. It is through this arrangement that I will be considering the worlds of interactive narrative artworks, particularly how story is mediated through technological interfaces and how these interfaces reflexively organise the body of the user. As a way to consider how the organisation of body and technology interface with one another through Ihde's postphenomenology, I briefly turn to Jeffrey Shaw's canonical installation *The Legible City*, one of the most well know artworks in media art history.

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 Weibel's 'From Expanded Cinema to Virtual Reality' or Hansen's *New Philosophy for New Media*, the work is used to analyse the fusing of virtual and physical space and to consider the place of the body in digital culture. The artwork can also be considered through Ihde's analysis of embodiment relations where amplification and reduction coexists. 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. A user pedaling the stationary bicycle becomes the means to navigate through this virtual world, where the lettered architecture form words and words form sentences.

As Hansen writes, this work 'specifically invest[s] the body as the site of a bodily, but also an 'intellectual,' event' (Hansen, 2004, p. 60). In contrast to earlier works of Shaw's where images are projected onto bodies, Hansen notes how *The Legible City* differs:

If the corporeal and intellectual processing it performs still functions to "give body" to the image, it does so not by lending its physical, extended volume as a three-dimensional screen for the image but rather by creating an image-event out of its own embodied processing of information. (Hansen, 2004, p. 60)

To put this differently, Hansen highlights the hybridity or co-creativity between body and image that Shaw's installation brings to light. In his work this is what Hansen terms as 'body-brain' activity; a concept he develops to replace Gilles Deleuze's time-image or movement-image of cinema. Deleuze's movement-image pertains to the distant senses of sight and sound fusing with the cinematic image to create meaning. Hansen instead champions the idea of replacing Deleuze's model with the digital image, which 'should be seen as the source for any technical frame designed to make information perceivable by the body'(Hansen, 2004, p. xxii). Following Hansen, this is what *The Legible City* puts forward, a digital interactive artwork in which meaning is made between the technology of the media artwork and the body of the user. 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 their 'experiencing' in which it withdraws into their corporeality as they act or experience through the bike, just as the caller experiences through the phone.

Similar to the telephone example, *The Legible City* and other interactive artworks like it (where a technology is embodied) amplifies and reduces experience for its user through its technological interface. As stated, amplification/reduction is a subset of Ihde's embodiment relation, which can be seen in Shaw's artwork. *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. In the artwork, a user's range of bodily motion is reduced only to the action of cycling, which is the only means the user has in animating 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 phone reduces the

speaking subject to just a voice, while amplifying and extending the subject to instantaneously reach a geographically remote recipient.

Furthermore, in a non-neutral capacity, these structures of amplification/reduction reverberate within the world of interactive narrative content. Interactive narrative is an amplified version of narrative. Whereas traditional narrative involves one story path and outcome, an interactive narrative often involves multiple paths and multiple possibilities. Users possess agency through choices and interactions such as which path or character to follow and what choices to make. For this amplification to work a process of reduction must also balance the equation, otherwise the narrative, due to limitless possibilities, will cease to exist in any meaningful way. Therefore, interactive narrative, as I will later demonstrate through *Scenario*, reduces choices (as well as bodily action) as this new technically defined body makes narrative cohesion possible. Without reducing the interacting body in this respect, the interactive narrative is unable to retain its narrative structure. Amplified choices in interactive art are therefore always balanced with a process of reduction that filters surplus story bits out based on a user's amplified and corporeally reduced interactions, where content mirrors form.

Ihde's concept of amplification/reduction is how he asserts that technology is non-neutral, as devices such as Shaw's bike, filters and mediates experiences. This is not to say that Ihde is a technological determinist, he, as Carl Mitcham acknowledges, 'rejects a hard technological determinism' (Mitcham, 1994, p. 77) but does admit how technologies are often 'latent telic inclinations' (Mitcham, 1994, p. 77). This as Mitcham notes, '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-emerges with to create meaning. This artwork's co-emergence and meaning is primarily accessed through Ihde's concept of embodiment relations.

