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Walking away from VR as 'empathy-machine': peripatetic animations with 360-photogrammetry

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Katerina Athanasopoulou

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**UNIVERSITY OF
PLYMOUTH**

**Walking away from VR as ‘empathy-machine’:
peripatetic animations with 360-photogrammetry**

by

Katerina Athanasopoulou

A thesis submitted to the University of Plymouth
in partial fulfilment for the degree of

DOCTOR OF PHILOSOPHY

School of Art, Design and Architecture
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Author's Declaration

At no time during the registration for the degree of Doctor of Philosophy has the author been registered for any other University award without prior agreement of the Doctoral College Quality Sub-Committee.

Work submitted for this research degree at the University of Plymouth has not formed part of any other degree either at the University of Plymouth or at another establishment.

Word count of main body of thesis: 79,170.

Signed.....Katerina Athanasopoulou.....

Date..... 13-11-23.....

Ethics Statement

I confirm that this research has been conducted in adherence to the University of Plymouth research ethics policy, having undergone ethical review and with informed consent obtained from my participants.

Abstract

Walking away from VR as 'empathy-machine': peripatetic animations with 360-photogrammetry

by Katerina Athanasopoulou

My research partakes in an expanded documentary practice that weaves together walking, immersive technologies, and moving image. Two lines of enquiry motivate the research journey: the first responds to the trope of VR as 'empathy-machine' (Milk, 2015), often accompanied by the expression 'walking in someone else's shoes'. Within a research project that begins on foot, the idiom's significance demands investigation. The second line of enquiry pursues a collaborative artistic practice informed by dialogue and poetry, where the bipedals of walking and the binaries of the digital are entwined by phenomenology, hauntology, performance, and the in-betweens of animation. My practice-as-research methodology involves desk study, experimentation with VR, AR, digital photogrammetry, and CGI animation. Central to my approach is the multifaceted notion of *Peripatos* – as a school of philosophy, a stroll-like walk, and the path where the stroll takes place – manifested both corporeally and as 'playful curiosity'.

The thread that interweaves practice and theory has my body-moving in the centre; I call it the 'camera-walk': a processional shoot that documents a real place and the bodies that *make* it, while my hand holds high a camera-on-a-stick shooting 360-video. The resulting spherical video feeds into photogrammetric digital processing, and reassembles into digital 3D models that form the starting ground for still images, a site-specific installation, augmented reality (AR) exchanges, and short films. Because 360-video includes the body that carries the camera, the digital meshes produced by the 'camera-walk' also reveal the documentarian during the act of documenting. Departing from the pursuit of perfect replicas, my research articulates the iconic lineage of photogrammetry, embracing imperfections as integral.

Despite the planned obsolescence of my digital instruments, I treat my 360-camera as a 'dangerous tool', uncovering (and inventing) its hidden virtualities, via Vilém Flusser. Against its formative intentions as an accessory for extreme sports, I focus on everyday life, and become inspired by Harun Farocki's 'another kind of empathy'. Within the collaborative projects presented within my thesis, I move away from the colonialist-inspired ideal of 'walking in someone else's shoes', and 'tread softly' along the footsteps of my co-walkers.

List of Conference Papers

Athanasopoulou, K. (2018) 'Towards a Cathartic Unpeeling of the Truth within VR Animated Documentary', paper presented at *Ecstatic Truth III: Making Sense Between Fantasy and Fact*, Lusófona University, Lisbon, 8 July.

Athanasopoulou, K. (2018) 'From procession to processing to process: a VR walkthrough', paper presented at *Performance.Experience.Presence Weekend*, Plymouth University, 26-27 October.

Athanasopoulou, K. (2018c) 'Virtual Reality as Sculptural Cartography', paper presented at *Performance.Experience.Presence (PEP)*, Plymouth University, 10 December.

Athanasopoulou, K. (2019) 'The Peripatetics of Virtual Reality', paper presented at *Virtual Realities + Alterities RCA Research Symposium and Manifestation*, Royal College of Art, London, 5 May.

Athanasopoulou, K. (2019) 'A Virtual Walk through Spaces of Healing', paper presented at *Association for Medical Humanities (AMH) Conference 2019: Material Medicine: Objects, and Bodies*, Plymouth University, 26-28 June.

Athanasopoulou, K. (2019) 'The Performing Skeleton and the Ghosts of CGI', paper presented at *Performing Animation, Animating Performance*, King's College London, 14 December.

Athanasopoulou, K. (2021) 'Walking from Physical to Digital within "Deep Waters"', paper presented at *Animation Practice as Research Symposium 2021*, Manchester School of Art, [online], 21 April.

Athanasopoulou, K. (2021) 'Glitching the Virtual', paper presented at *TaPRA Digital Distuptions: Bugs and Glitches in Live Performance* [online], 4-5 June.

Athanasopoulou, K. (2021) 'Walking away from VR as empathy-machine: kinaesthetic animations with 360-photogrammetry', paper presented at *Performance.Experience.Presence (PEP)*, Plymouth University [online], 15 December.

Athanasopoulou, K. (2021) 'Walking from Physical to Digital within "Deep Waters"', paper presented at *Animation Practice as Research Symposium 2021*, Manchester School of Art [online], 21 April.

Athanasopoulou, K. (2022) 'Walking the Ground of Immersive Technologies, through PaR and Peripatos', paper presented at *University of Plymouth Faculty of Arts, Humanities and Business Doctoral Conference 2022: Empowering Research*, [online], 9-10 June.

Athanasopoulou, K. (2022) 'Movement as Animation's Material', paper presented at *[DCPR]³ - [Design - Creative Practice - Research]³ Conference*, Design Museum, London, 25 November.

List of Screenings

'The distance between the staircase and the sky' (2022) was screened at *Window Display / Künstlerhaus Bethanien*, Berlin. January-February 2023.

'The distance between the staircase and the sky' (2022) was screened at *Tampere Film Festival*, Finland. March 2023.

'The distance between the staircase and the sky' (2022) was screened at *Los Angeles Greek Film Festival*, USA. June 2023.

'The distance between the staircase and the sky' (2022) was screened at *Video Miden*, Kalamata, Greece. July 2023.

'The distance between the staircase and the sky' (2022) was screened at *Bolton Film Festival*, Bolton, UK. September 2023.

'The distance between the staircase and the sky' (2022) was screened at *Animasyros Festival*, Syros, Greece. September 2023.

'The distance between the staircase and the sky' (2022) and 'Polykatoikia:Peripatos' (2022) were screened at the 3D3 Legacy Exhibition *Digital Flow/s: interdisciplinary digital arts and humanities practice-based research*, at *Sparks*, Bristol. September 2023.

'The distance between the staircase and the sky' (2022) received an honourable mention at the *Midwest Video Poetry Fest*, Madison, Wisconsin, USA. October 2023.

