Adaptive Realities: Effects of Merging Physical and Virtual Entities

By

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Abstract

In the worlds of virtual reality, whole objects and bodies are created in an immaterial manner from lines, ratios and light pixels. When objects are created in this form they can easily be manipulated, edited, multiplied and deleted. In addition, technological advances in virtual reality development result in an increased merging of physical and virtual elements, creating spaces of mixed reality. This leads to interesting consequences where the physical environment and body, in a similar vein to the virtual, also becomes increasingly easier to manipulate, distort and change. Mixed realities thus enhance possibilities of a world of constantly changing landscapes and adjustable, interchangeable bodies.

The notions of virtual and real coincide within this thesis, reflecting on a new version of reality that is overlapped and ever-present in its mixing of virtual and physical. These concepts are explored within my exhibition *Immaterial* - a creation of simulated nature encompassing a mix of natural and artificial, tangible and intangible. Within the exhibition space, I have created a scene of mixed reality, by merging elements of both a virtual and physical forest. This generates a magical space of new experiences that comes to life through the manipulated, edited, morphed and re-awakened bodies of trees.

I declare that this thesis is my own work and that all the sources I have used have been acknowledged by complete reference. This thesis is being submitted in partial fulfilment of the requirements for Master of Fine Art at Rhodes University. I declare that this has not been submitted before for any degree or examination at another university.

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INTRODUCTION

As a child, I grew up playing TV games, and later Playstation, with my older brother, was always watching cartoons and movies with family, and in my spare time was immersed in science fiction novels and colouring-in books. In constant contact with magic, time travelling and fascinating characters, it seems natural that as I grew older my imagination became rooted in futuristic landscapes, and a corresponding excitement for emerging technologies that dissolve the boundaries between reality and fiction. My exhibition and dissertation explore the changes in perceived reality, as advancements in technology have created machines capable of providing multiple realities; the physical and the virtual. In our modern society, access to virtual reality has become a commonplace part of everyday life, if not an expected norm; smart phones, tablets and iPods are always within reach, always in use and always online. Never out of hand, these machines become prosthetic additions to our arms, our gateways to alternative realities.

> If the industrial era was characterised by the amassing of physical capital and property, the new era prizes intangible forms of power bound up in bundles of information and intellectual assets (Rifkin 2000: 30).

The current movement away from tangible forms of reality towards powerful intangible virtual information influences both the construction of the body and its environment. Maurice Merlaeu-Ponty (1962: 162) states: “I am not in space and time, nor do I conceive space and time; I belong to them, my body combines with them and includes them”. Thus, in a society conceived from both physical and virtual spaces

and times, the body and its surroundings change to combine and include virtual spaces and times. A current and quick-paced change has emerged within the body and environment, and with it, a need for an interrogation of cultural tools that encourage and facilitate this change, in order to better understand the ways in which we shape intangible virtual environments, and, in turn, how they shape us in our global, networked society. In this dissertation I look specifically to the connection points between the virtual and physical, asking what happens when these elements touch and begin to merge. I explore this connection's possibilities to change, edit and multiply space, environments, bodies, and ultimately realities.

Chapter one: *Blended Realities.* Looking to Rob Shields' (2003) studies in this area, I unpack definitions of real, physical and virtual, delving into their similarities and differences. In relation to this I explore how the physical and virtual can combine to form a new type of mixed reality, while also examining ways that physical and virtual objects and information can transform and transfer into one another. This will be applied to the artwork *Like a Fish Out of Water*[2] (2012), the gaming invention, *Oculus* (2014), and 3-D printing whereby physical action can morph into virtual action and virtual information into physical information. These concepts will be applied to my own practice and its attempts at mixing and transferring reality systems.

Chapter Two: *Cut, Edit, Paste Landscapes.*

> Cut, copy and paste… are possibly ideal, certainly exemplary forms of the human activity of tool use. As such, the basic function of cut, copy and paste is the modification and manipulation of human environments. These digital

[2] Sophia Jump & Seven Sister Group, *Like A Fish Out of Water* 2012. (Performance and video) London.

> tools influence and alter our information environment, much as the pre-historic tool kit was used to act on the natural environment (Strate 2008: 49).

In this chapter I examine the current society of simulation, where 'cut, copy, and paste' become convenient societal tools for the modification and mediation of the environment. Relating this to physical, virtual and mixed realities, I will unpack Olafur Eliasson's *The Weather Project*[3] (2003), and his construction, editing and simulation of 'natural' phenomena. Jean Baudrillard (1981: 1) states that "simulation… is the generation by models of a real without origin or reality: a hyperreal… [P]resent-day simulators attempt to make the real, all of the real, coincide with their models of simulation". I will explore Baudrillard's text, *Procession of Simulacra* (1981), in which he states that society lives and learns through simulation devices, and thus becomes accustomed to an image of 'nature' that is 'bettered' and 'more real than real'.

Chapter Three: *Adjustable Bodies*. "If Facebook were deleted, I'd be deleted… All my memories would probably go along with it… If Facebook were undone, I might actually freak out… That is where I am. It's a part of your life. It's a second you." (Turkle 2010: 175 quoting a girl in an interview). The final chapter, *Adjustable Bodies*, will explore how people have become mixed and multiple entities of physical and virtual selves. In relation to Sherry Turkle's (2010) theories of virtual identity construction, I will examine possibilities of how one sees oneself within a new technological culture, and how this culture changes and challenges the view of the body. Further looking to Merleau-Ponty's (1962) studies on body image, I will

[3] Olafur Eliasson, *The Weather Project 2003* (Installation) London, Tate Modern.

investigate the effect on the perception of the physical body when, through the use of virtual avatars, one has the ability to construct, edit, expand, multiply, limit and even remove the physical body from environments. As visual cues I will explore the mixed bodies of social networking sites, and Bogosi Sekhukhuni's artwork; *Consciousness Engine 2: absentblackfatherbot*[4].

I will show how the ideas explored in each of these chapters have been informed by, or inform the mixed body entities within my exhibition, *Immaterial*. Using a combination of digital art and sculpture I have created an exhibition situated in a liminal space whereby the spectator is merged into an integrated immersive semi-virtual and semi-physical environment of a forest. I will apply the theory explored in the preceding chapters to assess and analyse my exhibition, focusing on both the physical self and physical environment and its changes and flux into virtual and multiple entities.

[4] Bogosi Sekhukhni, *Absent Father Bot* 2014 (Video) South Africa, Goodman Gallery.

CHAPTER ONE: Blended Realties

Coming up to my third year of studying towards a Fine Art degree, I was told that I needed to choose a specialisation, a choice between painting, printmaking, photography, sculpture or digital arts. In sculpture I enjoyed creating artworks that have the ability to occupy a multi-dimensional space, and revelled in the physicality of its creation, being able to touch and manipulate with my hands, enjoying the dirt and the grit. However, digital art has the seeming magical ability to disobey the very nature of space and physicality, being situated in a different kind of world in which almost anything can happen. I eventually decided that I would choose both sculpture and digital art. This choice was complicated; sculpture's main focus is its occupation of space, its tangibility, whereas digital is ephemeral, it denies the occupation of physical space, existing in light rays and codes. Thus, since my third year of studying I have been trying to come to terms with these seeming binaries, "the concrete and the absent", as Shields (2012) calls it - the physical sculpture and the elusive, intangible virtual.

For this exhibition and dissertation I decided to tackle the situation head-on asking how I could make sculpture and digital art play off each other, how I could make the concrete absent and the absent concrete. I have begun researching the ways in which physical and virtual realities merge and inform one another, looking into ways of extending and layering spaces, of making the tangible intangible and the intangible tangible through both digital and sculptural means.

First, one needs to ask: what is the virtual, and how is it different to everyday experiences of the physically 'real'? Commonplace views situate physical and virtual in contrast to one another, opposite ends of the spectrum of what is 'real' versus a technical manifestation of imagination. However, many theorists claim that they are not so dissimilar, but are rather two different parts of the same thing, different elements or realms of reality. Rob Shields (2003: 46, 21), in his book *The Virtual*, states that the virtual is "but another register or manifestation of the real", and that

> The virtual troubles any simple negation because it introduces multiplicity into the otherwise fixed category of the real. As such the tangible, actually real phenomena cease to be the sole, hegemonic examples of reality (Shields, 2003: 21).

Ennsslin and Muse (2011: 4) expand on this, stating that "what is commonly referred to as the 'real' is, in our understanding, a hybrid and fluid mixture of First Life actuality and Second Life virtuality (whereby both 'Lives' are pluralistic concepts)". The virtual and physical are thus different from each other, but are both very real, each holding its' own set of actions and consequences that play out in the world.

The ubiquitous nature of gateways into virtual platforms - always-available cellphones, laptops, tablets and entertainment consoles - enable a constant connection to other worlds, and we take full advantage of this. Many people engage in what Turkle (2010) calls multi-lifing, whereby one flicks easily from the realm of the physical to the realm of the virtual and back again, cycling through, enacting and living in both. For example, texting people via a cellphone, while almost simultaneously speaking to others in person. This becomes a sort of multi-tasking, multi-viewing, multi-perceiving experience through the connection of multiple realms

of interactivity at once. The increasingly pervasive nature of popular technology allows for the multi-connection to become easier and more frequent. Advances in technology allow for a reality whereby physical and virtual lives increasingly bleed into one another, so much so that at times they become layered and interchangeable. Flicking between realms becomes less necessary as these elements of reality become juxtaposed, occupying the same spaces at the same times.

Alternatively, within other technologies, virtual and physical can potentially exchange places; transforming physical attributes into virtual elements, and virtual information into physical objects. This exchange is possible, for example, with current advances in 3D printing. One can design objects in virtual space with virtual tools, and a 3D printer will process the given information, building up a physical version of the virtual design via thin layers in the chosen material. Campbell et al (2011: 2-3) explain how this changes the material logistic of production, "designs, not products would move around the world as digital files to be printed anywhere…"; virtual information is thus set to become the new requirement for production. Barnatt (2013: 13) adds to this in saying: "By making possible online storage and transportation, 3D printing is set to do for physical things what computers and the internet have already done for the storage and communication of digital information". One can now access a whole range of designs online, customise a design to suit one's preferences and then convert it into a physical object by printing it out in the comfort of one's own home, or the soon-to-be nearest 3D printer retailer.

Conversely, one can get this sense of transference of physical action into virtual information via many entertainment platforms such as Wii, XBox, and a new device

called the *Oculus Rift*. Virtual world interactions in popular markets are no longer constricted to the movements of the thumb or index finger, as the ability of entertainment and communication devices within the commercial sphere to process complex physical human movement into virtual enaction rapidly and inexorably increase. Technologies that enable experiences like this are fast being assimilated into the entertainment industry, creating possibilities for escapism and enaction in increasingly 'realistic' virtual worlds of inconsequence, fun, entertainment and adventure. A recent headline article in the *Financial Buzz* (2014: np) heralds: "A Virtual Race between Sony and Facebook's Oculus". The article examines the competitive nature for the newest release of virtual reality (VR) software and hardware within the entertainment industry. The latest development within virtual reality gaming, the *Oculus* device, is a headset, a goggle-like setup, which offers a full visual and aural immersion within a game. These headsets have integrated movement tracking and camera systems that monitor the movement and position of a player's head. As the player rotates their head, the virtual world image rotates; the player can bend forward to get a closer look at virtual objects, or even peek around virtual world corners. Physical action has virtual consequences. Mark Zukerburg, Facebook's CEO, claims that "the technology opens up the possibility of completely new kinds of experience" (Guaman 2014: np). A Sony spokesperson, in turn, explains that this technology "enables developers to create an experience that delivers a sense of presence - where players feel as though they are physically inside the virtual world of a game".