'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 relations, 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*. What I soon became aware of was 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). And Ihde focuses upon the duality of the body in terms of body one and body two as a real and 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). This is a concept that overlaps with Ihde's and can be applied to *The Legible City*, which is an installation that 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 them 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, they are also inhibited by it. As previously stated, 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 in regards to the bike 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 also 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 travel 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 relation. Additionally, I also experienced at the same time, 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 relation 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 fictional 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. Within the artwork Ihde's embodiment, hermeneutic and alterity relationships are identifiable as users become transparently immersed and extended into a narrative through the artwork's motion-sensing technology. Created at iCinema, (Centre for Interactive Cinema Research established in 2002 at the University of New South Wales) this narrative artwork calls upon the participation of five active users to simultaneously enact physical performance. This involves walking around the projection space and following on 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 with a diameter of 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 donning of 3D glasses and a custom built audio system.

As Del Favero and Timothy Barker have highlighted, the origins of *Scenario* was to test out the formation of meaningful relationships between humans and technology by generating 'innovative research in the field of machine learning and artificial intelligence (AI), along with iCinema's ongoing research into immersive and interactive environments' (Favero & Barker, 2010). The result of this transaction between a human user and digital character in *Scenario* is what they term a co-evolutionary narrative. In a separate 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, Barker, & Del Favero, 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 is attained by the participants moving toward 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 write, by the way users experience 'the ambiguity of the sensory objects that surround [them]' (Favero & Barker, 2010) juxtaposed with sensations that are 'relatively familiar as [they] can see [their] own physical bodies and the bodies of the other users' (Favero & Barker, 2010).

Within the third 'act' of the artwork, the users are transported to an open 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 & 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 & 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 (DD interview 06/14), 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, 2012).

As Edward Scheer has identified in his analysis of *Scenario,* the broken child is pivotal to the artwork through its symbolic evocation to Jacque Lacan's concept of the fragmented body (Scheer & Sewell, 2011, p. 68). 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 their 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). 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, stating:

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. (DD interview, 06/14)

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. In *Parables for the Virtual: Movement, Affect, Sensation*, Massumi describes affect as a virtual co-presence of potentiality that is integrated into humans as bodily beings. Massumi 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 threshold in which the real proprioceptive body converges with. Affect can therefore be considered a virtual, incorporeal space for potential action and changeability. 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)

Consequentially, a body is put together with every move it makes in a process of continuous becoming. This is something that Del Favero and Barker delve further into when they highlight how *Scenario's* model for action is structured by a theory of assemblage that is developed by Deleuze and broadened by Manuel DeLanda's *A New Philosophy of Society*. Within this work, Barker and Del Favero highlight that DeLanda's assemblages are a way to consider a collection of wholes, such as the whole of an atom, organ, human body, ecosystem or society. Regardless of the content, an assemblage consists of all the parts that make up this whole:

However, it is always more than a mere aggregate of these parts. For instance, it is not that a human body is constituted simply by an aggregate of organs. Rather, the human body is constituted by the organs' capacity to act and to work with one another. Similarly, a society is not made up merely by a sum of people. What makes the society an assemblage is the capacity that each individual has to interrelate within the collective. In short, an assemblage is always constituted by the capacity for interaction between its parts. (Favero & Barker, 2010)

In other words, it is not just the parts that make up an assemblage but also how they act, or how they could act, through the potentiality of their interaction to one another. 'It is the affect of the parts – as their capacity to act on one another – that matters, not their materiality, individual power or visual appearance' (Favero & Barker, 2010).

DeLanda considers a human conversation as an assemblage for it is made up of specific rules and organisational states that condition the exchange of information. People, language (sub-divided into words and tone), the scenario as to why they are conversing, (family, friends or colleagues or any other association) and the unforeseen potentiality of what might be said, or how something might be interpreted, are all integral parts of such a discourse assemblage. In a similar capacity, the co-evolution narrative of *Scenario* is also something that 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 dialog, a conversation with the audience' (Stern, 2001).