'The distance between the staircase and the sky' (2022) was screened at *Zebra Poetry Festival*, Berlin. October 2023.

'The distance between the staircase and the sky' (2022) was screened at *Aotearoa Poetry Film Festival*, Wellington, New Zealand. November 2023.

[upcoming] 'The distance between the staircase and the sky' (2022) will be screened at *London Short Film Festival*, London. January 2024.

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Thesis Introduction

‘Thesis’ is a word that *shimmers* with multiple meanings in English. According to the Collins dictionary, it is a dissertation resulting from original research, a doctrine maintained or promoted in argument, a subject for a discussion or essay, an unproved statement, a musical downbeat, and, in Hegelian dialectics, it is to be challenged by the antithesis; it comes ‘via Late Latin from Greek: a placing, from *tithenai* to place’ (Brookes et al., 2023: 2052). While this thesis is indeed a doctoral one in the English sense, it is firstly in Greek that the word *speaks* to me. A thesis (θέσις) in my mother tongue, is a position, a place, and a seat: a theatre seat, a bus seat, a place one chooses or where one is ranked within a hierarchy; a thesis can also be a position in space from which one *theorises*.

My doctoral thesis is an account of my PhD journey, one involving physical traveling, beyond a metaphorical sense of the word. Within her analysis of architecture as a performing art, Lisa Landrum explains that although theorising is today considered as a purely contemplative activity, there was always more to the practice of theory as a form of pilgrimage, involving travel, observing and re-presenting: *théoroi* were appointed delegates who would travel to places away from their home city, perform duties on its behalf, ‘behold strange and wondrous sites’ and, on their return, present an account of what they had seen (2016: 31). As a doctoral student I travelled frequently, from London to Plymouth, and from England to Greece, and back. Importantly, much of the travel of my research is via walking, and the notion of the peripatetic (metaphorically and literally, structurally and methodologically) is central to my approach¹. My thesis-as-position is of an Animator who immersed herself in Virtual Reality (VR) within a Performance milieu at Plymouth University; therefore, I theorise while carrying with me the *tacit* knowledge of my previous filmic practice, and Animation Studies’ own theories. Equally, my practice research picks up brand-new VR tools, while seeking *clews*: the old form of the word ‘clue’ meaning a ball of thread, yarn, or twine, and the action of coiling a thread into a ball (Brookes et al., 2023: 386). Robin Nelson suggests the word *claw* as a useful metaphor for research students ‘holding on to the line of the research inquiry as it weaves through the overall process’ (2013: 10).

My practice is peripatetic, in the everyday sense of the word in modern Greek, where *peripatos* means a walk, or a stroll for pleasure. By performing my ‘camera-walk’, I document a real place and the bodies that *make* it, while my hand holds high a camera-on-a-stick shooting 360-video. The recorded spherical video gets split into its constituent frames, a selection of which feeds into structure-from-motion (SfM) photogrammetric processing, and reassembles as digital 3D models that become the

¹ I expand on the peripatetic in my Methodology chapter (pp.26-28).

ground of my practice, and the scope of my writing. The practice also turns me towards a multitude of texts that help elucidate and articulate my *tacit* knowledge; for this reason, I do not offer my reader a ‘bounded’ literature review; rather, I ask them to follow me meandering, an ‘overland travel’ (Ingold, 2011: 153) through literatures of many kinds throughout the span of my thesis.

My thesis is peripatetic, as I invite my reader to walk with me through a terrain that was shook by the COVID-19 pandemic, forcing me to find a different path into new knowledge: my initial project was within healthcare training, where VR was already used extensively including in phobia treatment, anatomy and surgery practice. VR had been called an ‘empathy machine’ (Milk, 2015) enabling the participant to ‘walk in someone else’s shoes’, gaining insight and becoming more attuned towards them. While much emphasis was placed on visual immersion, I was interested in ways of learning for doctors through listening to patients’ voices, while enveloped in their everyday personal spaces. By creating immersive experiences encompassing spoken narratives, real-time animation, and digital photogrammetry, I aimed to illuminate the personal whilst simultaneously offering the patient a prospect of offloading trauma and commencing a healing process. The final part of my study was to involve patients and doctors partaking in workshops together, virtually exchanging their personal spaces while physically exchanging their VR headsets, followed by discussing, face-to-face, what they may learn from each other. My previous practice in CGI animated documentary, which I describe in greater detail in *Background to Practice* (pp.8-13), was to migrate from the flat screen into the life-size Stage of VR, and the ‘camera-walk’ was devised as a method of documenting spaces of everyday life on foot, towards creating digital environments to be experienced in VR, just as peripatetically.

The intentions of this thesis, articulated in this paragraph, shifted considerably through questions raised by the onset of the COVID-19 pandemic. While my research practice was envisioned as a move from Animation into VR, the pandemic caused, not an interruption, but a change of course. In 2020 I put away the shared headset as the possibility of virus transmission would contravene the ethics of working with human participants. However, a step-back is not a step-away: what was to be an ‘injection’ of Animation practices and sensitivities into VR became instead a ‘booster shot’ of VR into Animation, leading me away from the headset and into screens of many kinds. Equally, while the pandemic restrictions drastically changed the field of my practice, they also brought forth new possibilities for remote collaborations via immersive technologies, and, in the next section, I delineate the principle questioning that my thesis attends to.

Before, ‘diving’ into the overview, aims and questions of my thesis, a note on the visual material that is embedded in these pages. Rather than intersperse my sub-chapters with images along the main body of the text, I include them at the end of each self-contained segment, with the aim of giving

them, and my reader, room for interpretation, sans exegesis, almost silently. My reader may follow each sub-chapter without pausing over images, or indeed stop and locate the figure referenced; conversely, they may be primarily a viewer of those images presented in sequence and bypass the written elements. The list of figures (pp.9-10) is thus a kind of gallery space for my work (with Farocki and Flusser as special guests) as well as documentation contributions by named photographers, or institutions. My thesis does not include illustrations from VR works by other artists that I refer to, because flattening a VR experience into a still cadre mislays the ephemeral, rounded and gestural experience as animated by its player; promotional stills convey the intentions of their makers rather than my own impressions, so I prefer to articulate the latter in words only. My moving image works accompany my submitted thesis within their respective sub-chapters, and as web links in the bibliography. These works – the documentation of my site-specific installation *Deep Waters* (Athanasopoulou 2020a), the AR exchange documentation *Polykatoikia:Peripatos* (Athanasopoulou, 2022a), and the short film *The distance between the staircase and the sky* (Athanasopoulou, 2022b) – serve as practice-conclusions in their own right, but also allow for distance from the main body of the thesis, so that a viewer may also read them beyond my text.