In a similar manner, one can learn new skills by combining physical and virtual world action. *Guitar Hero* a popular XBox game, is a simulation of a musical

performance, where the player (or players), choose between singing, drums, base or electric guitar. If they choose to be a guitarist, for example, the player physically holds a simplified version of a guitar, with five coloured buttons on the neck of the guitar instead of strings. On screen, the player chooses a song from a vast list, and instructions describing how to play the song via this simplified guitar are then displayed on the screen in time to background beats. Pressing the guitar's buttons produces sounds simulating the performance of the guitar in the song. Timing must be perfect, and the buttons pressed in a specific order. The player is scored on their precision. In this way, the platform breaks down the physical actions into data, which is then wirelessly transferred into virtual actions and consequences. Advances in this technology have led to the ability to plug actual guitars into the system for precision scoring. It is thus possible to hone actual guitar skills in a new manner via this layering of physical and virtual action, and this experience can then inform, influence and change the physical realm.

This overlapping and integration of physical and virtual is known as mixed reality, causing virtual and physical rules to collide in the growing "trend towards bringing earth elements onto a synthetic world…[or] tak[ing] the world as it is but add[ing] something virtual to it" (Castronova 2005: 90, 91). This mixing leads to new perceptions and experiences of reality, as these new technologies modify the way one interacts with physical surroundings (Hugues, Fuchs and Nannipieri 2011: 47).

Like a Fish out of Water (2012 Fig. 1), performed by the Seven Sisters Group and designed by Sophia Jump, is an artwork that seemingly conveys the experience of living and using mixed realties. Beginning outside an English public swimming pool,

participants are handed an Ipod and earphones. Upon pressing play, an image of their current waiting area appears on the screen and the reassuring voice of the heroine of the story, Submarina, narrates through their earphones. She explains that, as the video on the Ipod moves forward, they too must move forward, as it turns, they too must turn. Imaginative qualities unfold as the audience members enter into the swimming pool site. Duplicating the site on screen, a man dives into the water, and as the Ipod's video diverges from the current physical reality, the viewers are visually transported beneath the surface, to another world of sea creatures and adventures. An ordinary day at the pool is reinvigorated with imagination on screen. Resurfacing from the water, the video pans across the scene to a grassy patch. Submarina narrates that she played with all sorts of sea creatures, but her favourites where the seal kings (Seven Sisters Group 2012). Displayed on the Ipod screen, a man in a seal-like costume dances in a limited motion, mimicking the rhythmic movement of the creature. Looking at the physical replica of the space, there, too, is a man performing a different version of the same dance. As Submarina narrates her personal memories, multiple performances like this, in the physical space, are replicated by performances on the screen, which at times diverge, like two separate sets of dances, two different troops of dancers (Fig. 2, Fig. 3).

Jump states that "people can get sucked into screens… at our events that doesn't happen because they are moving around, engaging and negotiating between what is on screen and what is real life" (University of Arts London 2013: np). The attention spans of the participants are dispersed between the physical and the virtual, being unsure of which one to watch, which one is more important, which one is more entertaining. This creates Turkle's (2010) multi-lifing effect, whereby the participants

flick continuously between realities. *Like a Fish out of Water* (2012) thus creates a multiple and layered space of performance and memory, both virtual and physical, enabling the physical site of English public pools to become further integrated with imaginative settings created through video playback via Ipods. Participants are encouraged to experience new aspects of both the space and the story through the multi-layering of the virtual and physical, creating interventions that interweave and play with the spaces of memories, imagination and the physical site. A new reality is created through this mixture. The physical and virtual spaces in *Like a Fish out of Water* (2012) inform, influence and change one another.

Like a Fish out of Water (2012) and entertainment platforms like *Oculus Rift* show the development of a culture exploring elements of the virtual and finding ways to conflate it with everyday experiences of the real. While *Like a Fish out of Water* (2012) focuses on dispersing attention spans between screen and reality, the *Oculus Rift* relies on "being sucked into the screen", minimising the attention span dispersion by making a user more present in the virtual through the incorporation of body movement and a 180 degree viewing screen. The virtual game encourages physical body movement in order to engage with what is on screen, and this movement in turn re-influences the virtual.

Both are similar in their reliance on the distinction between physical and virtual. Technologies such as Facebook and Sony's *Oculus Rift* and *Like a Fish out of Water* (2012) begin to touch the line between virtual and physical, but the boundary between the two is still clear. Within *Like a Fish out of Water* it is obvious which performance is physical and which is virtual, as the virtual component is limited to the small

handheld screens, with the main focus on the physical environment. *Oculus Rift* includes physical body action, but cuts off the majority of the real physical environment, isolating the participator in the virtual world. The merge between virtual and physical here is minimal, with the main focus being on the virtual. The Ipods and headgear from these two examples allow for mobility and a sense of personalisation with individual screens, however, to differing degrees, both of the virtual performances are still constricted, flattened to a screen, caught within the confines of the 2D. The physical awareness of the technology acts as a buffer to a suspension of disbelief. The technological interface and devices act as a constant reminder that there is a divide, that the virtual is not the same as, or intertwined with the physical. This highlights a flicking nature between physical and virtual, rather than a smooth blend of experience between the two, which would create a fully mixed reality.

Restrictions to the creation of a fully mixed reality can be explained by Shields' (2003: 49) description of the virtual acting as a threshold, being neither here nor there, positioned as lacking:

> The 'virtual' is imagined as a 'space' between participants, a computer-generated common ground which is neither actual in its location or coordinates, nor is it merely a conceptual abstraction… The virtual is liminal, 'betwixt and between', a threshold… In it everything is representational, a convenient fiction by which participants 'meet' but only figuratively; elements interact 'in essence' but not physically.

Thus, according to Shields, the virtual is an intangible space, a space that one cannot physically inhabit, touch or experience, a liminal space of representation (Shields 2003: 49). Virtual is classified as "*very close* to being something without actually

being it" (Merriam Webster 2014, emphasis added). This definition positions VR as a place of wanting; almost there but not quite, or as Shields explains (2003), an almost formed thing, a thing that exists, has essence, but not fully formed to the point of having physicality, shifting the real away from the material world (Shields 2003: 14), creating a liminal state - existing like a ghost or shadow.

While differing realms of reality are quickly beginning to bleed into and inform one another, there is still this gap, this restriction, and a clear line sitting between virtual and physical. In my exhibition, I explore attempts at erasing this line, asking how one creates and experiences a fully mixed reality when the virtual is intangible, prisoner to screens and only representational.

Practical Component

By layering differing spaces and playing and pushing the boundaries between the spaces of the virtual and the physical, I have constructed elements of a forest, that is virtual and physical, solid and yet ephemeral, *Immaterial*.

When looking at animation software, "like a sculpture, you analyse the object and deconstruct the design to learn how to create it" (Derakhshani 2009: 109). Gathering visual clues from virtual 3D modelling programs, I looked specifically at the underlying structures of grids, triangles, lines and points of light. The first element of my exhibition consists of a 'constructed forest', made of found burned, damaged and discarded tree trunks. Standing these trunks upright and embedding their bases into concrete blocks, they tower over the scene. The hollow areas of damage are filled with elements from the construction of a virtual tree, thus hybridising the trees. I

simulate the virtual elements by building up matrices of glass and mirror triangles within the bodies of the physical trees. Shining laser lights at the objects, the light refracts along the edge of the glass, producing glowing outlines, which further bounces off the mirrors, permeating the surrounding space (Figs. 4, 5, 6 & 7). The 'virtual' light element thus fills in the damage and spaces within the physical worlds, creating a slippage between visual virtual elements and physical reality. In this way I disintegrate the physical and make it semi-virtual, creating a space where imaginative and realistic, physical and virtual elements gracefully collide.

The second aspect of my exhibition is an extension of the first, furthering the experiments and concepts by creating virtual projections that take on a 3D presence that the spectator can explore and walk through. Big brand companies, such as Nike and Coca-Cola have caught onto the limitations of 2D video projection. Media campaigns associated with these companies have become increasingly aware of the alluring nature of projecting video onto water, fog and mist, enabling a form of tangible, holographic 3D-like effect, overlapping physical and virtual realities. Drawing from observations from these campaigns I have experimented with similar elements; projecting onto mirror, cloth, and layers of glass, resin and water. In an attempt to materialise and solidify the virtual to some degree, I have created a 3D-like space using semi transparent stretches of cloth, hanging parallel to each other, spaced about 80 cm apart. A semi realistic animation scene of a forest is projected onto the layers, and in it the wind blows through the branches with a soft presence of light and fog. Over time the projection morphs into an animation of the trees without their surface texture, revealing the grids and lines that make up the virtual trees' skeletons beneath their bark (Fig. 8). The animation catches along the stretches of cloth,

creating an almost 3D presence, a holographic effect, and in this way takes up a physical space. A smoke machine 'mists' up the area of projected material. As participants walk through the fog it naturally moves and shifts, the animations catch on the bodies of the participants and at times parts become caught and illuminated within the smoke. This enables the participants to walk through a physical space that has become seemingly digitised, or is rather an amalgamation of both physical and virtual elements (Fig. 9, 10 & 11)

These artworks occupy a space that plays within multiple realms of reality, creating a space that is both tangible and intangible through physical objects, light and fog. And, unlike the limiting technological interfaces of *Oculus* and *Like a fish out of Water* (2012) that break up the illusion of a fully mixed reality, *Immaterial* abolishes these physical interfaces, creating a multi-layered uncontained space. Components from both the physical and the virtual interweave, elements of the trees permeate the surrounding space; lights reflect and refract, images are reflected and the fog from the outside environment swirls through the negative spaces. Trees become partially absent, and the animation becomes partially concrete, and both are interconnected with the element of light and virtual graphics, creating a different mixed reality not limited to the headgear of gaming platforms such as *Oculus* or the 2D screens of *Like a Fish out of Water* (2012). Physical and virtual merge, collapsing into one another.

CUT EDIT PASTE LANDSCAPES

> *Skin transforms into shades of flowering neon yellow with depths of purplish black. A transcendental force takes over as gazes perversely gravitate towards the titanic glowing orb of light. Their own reflected presence beheld within the sky. Murmurs echo as spectators surrender themselves to the floor.*

The most critically acclaimed work thus far by Olafur Eliasson is *The Weather Project* (2003), a monumental constructed simulation of a sun that debuted for the first time in the Tate Modern Turbine Hall (Fig. 12). Upon entering the long, vast hall, a massive space of grand architecture in itself, fog rolls through the interior landscape, accumulating in puffs of clouds, dematerialising the scene in haziness. A semi-circular backlit screen, composed of 200 yellow mono-frequency bulbs saturates the hall's horizon, radiating intense illuminating light-rays which allow only tones of yellow and black to permeate the retina. The ceiling is transformed through a covering of thin mirror foil, reflecting the spectacle of the half 'sun', and through its reflection, creating a completed circle. The spectator's miniscule bodies, gazing in awe, are duplicated within this 'sky'. Often, audience members carefully lay their bodies down below the sun to better experience and grasp the effects of the subtly moving yellow and black appendages reflected in the large sky. Masses are unified in the experience, in the rays of mono colour.

Eliasson explains his works as "machines that create phenomena… a machine that produces a mediated reality" (Beccaria 2013: 17, 20). Upon closer inspection it is clear that the sun is a screen, the bulbs are visible, as are the fog machines. There are

no illusions about this being a construct, and Eliasson revels in these qualities of his 'natural' spectacles, stating: "There is no true nature, only the construct that you and I make of it" (Beccaria 2013: 16). These elements are thus purposely made visible to provide a platform for questioning and shifting perspectives of one's everyday 'natural' environment, invoking questions such as: what else is constructed, mediated, hidden, or misrepresented as natural? The transparency of the manufactured nature of environments such as *The Weather Project* (2003), establishes the beginning of a conversation around the construction and deconstruction of "reality, truth and representation" (Beccaria 2013: 30).