This conversation of *Scenario* between the digital characters and the human users relies upon an embodied assemblage through the way that the iTRACK system detects motion, translates it into digital data and responds accordingly. Added to the role the human user plays during the artwork, the design of the interface by the artist and technical procedures of a computer programmer are all integral parts of the assemblage. By taking Ihde's technology relationships into consideration, this assemblage breaks down even further. In terms of an amplification/reduction structure, *Scenario* sets out a specific relationship for the user, whereupon their corporeality is detected and reduced into code, 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 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 relation 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 of course are a more modern and everyday example of alterity, in which the player is pitted against the autonomy of a virtual character or scenario that they must best. 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, pp. 100-101).

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 the 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. (DD interview, 06/14)

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 ((DD interview, 06/14)). 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 could 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. (DD interview, 06/14)

Del Favero describes the house as a machine, before him Deleuze and Felix Guattari use the concept of a machine to reformulate the notion of desire. The desiring machine, as they call it, relates to a 'direct link between desire and production' (Young, Genosko, & Watson, 2013, p. 85). The desiring machine, according to Deleuze and Guattari, is the way in which the unconscious produces desire in a manufactured way. This is the desire to connect to other systems or machines, or the way in which 'components couple and connect with one another' (Young et al., 2013, p. 85), such as the breast machine of the mother, the education machine of school or the communication machine of language. Deleuze and Guattari, in a way that resonates with Del Favero's work, offer an alternate interpretation of desire from Freudian psychoanalysis. For Freud desire is established from lack. For Deleuze and Guattari, as for Del Favero, desire can be thought of as a productive force that is machined. A machine is the flow of this productive force, consistently interrupted by other machines. As Deleuze and Guattari state: '[a] machine may be defined as a system of interruptions or breaks (*coupures*). … Every machine, in the first place, is related to a continual material flow (*hyle*) that it cuts into' (Deleuze, Guattari, & Hurley, 2004).

The underground prison of the Fritzl home is a machine that interrupts the domestically normal looking flow of family life in the above ground house and vice versa. A machine is actualised within *Scenario* so that activity interrupts spectatorship, movement interrupts the flow of story, and movement from user to character and reciprocally from character to user interrupt and affect one another, which as Del Favero and Barker 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. (Favero & Barker, 2010)

he 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.

Scenario as Del Favero explained to me is an experience of performance that utilises four 'E's: 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. The users simultaneously experience reading their 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 alterity, hermeneutical and embodiment relations into one.

CONCLUSION

In this paper I have demonstrated how Ihde's human-technology relationships are used to technologically extend users into a fictional experience.

Through my application of 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 relation through a bike and a hermeneutical relation of reading a screen. I then considered *Scenario*, which intensifies this structure with an added portion of AI alterity. The application of Ihde's different postphenomenological relationships, as I have shown, can be mixed in different ways to afford users distinct experiences of story and meaning making.

As Ihde's relationships increase, so too does the complexity of the interface and in turn the possibilities of the story. *The Legible City*, which is an abstract experiment with narrative, is distinct from *Scenario*, which with three relationships gives users the power to unfold a narrative on the go. The story as Brown, Barker and Del Favero emphasise, 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 narrative structures through the changeability and arrangement of these human-technology relationships. Furthermore, embodiment relations (the main ingredient present within both of these artworks) can be subdivided even further into the amplification/reduction structure. In *Scenario*, amplification/reduction is one of the main elements of the interactive narrative. Movement and gesture in the third act of the piece 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. This visual representation within the imagery is again emblematic to 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.

Amplification/reduction is thus pivotal to an interactive narrative structure because it helps to establish a corporeal/incorporeal or real/virtual dichotomy that each of these works relies upon. Solid bodies and the incorporeal space of potentiality that they slide into are what these artwork interfaces set up, thus enabling the narratives to become interactive, giving the user the ability to choose a story path to cycle through in *The Legible City*, or rescue or neglect the child in *Scenario*, which in turn leads to different story outcomes. Within each artwork, the structure of the interface technology is revealed in its narrative content, thus proving the non-neutrality of technology, which is active through Ihde's human-technology relationships and reveals users as postphenomenological performers.

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