Thesis Overview, Aims and Questions

While the aims and objectives of my research had to be re-adjusted, certain key elements persisted throughout. The first is a deep curiosity for the meaning(s) of empathy, stemming from the persistent trope of VR as ‘empathy-machine’ (Milk, 2015), often accompanied by the expression ‘walking in someone else’s shoes’. As an Anglo-American idiom that does not easily translate in other languages and cultures, its persistence as an explainer of what empathy *is*, and of what VR *does well* requires investigation, which can be articulated as such: **what is the significance of ‘walking in someone else’s shoes’ within the rhetoric of VR as empathy-machine?** I engage with this question within *Chapter 3: Empathy’s Shoes*, and *Chapter 4: VR’s ever-new frontiers*. These chapters are closer to a ‘traditional’ thesis, as they glean from a variety of texts on the history and philosophy of empathy, as well as from those of VR. For VR, I am interested in both philosophical discourse and in what is technologically-afforded, and how VR’s techno-spirituality attempts to concretise the rather ‘slippery’ notion of empathy.

The second key element is the desire, or aim, to engage in dialogic artistic collaboration which passes the creative baton back-and-forth, beyond a strict dichotomy of subject-object. Because my practice is of a broadly documentary nature, and engages with walking, my collaborators are my co-walkers, and the baton exchanged is the physical stick of the 360-camera. With the pandemic enforcing a distance through travelling restrictions, this aim is (re)drawn as such: **how does the ‘camera-walk’ as a peripatetic artistic practice *make room* for remote collaborations?** Articulating this aim as a question reflects, at first, my anxiety to overcome the geographical distance between my co-walkers and myself. The ‘how’ stresses the shift from what was intended to be face-to-face and body-to-body, via VR, into a different experiential frame, and part of the question becomes answered through AR and animation. Crucially, this is not a technological matter only; rather, ‘to make room’ necessitates space given *in* the work for collaborators to express themselves, and to also make time for responses; to recognise them as individuals rather than as nameless, faceless contributors.

The practice leads the way, wanderingly, in conversation with artists and theorists (and those in-between), through works, and words. Importantly, the ‘how’ of my method within this project is always also a poetic² question, rather than a clearly delineated path which expects a fully-functioning output. *Chapter 2: Black boxes* pays attention to the photographic camera, to understand the baggage

² Poems feature prominently within my thesis, but a poem is also something ‘created, from [Greek] *poiein* to make’ (Brookes et al., 2023: 1539). I consider the poetic as ‘the thing made’ and, more playfully, also as ‘the thing made-up’. My poetic question therefore instigates some kind of making, including the possibility of making-up, in the sense of creation and invention rather than deceit.

carried by the VR tools that I carry. Accordingly, I pick up my GoPro camera and walk, first within *Chapter 5: Solo Practice*, partaking within a technologically-informed experimentation that becomes illuminated by hauntology and phenomenology. *Chapter 6: Collaborative Practice* begins new dialogues with my collaborators as they walk with me, and poetry gives me further clues into knowledge. Both practice chapters are accompanied by process images, film stills, and documentations of ephemeral exchanges; as I noted within the introduction, my practice includes a site-specific installation (documented as a short film), and two more short films. *Chapter 7: Discussion and Conclusions* summarises my research findings, states my contribution to knowledge and the fields that my research connects to, in relation to the original aims and objectives as well as to questions that were opened up through my study. Because I entered this research project as a practicing Animator, it also addresses a practice-research-related interrogation: **what do I do while researching as an animator, and while animating as a researcher?**³

There are therefore two lines of enquiry within my thesis; one is concerned with how empathetic VR as enabled and ennobled via the ‘walk in the other’s shoes’ idiom; the other finds things out through experimental practice, dialogue, and walking. A point where these two lines cross is Harun Farocki’s essay *Einführung* ([2008] 2016), which suggests ‘another kind’ of empathy, that opens my solo practice chapter (p.107) and inspires my collaborative practice (p.146). Borrowing from Farocki’s ‘unspoken rules’ (Ehmann, 2016: 23-4), I am also moving towards ‘another kind’ of VR practice that transforms the spherical video of 360-VR into the ground of research on the haunted iconography of photogrammetry, into the ground of a site-specific installation (*Deep Waters*), into the ground of AR within an ephemeral exchange documented as a short film (*Polykatoikia:Peripatos*, 2022) and, in the end, finds once more the physical ground of the cinema auditorium (*The distance between the staircase and the sky*, 2022). Taking a cinema seat (Fig.1), my thesis goes full-circle, enriched by performance and philosophy, informed by history, and marked by the traces of my co-walkers. Like one of Landrum’s *théoroi* (2016: 31), I have beholden wondrous sites, and, upon my return, my thesis is an account of such a journey.

³ This question is inspired by the musings of multidisciplinary artist Pierre Hébert, who asks: ‘[w]hat do I really do when I animate? I have the objective of attributing some kind of philosophical weight to the activity, and refuse to see it simply as creating the illusion of motion frame by frame’ (2005: 182).



Figure 1. Documentation from screening at *Jill Craigie Cinema*, Plymouth University, March 2023

Background to Practice

In *Immersion in the Visual Arts and Media*, Burcu Dogramaci and Fabienne Liptay suggest that the term ‘immersion’ has a wide variety of uses, ‘especially in the English language, a baptismal font or a swimming pool, a chemical solution or a medicinal bath, the shadow of a planet or a foreign language can equally serve as immersive ‘media’’ (2016: 1). In what was my first ever public talk about my animation practice, in 2002, I addressed a room of art students at the École Cantonale d'Art de Lausanne, and my first words were that “we watch films because we want to immerse ourselves in different waters”. This is the only phrase that I remember from that talk, because it allowed me to verbally encapsulate the why’s of practices (film-making and film-viewing) that up till then were, for me, mainly conducted in silence.

Before my doctoral research, I had worked for over 15 years with digital animation towards short films for screen and gallery space. Like many in my field, I am an autodidact learning by trial and error; getting my hands ‘dirty’ with software not always designed specifically for animation, the computer offers me a kind of playground for creating moving images to share with fellow practitioners and audiences within festivals, screenings and art events. Working independently and through commissions, my films grow out of intense experimentation, with minimal supervision and without ‘corrections’ from the commissioning bodies. As animation scholar Paul Taberham describes, within experimental film practice ‘[i]nstead of pre-planning a film and then executing that plan in the same manner as a commercial film, the entire act of creation may be a process of discovery’ (2019: 13). My experimental animator’s know-how is rehearsed afresh with every new project, and - particularly because I animate alone - missing the early, clear articulation that is born when verbally sharing a process as it happens, or defending a position within a team project. This process of discovery means that:

‘[y]ou can make [films] in a trance and not know why it is happening. Until it feels or looks right. [...] The biggest key in all of my work is that there is no plan, there is no storyboard. It’s a let’s see what happens kind of work, I bring things out of a hat and see if they work and I throw an awful lot away until something makes sense. [...] [I] enter the animation process in a nebulous way, like I enter a foggy room or landscape, and things get clarified only when I dare to give shape to them’ (Athanasopoulou, in Taberham, 2019: 27)