There is a constant battle of man against nature, we endeavour to mediate, control, contain and tame - to live, thrive, and entertain. Man seems to be succeeding in this war for control, technology its greatest ally. Jos de Mul (2011) proclaims that the "power of divine nature has been transferred to the power of human technology… [as] the modern man… takes technological command of nature", and with each advance of technology comes an advance in controlling, representing and 'bettering' nature. In the 21st century we construct nature to best suit our needs, and then paint it with a patina of seemingly natural, creating a simulation. In this chapter I begin an exploration into the "reality, truth and representation" of the construct of 'natural' landscapes. Looking to Baudrillard's chapter, 'The Precession of Simulacra' (1981), I shall attempt, like Eliasson, to make visible the underlying structures that create the perception of 'nature' situated within a contemporary visual culture that is saturated with technology and simulations.

I begin my pursuit with Robert Stewart and Roderick Nicholls' essay, *Virtual Worlds, Travel, And the Picturesque Garden* (2002). Stewart and Nicholls navigate ideas around mediated and re-mediated 'nature' by deconstructing the introduction of the 18th century picturesque English garden. They explain that the travelling Englishmen in the 1800's were greatly influenced by the splendour of the picturesque landscape paintings found and brought home from France and Italy (Stewart and Nicholls 2002: 92). Picturesque painters sought to capture the realistic splendour of nature through editing and representing it in, what they classified as, the most beautiful or sublime manner. Thus, upon returning home with these beautiful and idealised representations of nature, the English traveller felt "distaste [for] the geometrical designs of the [current] formal garden" (2002: 93). Hence began a reconstruction of the English garden, into flowing vistas that encompassed the idealised representation of nature, beheld within picturesque landscape painting. Stewart and Nicholls (2002: 93-94) describe that,

> These painters… used a mastery of the visual properties of phenomena to construct distinctive and thoroughly idealized versions of nature… The effort was to achieve a more "natural looking" garden, precisely through imitation and artifice. The landscape gardeners were emulating painters who strove to create a nature that was, at the same time, an ideal. The painters used diverse techniques and artifice to complete nature.

These gardens were not realistic representations of nature, but rather modified, edited, constructed versions of an 'ideal' nature, which created an *image* of a 'natural', organic flowing vista. Thus gardeners where seen to be constructing a 'bettered' version of nature, a "completed nature… a representation of nature at its best, to

rearrange it in a way that reality could not manage to do itself" (Stewart and Nicholls quoting Janet Browne: 2003: 94). Thus, picturesque paintings (like the possibility of all representations) had the effect of mediating the construction of reality, in this instance the reality of gardens.

Baudrillard (1981) explains that this type of mediation is in constant effect in different ways. Contemporary culture is particularly mediated through the ever-present connection to television, music, advertising, cellphones and laptops. Events are mediated through the news, communication is mediated through telephone calls, texts and emails, social learning through television series and reality TV, scientific learning through YouTube documentaries. One learns what to want/need through the pervasive platforms of advertising. The 21st Century connection and learning occurs through devices that simulate reality, and one becomes attached to these simulation and mediation devices. They teach us how to live these simulated lives, and through the saturation of media our notions of the real and the environment are subtly and slowly altered.

These mediations, according to Baudrillard (1981), begin to shape our lives in such a way that the simulated environments can seem to be more real, more lifelike than their unmediated counterparts; after all, it is the simulations teaching one what the environments should and should not look like. This is called the hyperreal. Learning what is 'real' through simulations leads to what Baudrillard (1981: 1) calls, a "generation by models of a real without origin or reality", whereby simulations are centred around other simulations, leading to a mediated, simulated reality. Baudrillard explains that,

> It is no longer a question of imitation, nor duplication, nor even parody. It is a question of substituting the signs of the real for the real, that is to say of an operation of deterring every real process via its operational double, a programmatic metastable, perfectly descriptive machine that offers all the signs of the real, and short-circuits all its vicissitudes (Baudrillard 1981: 2).

Sherry Turkle, in her book *Alone Together* (2010), briefly discusses the simulation of nature and the "short-circuit[ing of] all its vicissitudes" (Baudrillard 1981: 2). She opens a chapter narrating a trip that she and her then fourteen-year-old daughter took to a Darwin exhibition. A key advertised element of this exhibition of mainly plastic replicas was two live giant tortoises from the Galapagos Islands (Turkle 2010). Arriving at the exhibition, upon inspection, one tortoise was in hiding and the other was inert in its cage, and her daughter exclaimed, "they could have used a robot" (Turkle 2010: 3). Her daughter, according to Turkle (2010: 3), "was both concerned for the imprisoned turtle and unmoved by its authenticity". Sentiments from other children echoed Turkle's daughter, claiming, "Its water looks dirty. Gross" and "for what turtles do, you didn't have to have the real ones" (Turkle 2010: 3). Turkle continues the discussion in an interview with the vice president of the Disney Corporation, who stated that people also complained about the live creatures at the opening of an Animal Kingdom (Turkle 2010: 3). He explained that some members of the public where annoyed that the creatures where not as "alive" as animated or robotic creatures, who had the capability for constant motion, noises and interaction with the crowds.

This, Turkle suggests, shows how many children who are brought up in a world of simulation believe that "the idea of the original has no place", and that "aliveness seems to have no intrinsic value" (Turkle 2010: 3, 4). One does not want real life to interfere in the 'bettered' descriptive values of a simulation, and hence one comes to expect qualities that are more real than real, qualities of a constructed ideal nature, not the messy and uncontrolled version.

Travelling to Johannesburg for the first time recently, I discovered the excess of mediation and simulation that Baudrillard commands. The flat plains are littered with highways, shopping malls and businesses, their billboards shouting out at every single stop in the ebb and flow of unending traffic. Excess overflows from the sterile daze of objects from innumerable shopping centres. Two particular simulation experiences stood out within this new experience of a simulation city. The first was a brief visit to Montecasino, the second was my constant use and reliance on a GPS.

A casino, shopping centre, hotel and zoo, complete with bird garden and hot air balloon -"Johannesburg loves Montecasino!" states an applauding, online advertising article, www.istandton.com (2012). Traversing Johannesburg traffic, entering into the maze of cars in the parking lot, heading up layered stairways, I eventually entered into the space of commercial spending. Initially, this space does not appear as a huge casino, shopping centre, and hotel in a Johannesburg suburb but, rather, an 'Italian village'. This insertion into an unexpected place jarred and transfixed me, made me feel slightly jetlagged. While not a traditional landscape, constant elements presented themselves as 'nature'. Looking up to the blue sky of artificial light I began to notice the spotlights, and the solid nature of this sky - a painted ceiling. Looking down at the

cobbled walkway, it is clear that there is no Italian history walked into these stones, no grit and dirt; they are too clean, too pretty. The surroundings consist of multi-storeyed restaurants and shops covered in a mask of 'Italian culture', emphasised by balconies with old rugs airing on the railings. The walkways are lined with large plastic and resin trees - these can never be real, as no 'real' sunlight reaches the interiors of the building. A stream snakes through the scene, water washing over a blue painted concrete bed. And in the centre of this village, stand security guards, ready with metal detectors and purse inspections to allow access to the glittering lights and shouting, singing machines of the casino.

Montecasino appears as pure description, lacking in authenticity. It acts as a mask to romanticise and therefore incur more commercial spending. The solid painted sky acts as a buffer for those spending hours in the casino, whereby they can pretend they are outside in nature - possibly causing patrons to gamble for longer. In contrast, the sky within *The Weather Project* (2003) creates an experience that adds new perspectives and ideas to natural phenomena, and through its embracement of its construction, it never pretends to be a sky. Eliasson's sky enables the spectator to see themselves within this environment, and acts as an enquirer, a modification and an additive. Montecasino, however hides the real environment from its patrons, and does not question or better the original reference. The extent of which McGhie (2011: 369) reveals in stating that, "The [Montecasino] design teams initially travelled to Tuscany in Italy to research authentic designs and materials for their construction but found the architecture, materials and conditions at odds with their preconceived design and so relocated to nearby Lombardy…"

Making a cheap and inauthentic surface replica for direct commercial gains perverts, and lessens the signifiers of both 'nature' and the culture of Italian villages. McGhie (2009: 369), further states that it "…it is neither a museum nor an ancient Tuscan ruin, it is a simulated environment exploring its show business alter-ego". It adds nothing and betters nothing.

However, while in Johannesburg, I came across a descriptive model that did more than just describe, it created a new representation of the reality. As I travelled through and eventually away from Johannesburg, I was guided by a GPS navigational voice, travelling by a representation of a representation of a map representing a landscape: a simulation of land, a virtual landscape. Relinquishing navigational and spatial control to the representation, the computer voice instructed my body to make the moves to traverse the city space. This left me often staring at and contemplating the virtual representation of the landscape more so than the physical kind. The absolute mass of information held within the satellite signals translated within the GPS could not amount to the sparse information I could make out with my eyes as I zoomed past the same flat, monotonous landscape. Within the virtual simulation of this landscape I could zoom in and out, find cross sections, and discover the nearest shops, petrol stations and picnic spots. I could navigate through other towns around the world and be transplanted into new spaces.

Shields (2003, 46) states that, "The virtual comes into its own as an alternative of the real". The GPS was not pretending to be something that it wasn't. It was not pretending to be land, but through its simulation of references to land it adds to the land, deconstructing and reconstructing it, so that views are magnified, minimized and

rotated at choice. It betters the reality of the land by adding information and insight to the original reference. With the GPS I was in control, I became the master of a new space - the virtual landscape. I could chose whether to use it or not, how I wanted to use it, which representation of land and which destinations to go to. Having this information made me feel secure in my travels, it was a new 'landscape' that I could manipulate with my fingertips. This little machine held evidence of the technically sublime, massive amounts of information, landscapes and spaces held within, waiting to be accessed.

The 21st century landscape is mediated, changed, morphed, inauthentic and at times bettered through its simulations. Virtual landscapes become the epitome of this changed and morphing nature. In his book, *Virtual Landscapes; the Modern Era* (2012), Umran Ali showcases a collection of 'natural', computer gaming landscapes, and discusses the changes that have incurred within these environments over twelve years. Ali (2012) explains that from the year 2000 virtual gaming landscapes became increasingly realistic and interactive due to advances in 3D programming. Players could now move along 3 axes within terrains of incredible and exponentially increasing scale and detail (Ali, 2012: 10). Complex systems simulating environmental changes began to come into play, such as subtle and varied weather changes, detailed light rays and shadows, changes in seasons and daylight. Dynamic systems were synthesised to create the realistic growth of plants, along with a natural reaction to wind and gravity. Randomised generation patterns were programmed to create a more authentic dispersion of plant growth and rock formations, and this randomisation led to every scene looking completely different.

Programming like this leads to a realistic representation of physical reality, while at the same time allows the landscape to become an alternative to reality through its addition of elements of imagination, storytelling, user modification and accessibility - creating a new model of reality. Ali describes his experience of the virtual landscape within the game, *Morrowind* as follows:

> There was more than one occasion where I would simply stare at the beautiful transition from the nebula filled night sky, to the tranquil pink dawn, there was no rush to find the next location, or to progress the main story, but just to experience the wonderfully strange yet familiar natural environment (Ali 2012: 31, Fig. 13).