‘Making films in a trance’ describes a process that is often wordless, silent and deeply haptic; I find my animation out while I am making it – with one hand on the mouse, the other on the keyboard, my eyes on the screen – I become entranced by the animation’s own performance. Mistakes are not only expected but truly welcome, and a mis-behaving animation can offer avenues that could never be planned ahead. Working with 3D CGI Animation, I craft and travel the digital landscape with a virtual

camera, documenting a new territory that becomes known to me through movement. What this means, however, is that my animator's know-how does not always know exactly how something will be achieved, and neither why something appears as interesting or worthy of attention to me: my know-how is therefore from the start also an *(un)know-how* that sparks my curiosity and keeps me going until things start making sense, even if that sense is not easy to articulate. This carries with it, according to Taberham, the possibility that while experimental animators express their own language out of a sense of compulsion rather than being intentionally obscure, this may still alienate viewers (2019: 17).

A work can be an enigma not just to the audience but also to the artist, but the viewers may also enjoy the mystery, and accept that a rationale motivated the images that they are not party to; they might also simply enjoy the aesthetics (Taberham, 2019: 20). Indeed, there are occasions when I am delighted by how a viewer really *gets it*, recognising elements that are there for a reason I know already; at other times, their comments expand my understanding of the film in unforeseen ways; when that happens, I get momentarily and pleasantly alienated from my own work, as it shifts into a fresh perspective. Because my practice finds out by making, and by getting lost, it also invites a consideration of Tim Ingold's idea of improvisation as entanglement, because 'to improvise is to follow the ways of the world, as they unfold, rather than to connect up, in reverse, a series of points already traversed' (2010: 10). Therefore, the final piece is also a surprise to me, as I allow the work to do its own work, which I witness as an audience simultaneously as I direct it. Here, my independence as a solo artist matters, because unlike in a commercial film controlled by the agency and/or producer, the end of my film is decided through the journey of the filmmaking, which is a forward one.

Some of my collaborative short films may be seen through the lens of documentary, considered by documentarian John Grierson as 'the creative treatment of actuality' (1933: 8). Animation's claim to truth becomes unsettled through filmmaker and theorists Bill Nichols' view that documentary is '[d]ependent on the specificity of its images for authenticity' (1991: 29). Film studies scholar Bella Honess Roe considers that animation both lacks and exceeds the visual indexical bond between image and reality, which may also be a strength; she claims that animation, freed from the 'indexical bind' of conventional documentary, may represent 'temporally, geographically and psychologically distal aspects of life beyond the reach of live action' (2013: 22). While a detailed foray into animated documentary is beyond the scope of this writing, I am particularly interested in some of its uneasy positions. Honess Roe adds context that::

'the history of the overlaps between animation and documentary is not one of easy continuities. [...] What is important [...] is that from early on animation was seen to have a unique representational function for the non-fiction moving image, one that could not be fulfilled by the

conventional live-action, photographic-based alternative' (2013: 6).

Early examples include Max Fleischer's animated films for the training of soldiers from 1917, as well as the animated maps of Frank Capra's propaganda films for the US government made between 1942-1945, entitled *Why We Fight* (Honesty Roe, 2013: 8). The link between CGI Animation and the military is of grave importance: animator and historian Tom Sito describes how, following the launch of the orbital satellite Sputnik by the USSR in 1957, the Advanced Research Projects Agency (ARPA) was set up by the United States Defence Department; accordingly, most of the major breakthroughs of the 1960s and 1970s, including data storage, core memory, graphic displays, networking, virtual reality, were accomplished with ARPA funding. Sito explains that *Sketchpad*, considered to be the first true computer animation program, was created by Ivan Sutherland as a young student at MIT's Lincoln Lab in 1962, using a computer that had been taken out of action by the Defence Department in 1959 (2013: 40-1). The military birth of VR and CGI animation is shared by video games, and artist and theorist Simon Penny asserts that '[t]raining simulation and interactive entertainment were born joined at the hip' (2004: 75). Fleischer's animations for the training of soldiers find a progeny in the computer-generated animations that, for theorist of media Pasi Väliaho, teach recruits to kill within video games, by training their motor skills, desensitising them to danger, and diminishing their reluctance to kill (2014: 65).

I have also created maps of war with CGI animation, not to train soldiers but to communicate the ravaging that war inflicts upon the fabric of the land, as synecdochically traced on the fabric of a garment. *The Violet Hour* (Athanasopoulou, de la Haye, 2014) is a collaborative film I created with curator Amy de la Haye for *2014 Now*, a project curated by Alison Moloney. The title is a phrase from T. S. Eliot's *The Waste Land* (1922), evoking the end of day, 'when dusk beckons and the sky turns violet' (de la Haye, 2014: unpaginated). The project revolves around the 'Tea Gown', a garment worn by a married woman receiving her female friends for tea (de la Haye, 2014: unpaginated), and thus exclusively indoors; it fades from fashion around the First World War. Moloney explains that the film's viewer is taken into the private, domestic space of an Edwardian home, reproduced using 3D animation; the home interior becomes the contextual setting for the object, similar to how fashion curators scenographically emplace objects in the museum because the garments do not convey the entire narrative (Horsley, in Moloney, 2018: 43). At the Brighton Museum, de la Haye caringly holds up the Tea Gown that the film features like a living body, pointing out to me its seams, signs of repairs, and the sweat stains from the last woman who wore it – signs of her life. I am in-between the material object and de la Haye's vision, and I listen to her, intensely and silently, so that I may imagine what she is imagining: I envision a woman wearing a tea gown at her Edwardian home, facing a window, bathed in the evening light of the 'violet hour'.

Reflecting on my collaboration with de la Haye allows me to build upon Taberham's idea of the experimental film as an enigma that is 'not coming from [the artist] specifically, but rather [that] the work was given to them, and it is their job to make it manifest' (Taberham, 2019: 19). I propose that the role of the experimental animator working collaboratively with non-animators within non-fiction films can be that of a mediator who is almost a medium-as-translator, putting into images the visions of those that she works with – mental images that may even be visions of visions, considering that de la Haye drew from Eliot's poem. I point out that there is a difference when my collaborator is not an animator, because the moving images produced are not created through dividing the labour of the moving image practice, neither are the images created by filming human actors as in a conventional live-action project.

Picking up on the tension between the photographic/impressed and the animated/drawn, referring to a scene from the film where a Victorian illustration of violets has been overlaid over digital video footage of the garment, Moloney notes that:

'[a]lthough animated film might be viewed as a paradox, with the handdrawn illustration seemingly not as truthful as the photographic impression of the world, Athanasopoulou's film depicted undocumented moments and allowed them to be reimagined' (2018: 52).