This landscape, according to Ali (2012), invoked a new fervour and awareness of the virtual environment, inspiring players to create their own modifications to the game's landscape, adding differing hues, textures and models. In this way the users of this space begin inventing and distributing their own versions of this particular virtual landscape, taking hold of user modification.

User modification can be applied to many virtual platforms: GPS, web browsing, social networking sites, or applications like Google Earth and Maps. Manovich (as quoted by Hansen 2004: 10) states "New media turn[s] a viewer into an active user… the new media image is something the user actively *goes into*, zooming in or clicking on individual parts…". Flisher (2008: 59) adds to this in stating that "as facilitators we provide the arena or interface and… allow the audience to be… addressed as a storyboard controller, co-author, actor or self-performer". Simulated virtual environments allow for spaces of user selection and the co-creation of spaces within one's own virtual landscape.

Accessibility of new spaces is another additive element that the virtual landscape allows. Virtual landscapes enable the ability to access lands, based on both real and imaginative designs, to traverse and explore spaces that one might not be able to physically access and explore in real life. Imaginative aspects are added to create either new spaces and worlds, or different editions of our world.

The simulation of 'natural' landscapes has thus transformed. Once constructed through physical placement, constriction and pruning of environments, the simulated landscape then morphed into descriptive replicas, such as plastic plants and plaster rock models that never had to be watered, moved or pruned. Now simulated nature in the virtual sphere can be constructed and modified by its creators and users, invoking new representations of space. The landscapes described by Eliasson, the GPS and Ali are more than mere simulation, they add to reality, have imaginative qualities, and they become a simulation of nature that evolves beyond a descriptor. One can control, subvert, change and create one's own virtual environment so that it is no longer a referent, but becomes its own unique construct.

Practical Component:

One of the key focus areas of my exhibition is a simulation of a forest. I alter physical trees as well as grow my own virtual kinds. Within my constructed landscape I modify and move the objects at will. Like the English picturesque gardener, I place, change and cut into the trees, transplanting them to create my own ideal nature. My exhibition becomes an exploration of the construction of a new version of a 'natural' landscape.

Like Eliasson, I attempt to reflect the reality of the construction of 'natural' phenomena, extending the idea to mirror a new ideal of mixed reality and revealing the underlying structures that make it so. The virtual trees reveal their underlying construction through their lines, light and ratios. Physical trees show their batteries, wire glued across the bark and attached lasers.

Teaching myself basic animation software, to create my own forest landscape, I came to realise that every element of nature can be reconstructed within this new intangible environment within my screen. A key function of my 3D modelling programme, Maya, (as with most 3D programs) are tools called Dynamics and nDynamics. Dynamics are a set relational law that the designer sets up. The list of such includes descriptions such as "particles, fluid effects, fields, soft/rigid bodies, effects and solvers". These allow a myriad of actions, including creating gravity (how strong and in what direction), turbulence, wind (strength and direction), particle emitters that behave as instructed, and the list goes on. One has the ability to build a chain of commands. For example, if I add turbulence to a scene - which objects will be effected by the turbulence? How will the object move when affected - will it fall to pieces, roll around, or spiral up? How will it respond when it impacts other objects - will it travel through them, force turbulence onto the next object, or stop in its tracks? As creator I set my own rules for nature within the virtual platform, (much like the gardeners and Eliason set their rules for nature on a physical platform). One's imagination is the limit, that and the processing power of the computer.

Creating the scene, I carefully study the structure of trees, the way they move, their colours, and then within the virtual platform carefully construct the scene, select the shades of colours of the leaves, plan the composition and specifically choose each texture. Getting lost in this world of my creation had a peculiar effect, I looked to the physical nature around me and it seemed so incomplete. The real seems less than its substitution. The physical version of a tree appeared far more flat, less real than before. Where was the vividness, the movement, the contrast and the magic that was so readily available to me in its virtual form? It was a strange paradox, whereby the physical tree, the original reference, lost its sense of realness and its tangibility. Baudrillard (1981: 3) states that "simulation threatens the difference between the "true" and the "false", the "real" and the "imaginary"." My virtual model was referenced from physical trees, but when elements of the simulated became more vivid, and in some sense better, I began to want to model the physical to look like the virtual. I was experiencing a case of Baudrillard's hyperreal, models of reality that are not based on reality.

I therefore wanted to create an artwork within my forest that encapsulates these possible new rules of nature, and the ability to go beyond the real to take on another form of reality. I decided to create a 'pond' as the centre of my constructed forest, one not based on nature, but that is rather a combination of different referential systems, different disguises and simulations of nature. I use documentaries, my own recordings and layers of animation, creating an effect that, according to Shields (2012) and Baudrillard, is common in contemporary society:

> The actual material may thus be forgotten, lost or supplanted; hybrid images such as a film star's head on a porn star's body posted up on the web; even

becoming the source for later content in which the now-digital material is further cropped, edited and changed (Shields 2012: 71).

Using nDynamics to simulate the effects of water, I layer it with found, stolen, captured and animated videos and images. I attempt to create an oscillation between the documentation of the 'real', an animated version and the break-down of that animation into the lines and structure created by the animation program; reflections of tree elements turn into tessellated elements of animated fish, which eventually share the water space with their 'realistic' counterparts from BBC river documentaries (Fig. 14 & 15). These recordings are projected onto a large black cement pond, filled with water, which is infused with brown oxide that mixes into the water as well as forming a layer on the surface. As the projections hit the water, a diffused 3D effect is created, images catch on the surface layer, appearing as a reflection, the light rays then become dispersed and permeate through the water, and a final layer of projection sits on the pond bed (Fig. 16, 17 & 18).

In addition to the mediation within the pond, I have manipulated and mediated the documentation of 'natural' sound elements. A YouTube clip called *Morning in the forest: over an hour of relaxing forest sounds* (2012) can be heard throughout the forest. This collection of 'natural' sounds is in itself not particularly natural, as it has been recorded and synthesised to be played from the Internet. Calming relaxing sounds of birds give way to, and at times overlap, what sound like industrial echoes and hums. These sounds are the same 'natural forest' sounds that have been further synthetically distorted and manipulated through change of pitch and speed. This

digitised background noise is accompanied by the mechanical tapping and whirring emanating from the machines moving the lasers pointed at the physical trees.

In this way I transmute the pond, and the surrounding forest, into something else, an imaginary space, creating a nature that does not necessarily act as physical nature should. In a society where the idea of the 'natural' has changed, I take on the new model of reality, creating elements of hyperreal, by cutting and pasting, zooming in, highlighting and modifying. The elements of nature within *Immaterial* are situated/edited/controlled in such a way that each has its own precise place. The scene sits in relation to pristine white walls and polished wooden floors. The pond is contained within a thick round circle. The trees are each in their own segment of a neat calculated block. In the words of Eliasson: "There is no true nature, only the construct that you and I make of it" (Beccaria 2013: 16).

ADJUSTABLE BODIES

> *In so far as we reflect ourselves,*
> *In the products we create and love to hate.*
> *Fabricating new technologies to overcome our human limitations,*
> *And retrofitting ourselves to accommodate their inevitable shortcomings*
> *We engage in a cycle of mutual imprinting.*
> *And so we must ask,*
> *As we code ourselves into technology,*
> *Bit for bit,*
> *What becomes of the ugly bits?*
> *Are they augmented along with the rest?* (Behar 2014)

Mary Shelley's novel *Frankenstein* (1818) divulges a story of a man who, through his scientific experiments, wishes to bring to life that which is dead. He desires to create a man of flesh and blood, to reanimate his collection of corpse bits into a whole, complete unit. He succeeds, and the novel takes a dark turn of further death and betrayal. It is the beginning of the novel that I find most interesting, and which is most known in popular culture – Doctor Frankenstein's creation, his creature, in all his ferocity and might. He is a man/monster who occupies a liminal space of life and death, science and science fiction.

This science fiction creature may seem like a far stretch to many, however the limitations of the body are beautifully and smoothly elapsing. The frail body, with the essence of death always nearby, is morphing and adapting due to advances in biotechnology, entertainment and communication platforms. While Frankenstein's creature was made of multiple components of flesh and blood, the bodies of the 21st century are made of different substances; flesh, blood and mechanical components of correspondence - smart phones, tablets, laptops and gaming devices; the prosthetic additions to the arms.

We no longer have to wait for a Dr Frankenstein counterpart to morph the human body. With plastic surgeons, biotechnologists and printed organs, we can simply engage others to extend and infiltrate the body. With access to contraptions modelled and imprinted from and onto ourselves, such as the mechanical components of correspondence, we now have the capacity to change, morph, adapt and preserve the body on a virtual platform, akin to a DIY at home Doctor Frankenstein invention.

Baudrillard (1981: 100) explains how DNA becomes a human's map marker, coding and determining who humans are before they are allowed to discover this for themselves. Virtual reality does the same in that it determines and codes reality and allows for its production. The DNA of our online identities and realties are themselves constructed via digital technologies, bundles of online information. South African artist Bogosi Sekhukhuni deals with these ideas in his artwork *Consciousness Engine 2: absentblackfatherbot* (2014, Fig. 19 & 20). Green floating heads with purple eyes surrounded by a golden background are presented on two flat screen televisions. Two Humanoid creatures with no neck or body are situated side by side, each isolated and constrained to their own screens. To the left floats an older face of a forty year-old man, to the right, a younger, perhaps twenty-year old. These creatures are constructed from recordings of real human faces, and juxtaposed with animated elements - the jaws move in a jittery stiff motion to give the appearance of talking, like that of an animated avatar. In flat robotic-like voices, the two heads attempt to hold a conversation between each other, broaching mundane topics, general small talk. At times the timing of speech is off, the avatars talk just a little over each other, or awkward silences ensue between questions and answers, creating a type of communication barrier, and showing an unawareness of each other.

Sekhukhuni explains his work as "want[ing] to make a kind of '*Consciousness Engine 2: absentblackfatherbot*,' …If you don't have a father, you can talk to the bot" (Donaidio 2014: np). *Consciousness Engine 2: absentblackfatherbot* (2014) is a personal response to an experience that Sekhukhuni had with his own absent father. At 18 Sekhukhuni sought him out on Facebook, they had little communication and then the already strained relationship took a turn for worse - his father blocked him on Facebook (Donaidio 2014). Sekhukhuni thus reconstructs himself and a new possible father figure within the confines of the virtual world, creating avatars. The avatar on this platform enables a surface connection to another social creature, providing an interaction with no depth, but one that is better than nothing. These creatures stand in for the real flesh, created to fill a space and provide an uneasy comfort/discomfort that is not possible to face in physical reality. Sekhukhuni creates a virtual cyborg substitution.

Virtual platforms open up opportunities whereby one is no longer constrained by the visual appearance of the physical body, or even confined to the limitations of a singular body. Virtual realities provide a platform to further explore and construct multiple identities, through the creation of virtual avatar bodies. These avatars are created via multiple platforms such as social networking sites like Facebook and Twitter, virtual worlds like Second Life or action orientated games such as World of Warcraft. Virtual world users can choose from a multitude of different visual elements to represent themselves, varying depending on the platform. The construction of an avatar via Facebook is created through the user's careful choice of profile picture, and then the writing of a bio, such as place of birth, school, interests

and likes. The identity of the avatar then begins to take further shape as the user edits and morphs these options and begins to further upload pictures, add statuses, comment on other people's walls, and as friends, in turn, comment back. In making these online choices a participant constructs and writes him or herself into existence within a virtual platform. Like Doctor Frankenstein, who takes the bits, edits and morphs them, adds the parts together to create an almost man, users create their own bodily identity through this mode of choosing and editing.