I am particularly interested in the potential for moments to be reimagined by the viewer, as a visit into a landscape or state of mind that a physical camera could not reach, nor recreate. The final work that I will discuss is such a project, where a live-action film camera was forbidden. *Branches of Life* (Athanasopoulou, 2016) portrays a woman under sedation for a lung operation sinking inside her unconscious. To create the film's space, I witnessed a lung operation at the University College London Hospital, at Westmoreland Street, using a stills camera to document the operating theatre, under stipulation by the hospital not to record moving images. Although ethical clearance had been given for the patient to be photographed, the likeness of the medical staff was not to be made public. In other words, the photographic material that I shot could not appear in the final work.

I *learnt* the space of the operating theatre by moving inside it, in-between humans and instruments, under blinding surgical lights and surrounded by the sounds and smells of the surgical laser. The still photographs that I shot carried no artistic ambition in themselves but operated as references for me to create, back in my studio, the CGI space of the film. Assembling my digital set with my own models as well as ready-made ones bought from online libraries, I began lighting it in the 3D software, like shining one light-beam after another onto a theatre set. Looking through the virtual cameras of the 3D program, I repetitively traversed the virtual space via my screen, through mouse and keyboard, simultaneously remembering what it was like to be moving *there* - the real theatre, the real voices of

the medical crew - but also free to re-imagine the hospital room as underwater. In this space of immersion and dream, the sleeping patient became a deep-sea diver (Fig.2) and her breathing tubes turned into diving helmet pipes, a fragile umbilicus connecting her to living.

It is in the studio that the work materialises, rather than by following a step-by-step plan; it is in the experimentation with my CGI materials and peripherals, in the iterative renders, in the unexpected screen phenomena; it is in the constant replays that I witness, as my own first audience. Within my doctoral research, my Animator's practice allows me to envision a bridge from CGI animation to VR, via *Branches of Life*: the hospital operating theatre transformed into CGI animation's theatre, makes me think of VR as theatre: a space of, and for, performance, created first through digital scenography so that VR players may become immersed while walking its stage. The deep-sea diver's helmet with its breathing pipes brings to my mind the tethered headsets of VR, and the wateriness of immersion is evoked by image-maker and anthropologist Paolo Favero who likens the entrance into immersive environments to an act of 'diving' into and then 'swimming' in a new world. He stresses that the aqueous dimension is not only metaphorical, but that the viewer's movements slow down like in real water, and the air feels heavier than in the real world (2017: 68).

My passage from animation to immersion was based not only in the metaphorical sense of the patient-as-diver, but - in a practical sense - in the CGI environments that both CGI animation and VR employ, and the polygonal meshes that they may share between them. Indeed, some of the digital models that I had employed for my 3D films could be emplaced within VR environments created in Game Engines, and some of the ready-made models that I had purchased for my films had been created (by others) for the purposes of Games and VR. Thus, I was already immersed in the kind of environments that VR employs for its immersive potential. And while the 3D animation software packages I was familiar with were distinct from Game Engines, their common ability to handle specific types of digital objects within digital 3D space is what offered me a bridge into the new (for me) ground of VR. I note here that I describe the software packages as handling objects in a metaphorical sense, whereas my own engagement with them as an animator, was (and remains) thoroughly haptic and tactile, through *physically* handling my animator's tools, including the computer keyboard and mouse.



Figure 2. Still from *Branches of Life* (Athanasopoulou 2016)

Chapter 1: Methodology

Introduction

How to name the research type of a project that pays attention to theory's articulations and equally to the tacit gestures of practice? Linda Candy and Ernest Edmonds offer a concise analysis based on 35 years of 'practice-based research', a term that they favour over related ones including 'practice-led research', 'practice as research', and even 'research as practice'. They find these latter two to be particularly unhelpful, conflating research and practice, a confusion which 'has led to a diminution of the significance of the practice-based approach to the PhD (2018: 63-4). They differentiate between practice-based and practice-led as follows: if a creative artifact is the basis of the contribution to knowledge, the research is *practice-based*; if the research leads primarily to new understandings about practice, it is *practice-led* (2018: 64, emphasis in original). Another approach is offered by James Bulley and Özden Şahin, via a set of reports commissioned by the Practice Research Advisory Group (PRAG-UK); they propose 'practice research' as an umbrella term including *Art as Research*, *Arts-Based Research*, *Arts Research*, *Artistic Research*, and *Performance as Research*; non-discipline-specific terms that the researchers have encountered in the field of practice research in England include *Action Research*, *Close-to-practice (CtP) research*, *Embodied Research*, *Participatory Research*, *Practice as Research (PaR)*, *Practice-Based Research*, and *Practice-Led Research*. They explain that within 'Practice as Research', as coined by Robin Nelson, practice is defined as a type of method paired with research; while this definition is closest to 'practice research', they note that 'the conjunctive 'as', used to bond practice with research, creates a feeling of replacement that doesn't convey simple and direct interrelation' (Bulley and Şahin, 2021: 19-25).

Despite the wide array of terminologies, all of Bulley and Şahin's interviewees⁴ wanted to embrace 'practice research' as an umbrella term; many expressed weariness around discussions of terminology, describing it as a conversation that has confused and impeded the development and growth of practice research, with interdisciplinary artist and researcher Michael Biggs commenting that his committee avoids 'these sort of territorial boundaries and definitions of practice-led or practice-based [...] [as] not productive' (in Bulley and Şahin, 2021: 25). I find all the above terms to be

⁴ For the purposes of the two reports, 62 practice researchers, theorists, research support professionals and policymakers contributed through interviews, surveys and questionnaires (Delgado et al., in Bulley and Şahin, 2021: 3-4).

of value, and indeed within this thesis I use both 'practice-based' and 'practice research'; in addition, Nelson's model being 'specific to PaR in that practice is at its heart' (Nelson, 2013: 38) features prominently in my writing, as my research journey was deeply informed by entering the field of Performance Studies. This sharpened my appreciation for the language of performance, and alongside the 'as' of PaR I also acknowledge scholar and practitioner of performance Richard Schechner, when he explains that:

'[p]erformance isn't "in" anything, but "between". [...] To treat any object, work, or product "as" performance - a painting, a novel, a shoe, or anything at all - means to investigate what the object does, how it interacts with other objects or beings, and how it relates to other objects or beings. Performances exist only as actions, interactions, and relationships' (2013: 30).

What I *hear* in 'Practice as Research' - in knowledge of Nelson's deep commitment to Performance - is a desire, not to replace nor to conflate, but to *challenge* both practice and research towards tracing interrelations that may not be simple and direct, but are worth the effort. Holding Nelson's 'practice is at its heart' (Nelson, 2013: 38) describes a research project that truly speaks to me, animates me, even. In the following sections, I address some of the key facets of my methodology, including the notion of the peripatetic, the function of etymology, the knowledge grounds that it walks, the body in the centre, and certain positional in-betweens.

Peripatetics

Central to my methodology is the notion of *Peripatos*, with its multiple meanings of a school of philosophy, a physical building, a stroll-like walk, and the path where the stroll takes place. Writer and historian Rebecca Solnit explains the term peripatetic as linked to Aristotle's philosophy school which took place within a covered colonnade in the ancient city of Athens called Peripatos. For Solnit, the idea that the ancients walked to think was established because of John Thelwall's 1793 book entitled *The Peripatetic*; it is uncertain whether the peripatetic philosophers talked philosophy while walking, but, in English, the word peripatetic means one who walks habitually and extensively (Solnit, 2014: 15-6). Indeed, throughout my doctoral research, habitual and extensive walking (while simultaneously holding up a camera-on-a-stick) formed the ground of my methodology. If the peripatetic points philosophically and architecturally towards an originary city of Athens - which is also my modern city of origin - the practice of psychogeography, with its emphasis on urban walking is of interest. Psychogeography points at another capital city - Paris, and artist Guy Debord's call in 1955 for a discipline that 'could set for itself the study of precise laws and specific effects of the geographical

environment, consciously organized or not, on the emotions and behaviours of individuals' (in Bauder and Engel-Di Mauro, 2008: 23). While the figure of the *flâneur* in Baudelaire and Benjamin are deeply relevant to psychogeography, I note that the landscapes that I walk are not urban only, and my 'camera-walk' takes its first steps at an abandoned farmhouse in the Greek countryside, which I recount within *Ghosts in the Church* (pp.118-119).

Scholar and artist Katya Mandoki uses the term *peripatos* in the sense of 'to traverse, to roam' and, via Aristotle's peripatetic school, links 'corporeal peripatos' with the 'intellectual peripatos engaged in learning' (2007: 94). She explains that:

'[p]eripatos rests on playful curiosity. When painting a picture, writing a story, or elaborating a theory, the game we play is exploratory: we play *what if*' (2007: 94 emphasis in original).

Mandoki's analysis is significant for a methodology that finds its way through the 'what ifs' of wondering, wandering, and erring astray. A peripatetic methodology formed through the feet finds interest in the way that critical methodologist Dan Miller etymologically unwraps the word method. He explains that:

'[m]ethod, etymology argues, has to do with following paths and pursuing ways. To get from here to there, take this road, proceed a certain distance, turn at a particular point, again at another point, and you will reach your destination. Method suggests that a specific path is in some sense optimal: there may be other routes, but they will not lead you to your goal, or if they do go to the right place, they are longer or more arduous or less easily followed. One particular road, one hodos is the proper path' (in Miller et al., 1987: 1).

Here, the road (*hodos*) inside method (*methodos*) can be appreciated as a *spatial* metaphor bridging knowledge with traveling and walking. If there is danger in marking a single method as a *proper* path in the detriment of missed wonders, Mandoki's peripatos-as-play shows another way; she explains that, unlike competition's challenge resulting in a winner and a loser, the adventure of peripatos 'consists in exploring another path, in deviating from the routine towards a different option' (2007: 94-95). A peripatetic methodology may thus potentially follow *and* divert from any optimal path, allowing the circumvention of any 'proper' applications of specific methodologies; instead, I may pick my way through different approaches, seeing where my own feet take me. Therefore, to explain *peripatos*, I look to where I stand: *patos* can be understood as the *ground* and the *bottom*, and the verb *patein* refers to the foot moving and making contact with the ground; what is further gained by *peri* as 'around' is a sense of 'walking around'. This sense persists in modern Greek 'perpató' ('to walk') and 'peripatos' is an unhurried stroll taken for pleasure, alone or in company. In other words, my emphasis on the *peripatetic* rather than the *psychogeographic* reflects my own practices of everyday life, and it is neither an Ancient *peripatetic* nor a Parisian *flâneur* that sets me in motion.

Rather, *peripatos* reminds me of my maternal grandfather, Panayiotis Tzevelekos, holding his walking stick in readiness for his daily stroll; when I was a child, we would take such walks together. My grandfather continued strolling into his late eighties, by which time he had lived with profound osteoporosis for decades. Solnit names three prerequisites to going out into the world to walk for pleasure, that are free time, a place to go, and a body unhindered by illness and social restraints (2014: 181). Being retired, my grandfather had time, but his body was hindered, and his movement was slow and shuffling. Ingold and Vergunst explain that growing older is a lifelong process, and

‘people have continually to readjust the patterns and styles of their walking in order to accommodate the changes undergone not only by their own developing bodies but also by the bodies of those, including young children or the elderly, whom they walk *with*’ (2008: 17 emphasis in original).

This sense of *peripatos* as readjusting to each-other’s pace within a mutual development between co-walkers, a process and a procession in-between us, resonates with me deeply; as my body continues to change and as I keep walking with others, *peripatos* and I never stop catching up with each other. Walking is a part of everyday life that humans seem to perform automatically, and it is with a disruption - such as a slip, or a stumble - that we remember how we take walking for granted. One of my principal co-walkers, my father-in-law Mick Clark, shares with me his ‘dizzy diary’ where he recounts his experience of living with Motor Neurone Disease (MND), and our joint peripatetics within *Tread Softly* (pp.147-60) make room for reflecting on agency, poetry, and collaboration ethics.

The corporeal emphasis on the peripatetic means that I do not use the word only academically or metaphorically, but as rooted in the physical act of walking, and its complex interweavings of knowledge and traveling. Philosopher David Turnbull speaks of how those can be ‘dimly perceived in a set of related root meanings of many terms closely associated with making, meaning, and knowledge’ (2007: 142). He includes terms like *symbol* from ‘bolein’ meaning ‘to place or throw’ and ‘syn’ meaning ‘together’; *metaphor*, meaning a device for being transported across space; *theory* from ‘theorus’: one who travels to see things; *travel* originally ‘travail’ meaning ‘to work’; *method* from ‘meta’ meaning ‘after’, and ‘hodos’ which is a way or path. Turnbull points out that these ‘elements of activity, work and movement are now almost absent and invisible, as evidenced in our constant use of terms like ‘method’ or ‘way’ without realising they literally mean paths or trails’ (2007: 142). I am deeply interested in *why* these elements are now almost absent and invisible and may only be dimly perceived in etymologies; particularly as etymology is also part of my methodology, I examine it in the following writing.