Individuals can change gender, appearance, age and ethnicity. People can create the selves that they want to be, or even just explore other possibilities of selves. This allows people to ask questions about their own identity, such as how do I feel when I enter a chat room pretending to be a man, how do people respond to me when my avatar looks much younger or older than I am in reality (Turkle 2010: 24)? Avatars thus allow for a complex process of identity creation and exploration on a fairly simple platform. The current phenomenon of the selfie is a marker of people asking themselves; how do I wish to portray and edit myself visually in the virtual world, and how do others see me? Virtual avatars are thus a means of exploring differing ways of representing identity within a non tangible, but always accessible environment of connection via the internet. Thus the body that is most accessible to the public is the virtual body that can change, morph, dissolve, show-off and edit itself.

Geographic space is no longer of any concern to the body as long as there is viable computer access. As Levy states (1998: 4), "When a person… is virtualised, they are 'not there', they de-territorialize themselves. A kind of clutch mechanism

detaches them from conventional physics or geographical space and the temporality of the clock or calendar". Cleland (2010: 77) states that the body is no longer limited to the skin, but extendable through artefacts, "The body schema is inherently malleable, expanding and contracting as it incorporates elements external to the body as prosthetic perceptual devices". One can visit people around the world for free, via communication software such as Skype, and visit imaginary lands through gaming platforms. The body extends beyond the physical location to become incorporated into the technology that further reaches into an infinite number of spaces.

The lifespan of an avatar works in interesting ways, independent of the lifespan of the physical user. Facebook accounts often stay open for years after a person has died, existing as a connection and reminder for friends and family. However avatars can also be short-lived. Merleau-Ponty (1962) explains that when a physical limb is cut off and is no longer connected to the body, the body no longer accepts it as part of its identity. Avatars can act in the same manner, having a fleeting life span, existing according to the current trends and usage by the physical body. When it is no longer used, it fades out and away from the user's identity. I have had several avatars, or representations of self, in multiple platforms over the last few years. At the age of 16, my best friend moved to England. As a way to keep connected we created profile pages on a social networking site called *Bebo*. Our *Bebo* accounts then gave way to *MySpace* accounts, as the customisation of the profile was greater. *Facebook* and *Twitter* then became popular, thus *MySpace* faded out. Each of these sites where left behind, creating a shadow of inactive profiles. These shadows, too, eventually faded away. The same could be said for gaming avatars. As the interest in the game fades out, so the avatar gets left behind and replaced by a new avatar on a different

platform. The value of these bodies only exists while there is a value in their environment. These bodies are easily disposable.

The body has great importance to the way one experiences and perceives the world. Merleau-Ponty (1962) explains that the body is our placeholder for being in the world, it acts as our entrance to the world, our way of experiencing the world here and now, it is our reference point for being. The body creates "an absolute here, in relation to which all perceptual experience must be oriented" (Hansen 2004: 5). It offers a physical space to occupy and belong, and is a vehicle for manoeuvring and enacting on the physical world. It acts as a space for identity; one can dress it in certain ways, gesture with it, and carry different postures to represent different aspects of emotions and personalities. The body is also a place to externalise one's inner workings and emotions, a vessel for one's thoughts. Traditionally an individual has one body, one connection to life, and when it goes, they go. But what happens when we no longer occupy a single, fragile body? When we have other mechanisms for viewing the world, for manoeuvring, for creating and representing identity? The body in the 21st century has changed shape, morphed into something new, a science fiction body, where the limits and constraints are beginning to dissolve.

The changed, edited and extended body can be understood in terms of Merleau-Ponty's (1962) description of the body image. He explains how the body image has the ability to become dislocated and extended. As an example, he describes how a blind man's stick becomes an extension of his body, he uses it to feel his way, it becomes his sight, an extension to touch, it is included within his bodily image (Merleau-Ponty 1962:165).

To get used to a hat, a car or a stick is to be transplanted into them, or conversely, to incorporate them into the bulk of our own body. Habit expresses our power of dilating our being-in-the-world, or changing our existence by appropriating fresh instruments (Merleau-Ponty 1962: 166).

In the 21st century, the limitations of our body have been dislocated and extended through the instrument of the virtual using machines, with the virtual absorbing itself into and onto our bodies. Our virtual bodies have extended into our physical identities. Virtual worlds and bodies become incorporated into the body schema through its constant access and use. In the words of Castronova:

> The body is the tool by which the mind receives sensation and manipulates the environment, and this avatar body does exactly and only that. And it makes sense to think of it as *your* body, just as someone with a prosthetic arm should think of it as *his* arm (Castronova 2005: 45).

Like an organist who can play multiple organs, we play multiple bodies through avatars. One can try on different skins, and incorporate each into their bodily image. When enacting in virtual reality, one body is situated in the physical world and one in the virtual. These multiple avatars become extensions of the physical body, each operating in their own way. Each avatar giving us a slightly different read, like that of differing organs, but due to habit, being brought up in a society where avatars are constant, we settle into each one, and play them well.

Twenty-three years ago, cultural theorist Donna Haraway (1991) described the human body as cyborg, a combination of man and machine. She describes the way

that machines have been enhancing and integrating into the body, prolonging our frail organs with mechanisms such as pacemakers (or now replacement 3D printed organs). Biotechnologies change the coding within the genes that create the body. Telecommunication machines are always readily accessible, always available to extend the bodies into other virtual realities. Haraway (1991: 8, 12) in her *Cyborg Manifesto* states that,

> By the late twentieth century, our time, a mythic time, we are all chimeras, theorized and fabricated hybrids of machine and organism… we are cyborg… Our best machines are made of sunshine; they are all light and clean because they are nothing but signals, electromagnetic waves, a section of a spectrum. And these machines are eminently portable, mobile... People are nowhere near so fluid, being both material and opaque. Cyborgs are ether, quintessence.

As time and technology advance, Haraway's manifesto becomes even more valid and applicable. In the 21st Century we now create identities and alternative lives that only come to life through, and in machines, virtual lives that are created and sustained by the ether!

The body has thus become hybridised, a combination of virtual and physical, a cyborg body written into existence through flesh, electromagnetic waves and coding - a 21st century Frankenstein creature. Our bodies extend themselves, become multiple bodies, capable of being edited, copied and pasted, capable of being born into many existences, and of dissolving away. Avatars allow the creation of a new point of reference in a totally new virtual world. This ability to edit and change the body

allows for a partial dissolving away of the body's original image, and transforms it according to the internal body's desires or whims. Turkle states (2010: 10),

> I once described the computer as a second self, a mirror of mind. Now the metaphor no longer goes far enough. Our new devices provide space for the emergence of a new state of the self, itself split between the screen and the physical real, wired into existence through technology… technology has become like a phantom limb… not necessarily thinking of simulation as second best.

Science fiction landscapes are thus the landscapes of our present, we live in a liminal space situated between physical and virtual, machine-human connections, of being situated everywhere and nowhere through virtual space, while inhabiting multiple bodies through virtual avatars. The repercussions of this are still being revealed and explored every day, and being added to with advancing technologies.

Practical Component:

In my work I wished to further explore and, in a sense, take on the role of Doctor Frankenstein, extending or bringing to life that which is disconnected, unavailable or dead, in unexpected ways. Rather than pursuing this goal with the use of the human body, I chose to take a step in another direction, (as previously mentioned) bringing life to dead nature, in this case the forest. Examining the way that people no longer have a need for skin or exterior looks, I explore this in relation to the tree; questioning its need for its skin; removing, replacing and recalibrating its bark into elements of ether and light. I re-imagine the tree in a realm of mixed reality, dissolving, multiplying and editing its body. I peel back the skin, to reveal the decaying interior

of the dead, rotting carcasses of trees, devoured by forces of nature, such as fire, earth, wind and rain. Like the main character of Shelley's novel, I reanimate and attempt to bring to life these sections of what was once living.

I cut, edit, copy and paste sections of trees in a similar vein to how we treat the 21st century body, (in both a virtual and physical sense)[5]. I attempt to partially dissolve the skin, make it translucent. I hack and slice into trees to extract selected sections. These sections are placed into a pool of silicon, to create a mould, and then doubled, made into thin, skin-like polyurethane resin copies. These resin copies are replaced into the tree's body, supported from the interior by metal rods. Each resin substitute is reinvigorated by an internal life, a small light that glows from the center of each (Fig. 21 & 22). Like the limited lifespan of the avatar, these reanimated trees too only have a partial life of several hours; lights flicker and fade, according to the battery power. These modified trees stand alongside the trees described in Chapter one, which have glass and mirror triangles and squares glued and pinned to the interior damage, reconstructing the deathly damage, illuminated by the light of lasers (Fig. 23). Each tree is mounted on an earth-like cement block, acting as a base to hold the pillar of reinvigorated life, a mound of earth and stone where no roots will grow, yet nonetheless gives birth to, and supports the existence of these new tree creatures.

We, a product of the 21st century, are versions of Frankenstein's creature, a chimera of technology, virtual reality, robotics and mechanics, always connected to machines to enable an extension of our physical bodies' capabilities. I am a Frankenstein invention, I attempt to bring to faux life that which would be discarded

[5] In a similar manner to Baudrillard's (1981) description of how one mediates reality.

and disintegrated into the earth, creating my own grandchild generation of chimera creatures; ones of death, light and electrical volts.

CONCLUSION

The notions of virtual and real coincide within this thesis, reflecting on a new version of reality that is overlapped and ever present in its mixing of virtual and physical. In a society that has a never ending connection to simulation technologies that become gateways into alternative realties of the virtual kind, it is important to unpack the ways that, "virtual environments… change our understanding of our embodied nature and the limits of our everyday world" (Shields 2012: 63). Virtual reality systems extend and modify notions of the real. These changes have been explored in the three main sections: *Blended Realities, Cut Edit Paste Landscapes* and *Adaptive Bodies.*

Blended Realities looked to ways that the physically real and imaginative virtual could co-merge. Shields (2012) argues for a distinction between the virtual and concrete, rather than virtual and real. However, I look to ways in which even this distinction is dissolving. The virtual can become physical and the physical can become virtual. The liminal spaces that situate both the virtual and physical in one co-mingled space are an augmented reality.

In *Cut, Edit, Paste Landscapes,* I opened with ways in which physical landscapes are edited through human intervention. Examining Eliasson's statement "There is no true nature, only the construct that you and I make of it" (Beccaria 2013: 16), I look to his construction of 'natural' phenomena in conjunction with how the English picturesque gardeners sought to create an image of 'nature' within their gardens by cutting, editing and pasting different elements of nature into a modified, 'bettered' and 'completed' version. I looked to Baudrillard's (1981) notion of the hyperreal to better understand the mediation, or simulation of natural elements, in which he says

that simulations become a "perfectly descriptive machine that offers all the signs of the real, and short-circuits it and all it vicissitudes". I further examined how this applies to contemporary examples and the ways in which a simulation can extend beyond a mere descriptive machine, to create an experience that that extends physical reality, such as in virtual worlds. Simulations can provide platforms that create whole new landscapes for participants to encounter, experience and explore, enabling one to do things within a virtual landscape that would often not be possible within the physical version.

Adaptive Bodies examined how common personal digital devices extend and modify the body, creating what Haraway calls a chimera existence, or a cyborg body. We become cyborg (half human, half machine, a cybernetic organism) through constant connection to digital portals: using cellphones, virtual gaming systems, VR environments, laptops, Ipods and tablets for communication, entertainment and information access. We extend ourselves into these platforms via avatars from the comfort of our homes, from the office, or our favourite coffee shop. I examined how the body is multiplied through the use of avatars, and the way that these virtual constructions of the body allow one to recreate, morph, edit and multiply the representations of self. I have unpacked Merleau-Ponty's description of the body image in relation to a possible new image of the simulated and mediated body.