Etymology and Translation

Much of the vocabulary informing my writing arises through Greek and Latin roots, which may invite criticisms of Eurocentricity. Philosopher Molefi Kete Asante recounts that '[t]he very structure of the knowledge system in the West kept one from opening doors to Africa or Asia. An ancient Greek was behind every scientific or humanistic door' (2006: 157). Asante's reader is invited to imaginatively witness, and even enact, a set of scripted movements while roaming a metaphorical space. Employing metaphor to move the reader into a place of imagination agrees with the very structure of the word *metaphorá*. *Metá* means that which may be chronologically later, or spatially further, or aside; *phorá* derives from *phérein*, the verb 'to carry'. My etymological probings are not in the name of some essential and diachronic truth that stabilises Western narratives, but rather because they are part of my own mother-tongue, and because they employ space to speak of space – as I also move in space to make space within my practice.

Through etymology, I bring forth my lived experience as a non-native English speaker, making sense of philosophical ideas through a kind of archaeology: a 'digging around' of rooted connections via older word forms as rehearsals of contemporary ones. I do not seek 'correctness' but appreciate the *spectral* traces of past alternatives - not as *more* or *less* true, but of a different quality of truth: a meaning that has disappeared may be of equal importance as what persists. My appreciation of etymology happens through English, affording me a certain distance from words that I may have otherwise taken for granted; in this sense, etymology simultaneously reconnects and alienates me from the familiarities of language. Crucially, my appreciation of the mutability of language affords me a degree of playfulness towards linguistic authority; equally, the historicity of etymology may inspire critical resistance towards terms that garb themselves in archaic prerogative. Accordingly, a neologism such as 'empathy' is of interest, particularly as the English word appears to be a nearly perfect antonym of Greek *empathēia*, and I recount this within *Slippery shoes* (p.61).

Taking a step back to Turnbull's interweavings, is there a way to attend the movements revealed through etymologies, beyond the colonialisms perpetuated through language? Choreographer and phenomenologist philosopher Maxine Sheets-Johnstone points out that '[e]xtensive studies of root forms show both that the referents of primordial language were motional-relational complexes, not objects, and that the symbolic structure of primordial language was anchored in iconic sounds rather than in arbitrary ones' (2011: 331-2). Thus, what is glimpsed faintly within etymologies is not just linguistic constructions, but something crossed-out through the persistence of the false Western dichotomy of mind/body: the fact that 'verbal language is post-kinetic' (Sheets-Johnstone, 2011: 515),

and ‘movement is our mother tongue’ (2011: Xxv). This understanding allows me to appreciate the movements that formed language, but also to *think* in movement, and to pay attention to what my own movement tells me. It also means that by practicing *peripatos*, I listen and speak in a kind of universal mother-tongue of movement.

To extend Sheets-Johnstone a little further here, ‘translation’ *also* speaks a mother-tongue of movement. This is not only revealed etymologically, as deriving ‘from Latin *translātes* transferred, carried over’ (Brookes et al., 2023: 2096), and mathematically, whereby translation occurs when the origin of a coordinate system is moved to another position (Brookes et al., 2023: 2096), but also in the practice: Canan Marasligil, translator, author, and artist in movement, says that ‘[t]ranslation [...] is movement: physical and intellectual, between spaces and languages, across geographies, cultural and political contexts. It is also a movement between emotions: people moving each other’ (2021: 5). My methodology applies translation in the movements between space and place, in the transformation between 360-video and animation, and in the in-betweens of Greek and English, including the translation of poetry as part of my collaborative practice, which I delineate within *The distance between the staircase and the sky* (pp.193-4).

Knowledge Grounds

Because my peripatetics ‘walk’ both physical and philosophical terrains, Sheets-Johnstone analysis – in the language of a dancer-who-became-philosopher – is of relevance, as she points out that:

‘[t]he ground we want to examine is under-foot: we can feel the ground. But if we walk across it with our shoes on, we feel it less and know it less than if we walk it with our bare feet. Walking it in our bare feet, we feel the stones, the hardness, the mud, the unevenness directly [...] the difference between exploring a terrain in shoes and socks, and even shirt and tie, and exploring it with our bare feet is undeniable. In the latter instance, we let the terrain speak to us *directly, personally*. We do not just leave our footprints, but our feet themselves are marked by our contact with the terrain. In effect, the ground we are exploring *touches* us; nothing *professional* separates us from it’ (2011: 295 emphasis in original).

Sheets-Johnstone’s heightened sensitivity is achieved through laying bare the habitually covered-up soles of the feet, and Ingold reminds me that ‘it is surely through our feet, in contact with the ground (albeit mediated by footwear), that we are most fundamentally and continually ‘in touch’ with our surroundings’ (2004: 330). The terrain speaking (back) directly also entails vulnerability. A barefoot exposure takes place, metaphorically, in being seen publicly during the ‘camera-walk’: the presence of witnesses throws a spotlight on my presence, and passers-by occasionally intervene by heckling

me. For Sheets-Johnstone, '[t]o take a stand is to refuse to separate the professional and the personal. It is at the same time to refuse to separate reason and passion' (2011: 294). This resonates with the challenges faced when a personal artistic practice-research 'lays itself bare' within an academic and professional terrain, in what can at times feel like a live self-anatomy class. This discomfort was articulated within the Q&A session of the *Practice-as-Research in Animation* Symposium in May 2021 when I said that "having to share work that isn't finished is painful; it's a little bit like you are performing an autopsy on yourself and you're showing people your liver" (Athanasopoulou, 2021c).

Interdisciplinary artist and researcher Mike Phillips discusses the academic metricisation of creative practice-based research as a process overpowering the UK education system with culture testing and quantification since the 1980s, so that '[t]he frog is now fully dissected, its bits are spread out on the tray in an orderly fashion, and we still can't find that funny little ribbit sound' (2021: 220). There are elements that I want to pick-out from the two metaphors, my messy live self-autopsy next to Phillips' orderly and silent dissection tray. Within practice-based research '[t]he practitioner researcher is in the centre of the research' (Candy et al. 2021: 61), and when the production of artifacts is also expected, there is a doubling of responsibilities without an automatic doubling of the time and budget needed to undertake them. Artistic researcher Falk Hübner asserts that sacrifices including countless hours of practicing, rehearsing and editing may not be a problem for the practice researcher, but careful ethical consideration should be given to participants or collaborators who may not be as deeply involved (2021: 1302). Even on a 'solo' level, the knowledge one draws through their own practice can be simultaneously pleasant *and* painful. Although 'failings' are part of my process, a public articulation of work where things have not yet 'fallen into place' can be excruciating, an outing of a still-tender organ.

I return to Nelson explaining that PaR 'investigates phenomena which can be explored only through a practice' (in Scott, 2016: Vii). However, when trying to articulate certain sensations rising during the practice, I find myself lost for words. For example, how to describe the unexpected, and pleasurable, awareness of my body-moving during the 'camera-walk'? I had walked before, and I had used a camera before, but there was something different happening to me while engaged in this unhurried, unframed process; something that I could not name. I recognised a kind of 'pleasure-in-movement' that I dimly remembered from/while running in early childhood, a full-body-moving understanding from the time before I knew the words 'body' or 'movement' or 'sensation': my mother-tongue of movement, my own, bodily animation. Accordingly, in the following writing, I look towards the body in the centre.