In each of these chapters I have applied my own practical component of an exhibition that has informed and been informed by the theoretical texts. I look to my own experience of creating simulated nature encompassing a mix of natural and artificial, tangible and intangible. I have created a space of mixed reality, merging a

virtual and physical forest to create a magical space of new experiences that comes to life through the re-awakened bodies of dead trees.

ILLUSTRATIONS

Fig. 1

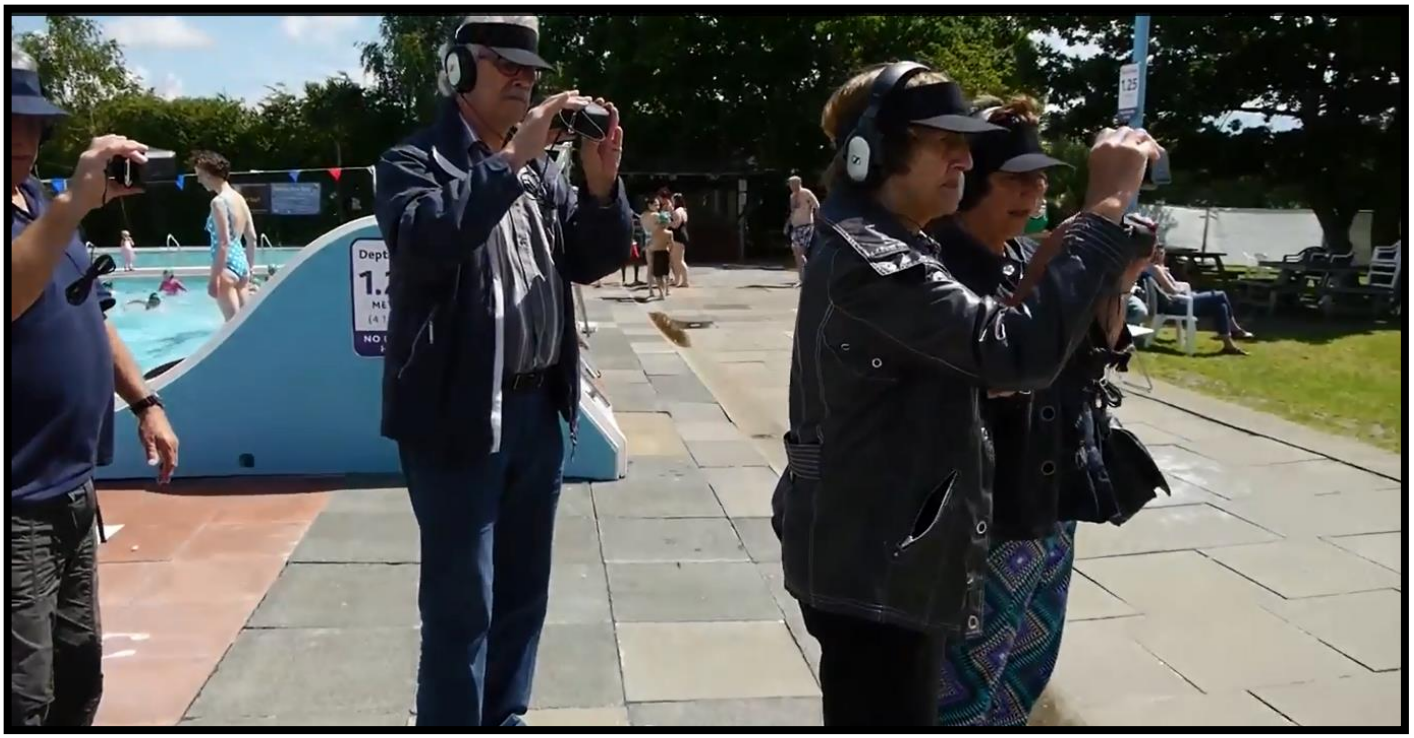
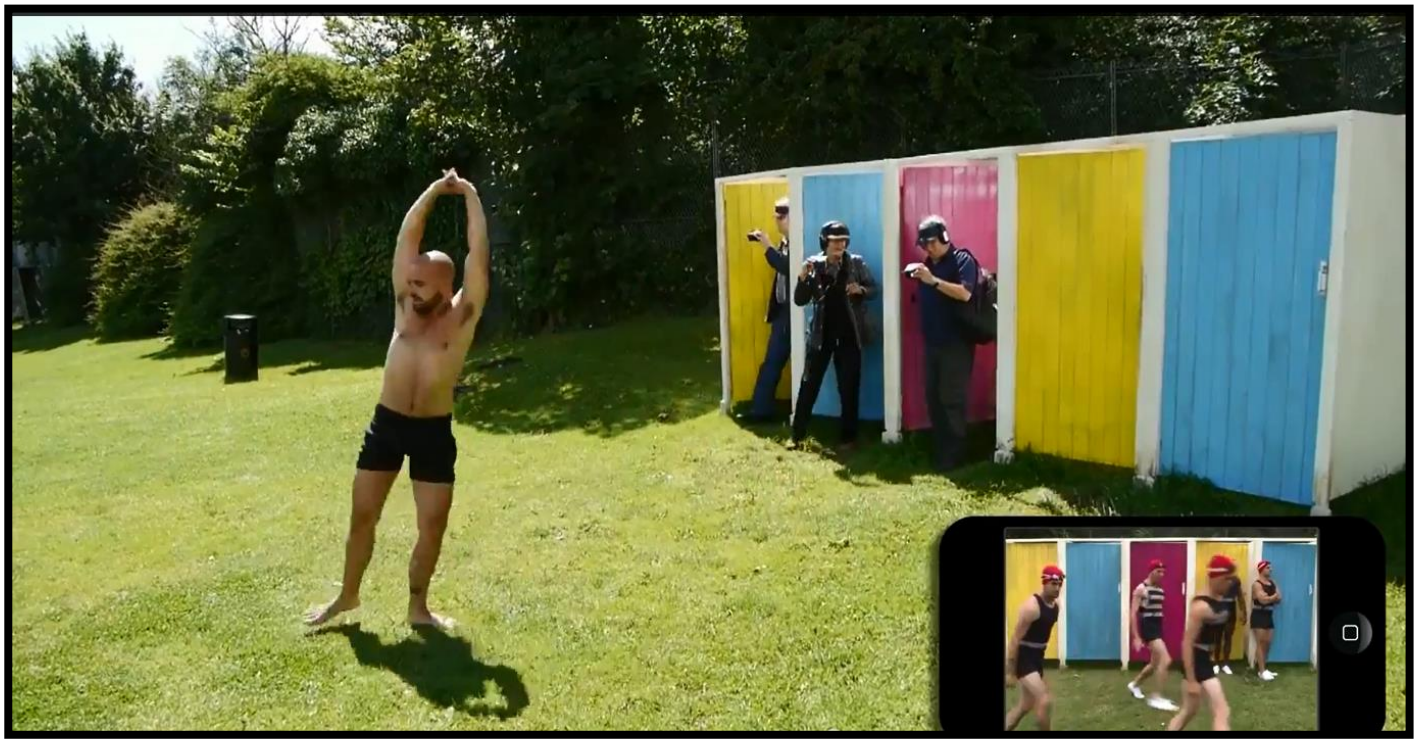


Fig. 2



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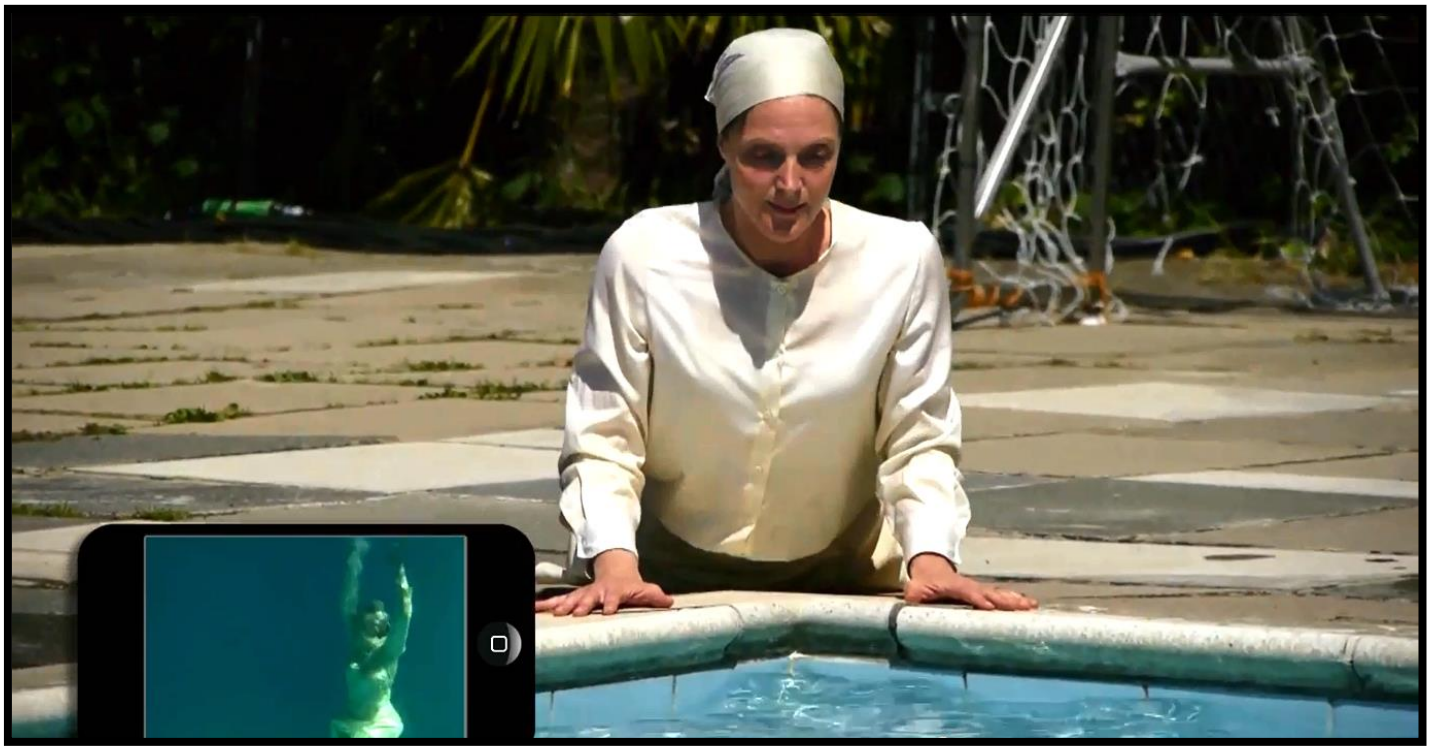

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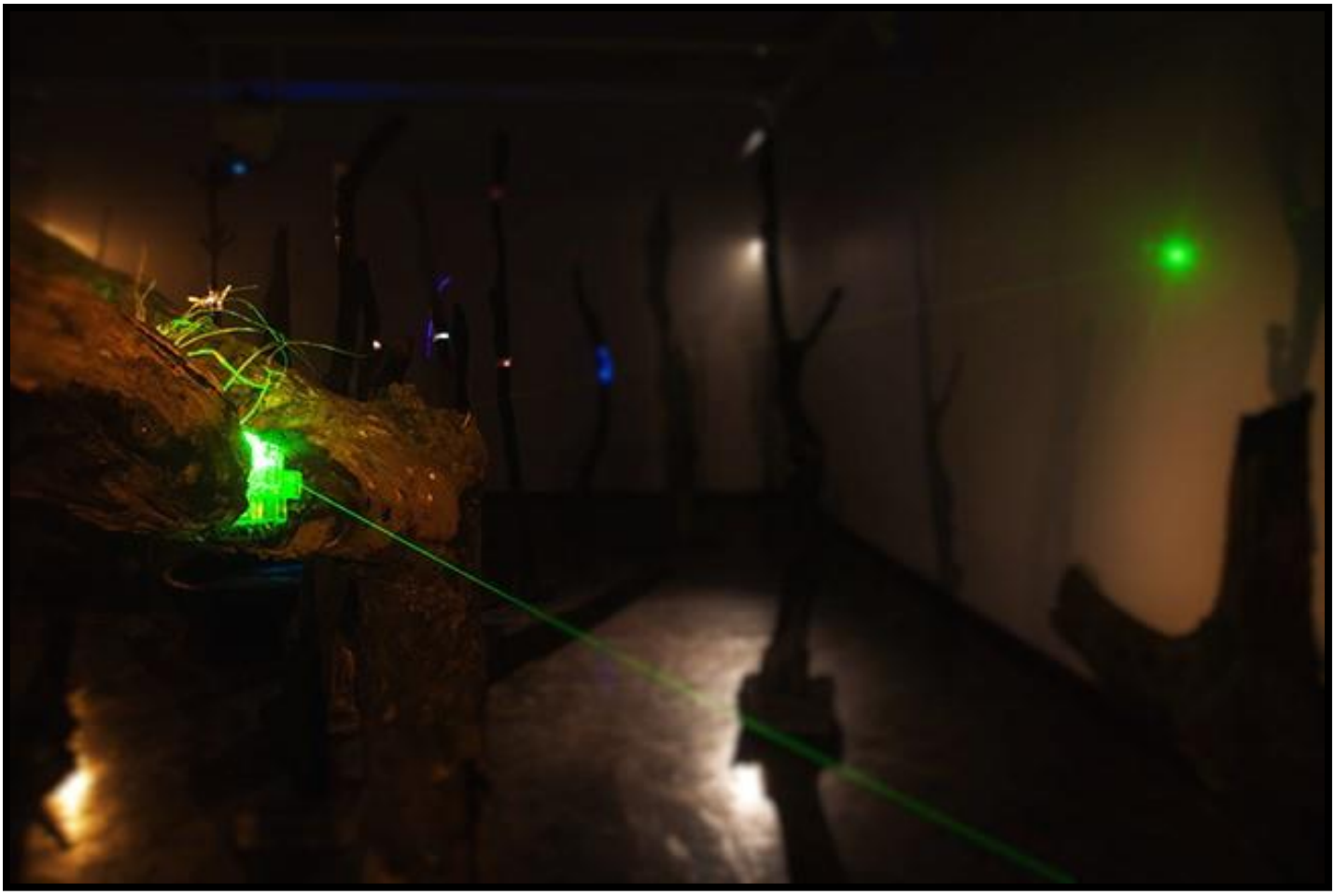


Fig 5

Fig. 6

Fig. 7

Fig. 8

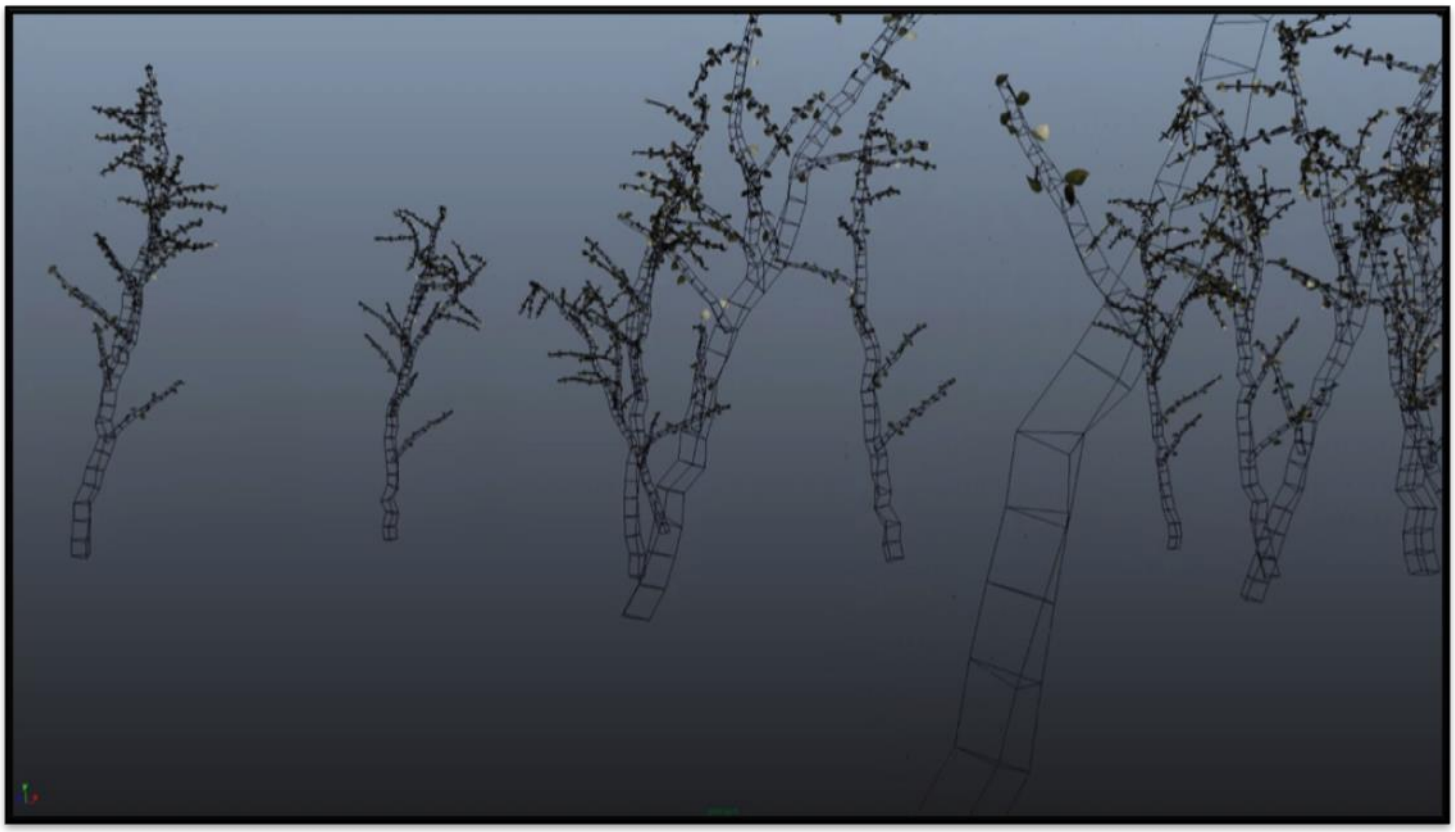


Fig. 9

Fig. 10

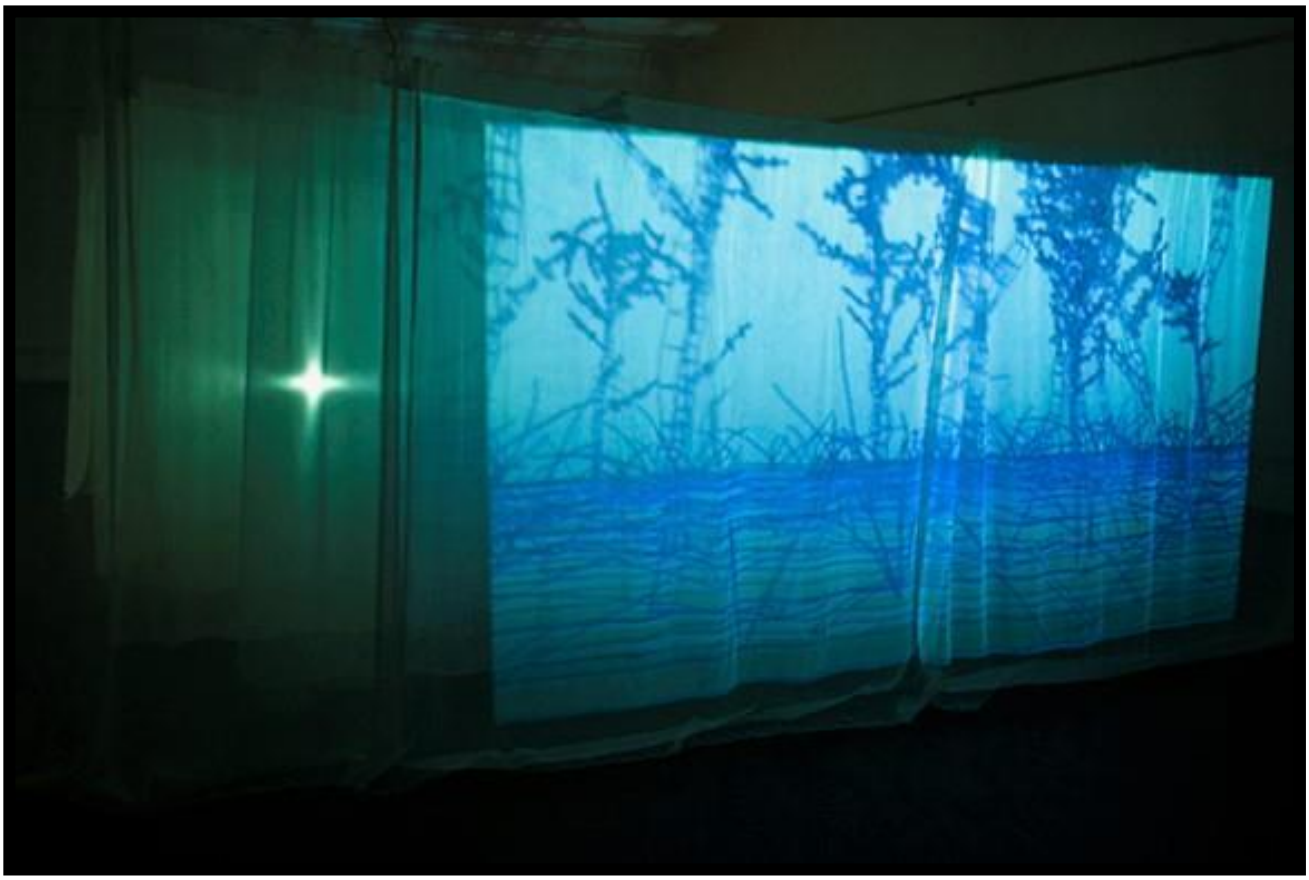
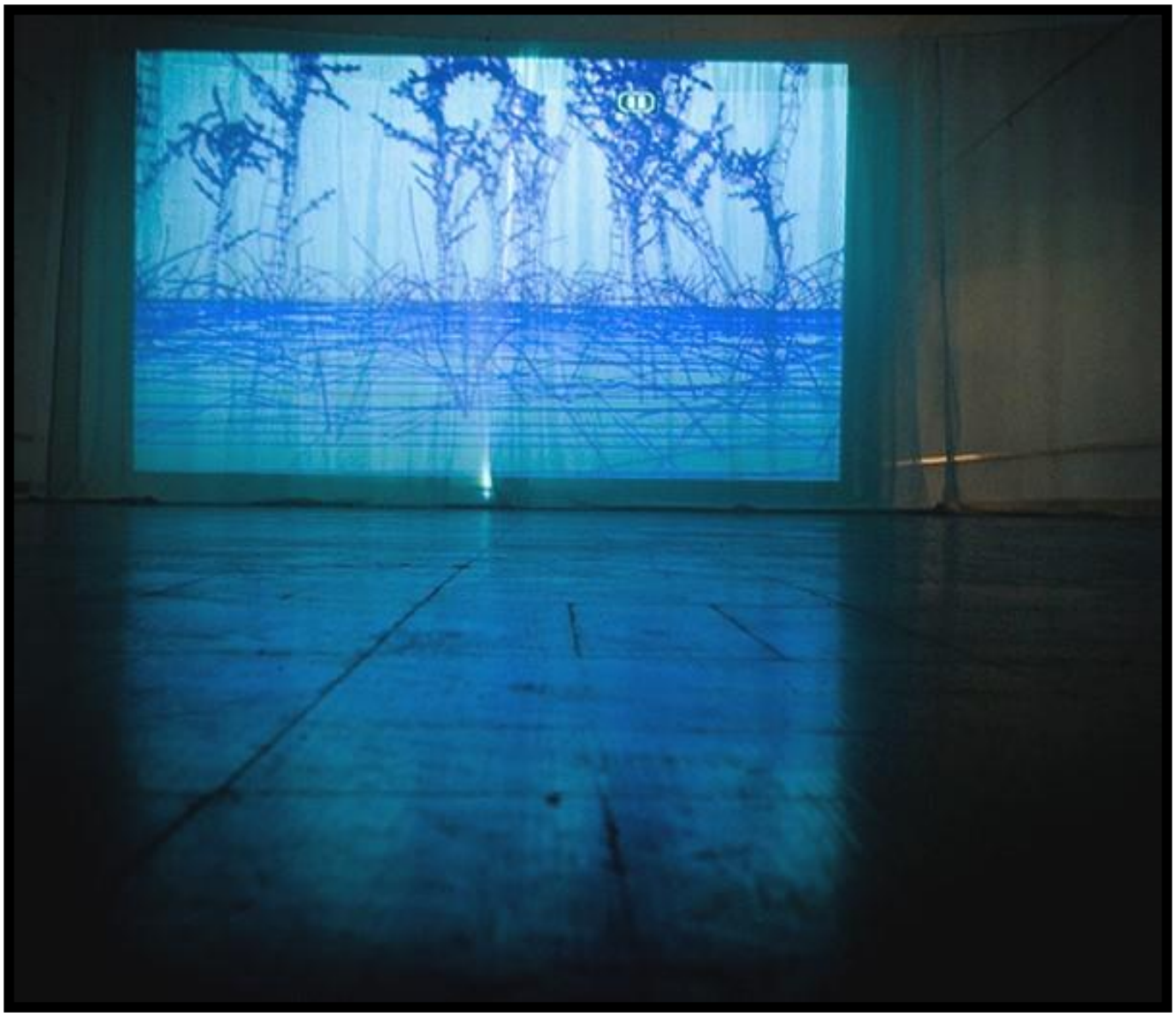


Fig. 11



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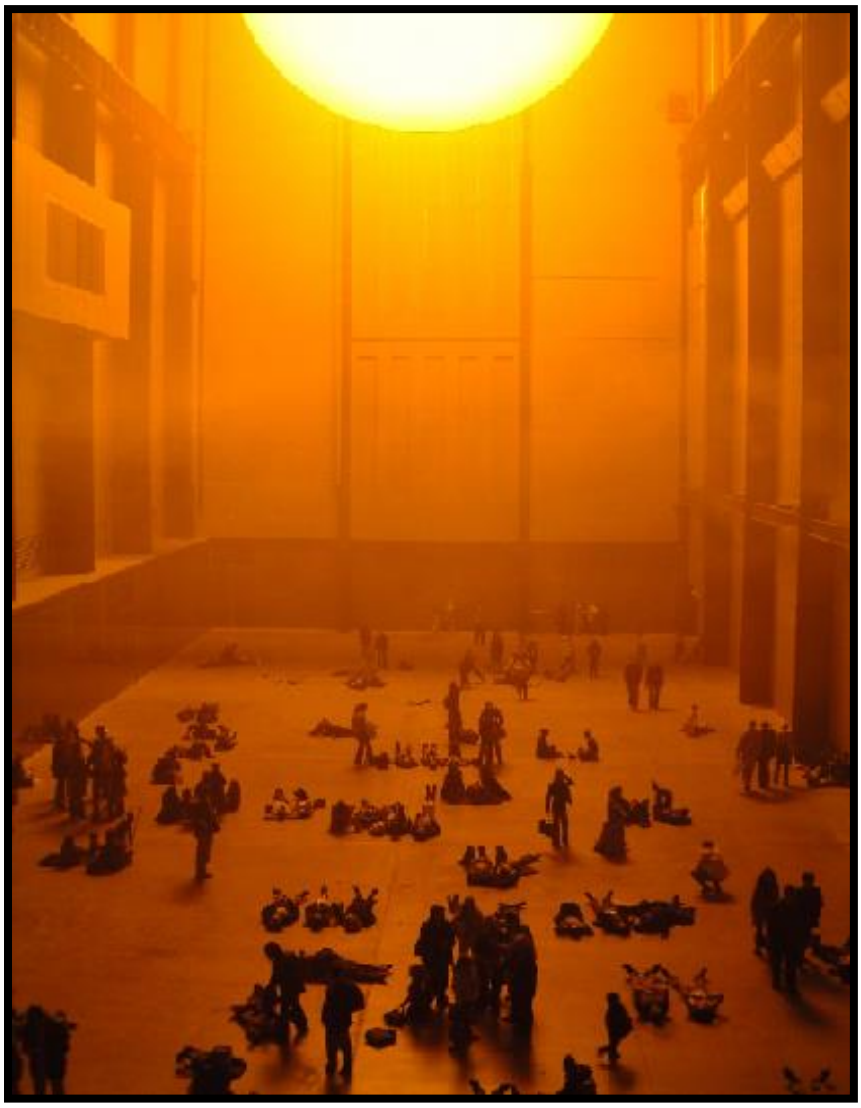

Fig. 13

Fig. 14

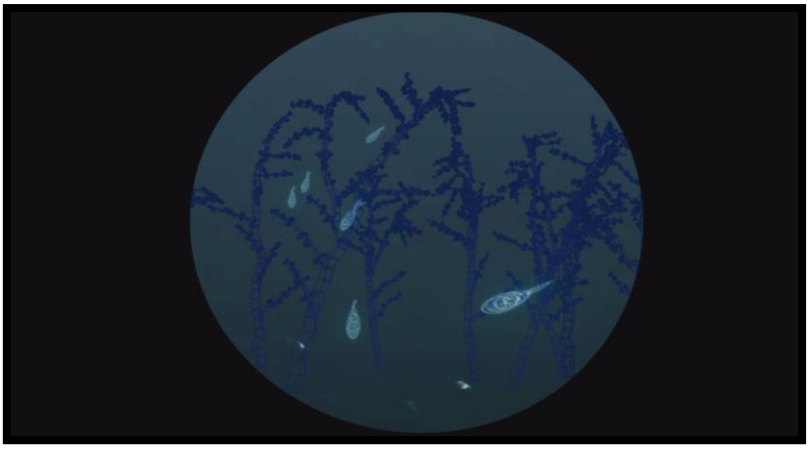

Fig. 15

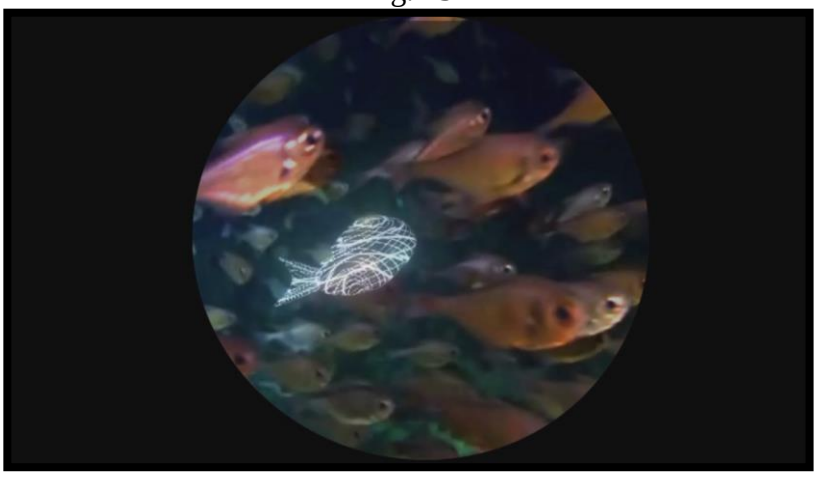

Fig. 16

Fig. 17

Fig. 18

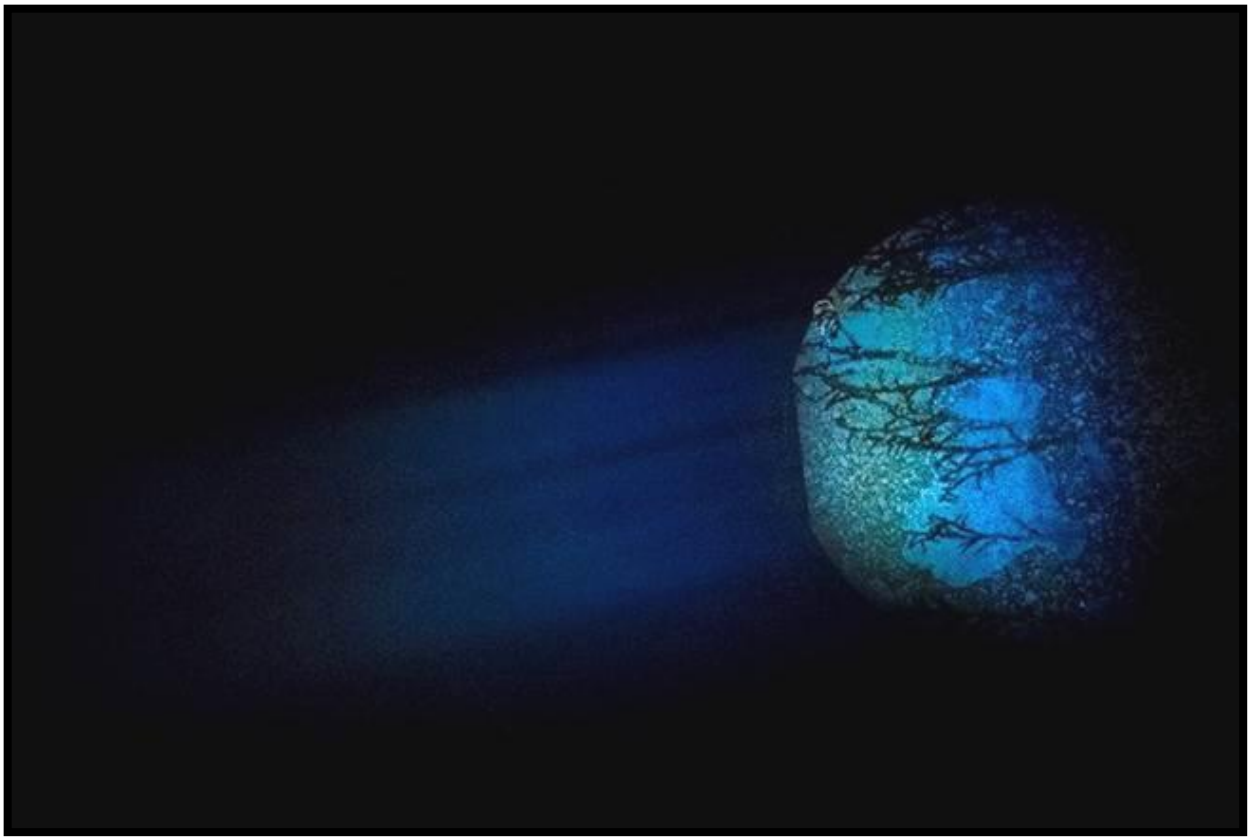

Fig. 19

Fig. 20

Fig. 21

Fig. 22

Fig. 23

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