The body in the centre

Phenomena which can be explored only through a practice (Nelson, in Scott, 2016: Vii) invite the consideration of the *idion* of the practice - its singularity and specificity. The word 'idion' can be elucidated through familial words such as 'idiom', 'idiosyncrasy', but it can also be engrained within the *sound* of poetry. Professor of rhetoric James L. Porter speaks of radical euphonist critics, active from the beginning of the Hellenistic era down to the mid-second century, for whom the value of poetry 'lies not in what poetry means but in the way it sounds and in the immediate pleasures it yields' (2006: 343) and poems are 'no more than surfaces of sound that impinge on the hearing' (2006: 344). This form of euphonism, explains Porter, denies the possibility that what is classical has any universal properties that can be instanced in particular works of art, and:

'far from being an ideal, let alone an idea or a formal property of any kind, the *idion* is materially embodied and cannot be translated, whether into another context (as meaning) or into language (as description or paraphrase), without damage to its effects, nor can it be compared to anything else but itself' (2006: 346 emphasis in original).

An approach highlighting an *idion* is known within the social sciences as the *idiographic* style, which 'focuses on specific elements, individuals, events, entities and situations, documents and works of culture or of art and concentrates on what is particular to these. This differs from research that highlights regularities and repeatable elements of form or behaviour as part of larger processes or patterns concerned with general laws and theories [...] known as *nomothetic*' (Wharton in Jupp, 2006: 142 emphasis added). There is a resonance here with some PaR considerations: expanding on the idea that artistic knowledge with its focus on the singular and the unique cannot be comprehended in laws, Nelson highlights the challenge for PaR methodologies and methods to frame artistic knowledge on a different but equivalently rigorous basis (2013: 39-40); some of these methods tend to be highly idiosyncratic, and arise out of 'an enthusiasm of practice' (2013: 135). To trace the *idion* of my practice, I look at a type of knowledge that Nelson describes as know-how: 'insider', close-up knowing that is experiential and haptic, tacit and embodied (2013: 42); he explains that:

'[a]dvanced students engaging in PaR bring with them to the praxis a baggage of prior educational experience and, typically, specialist training. Most hold a first degree and masters-level qualification and many have significant professional experience. Accordingly, they know how to engage in their practice' (2013: 42).

This allows me to imagine the practitioner's insider knowledge as baggage in a research journey - not only as storage, or burden, but also as a box one puts down to serve as a seat to read, or watch a film, or a play, or even a sunset. Through this I understand that, firstly, the baggage of practice that a practitioner-researcher carries with them influences the journey-as-pilgrimage itself; secondly, that

this baggage might allow one to collect and carry mementos or souvenirs from the journey in the form of documentation; thirdly, that the practice-as-box, especially when dealing with any black box of technology, can offer wondrous sites/sights to be beholden while attempting to open it. As I explained within *Background to Practice*, because my practice is experimental, I do not know in advance how something will be achieved, and neither why something appears as interesting or worthy of attention to me: my know-how is therefore from the start also an *(un)know-how*.

As my research relies on immersive technology that within a short amount of time become ‘upgraded’ and obsolete – including the GoPro, various computers, VR headsets, mobile phones, software applications – what remains constant is the body in the centre of the research, *my body*. This agrees with practice-based research (Candy et al., 2022: 61), but also with a Flusserian approach in more general terms, whereby:

‘[t]he researcher is located at the center of his environment. It doesn’t matter where—wherever he is, that is the center. Many things are happening around him, some of them of great concern to him. They press themselves on him, and he throws himself toward them, projects himself against them’ (Flusser, 2014: 156).

In remembering that my research is also deeply informed by Animation Studies, my position as an animator ‘in the centre’ of the work also meets resistance. Animation scholar Mihaela Mihailova juxtaposes two distinct positions on the subject. For animation scholar and scriptwriter Paul Wells, ‘a completed animation represents an example of an entirely controlled environment which is a symbolic space wholly predicated on the whim, intention, and bravura of the animator’ (1998: 228). Mihailova considers ‘this daydream of an unconstrained creator’ (2013: 132) to be refuted by philosopher Alan Cholodenko decrying the ‘purist, utopian, idealist, mythicising ontology of the animator as [...] supreme human being, individual, master, who gives birth to worlds, to universes, made to his measure’ (in Mihailova, 2013: 132). Cholodenko considers it retrograde that animation studies ‘poses, embraces and models the animator as the very limit case of the filmmaker, that is, as *author*’ (2007: 12 emphasis in original). He favours a state of ‘spectral animators animating animatically with their lifedeath, turning spectatorship – of both author and reader – into spectreship. Do we need to say that such an author, reinstated as spectre, is by definition impossible to track down?’ (2007: 14). This is particularly pertinent for the way that the human body is at the centre of the immersive experience and its *tracking* can be considered as a *condition* of VR: media theorist Deborah Levitt explains that ‘[w]hile a film may continue to play when a viewer leaves the room, a VR experience needs the presence of the experiencer to function’ (2018a: unpaginated). More so, since a headset that is untrackable by the computer will enter ‘sleep’ or ‘idle’ mode, the experiencer must not only be present but also wear the headset, and move, to be ‘seen’ by the system.

Because the headset acts like a blindfold, the VR player can be an unsuspecting performer amongst an equally unsuspecting audience awaiting their turn, such as in queues forming around public VR experiences⁵. From my own experience, I note the unevenness between the bystanders and the player, because she moves in a virtual world opened up for her only, and attracts attention while she is both ‘here’ and ‘there’. The player and her queuing audience do not share a view – she sees the VR content while they see *her* – but they all share a room, and a floor, and thus a stage. Lacking the context of the player’s gestures, they see her in an intimate state, her inhibitions potentially thwarted by feeling unseen – her head in the virtual sand. There can be beauty and drama in such experiences, and the roles of player and bystander are interchangeable because, once the headset is exchanged, the next person begins to make ‘a spectacle of themselves’, for the previous player to potentially witness. This overlap of worlds – the virtual one and the physical one – has a learning potential through the loops of turn-taking, with the bystander potentially becoming more attuned to the blindfolded. However, such occasions can also take a more negative turn, as seen within video recordings of VR players experiencing mishaps released in social media⁶. Within such documentations of VR that ‘went wrong’, presented as ‘fails’ for laughter, any accidental potential for beauty is excised in favour of comedy, in what becomes a virtual-to-real theatre of cruelty: people screaming towards invisible monsters, punches thrown in the air, television sets cracked by flying hand controllers and, more painfully, players colliding with screens, walls and door-frames. Such painful scenarios affect particularly in-home experiences, that lack the trained helpers overseeing out-of-home VR⁷. While the above are relevant to my study which began within healthcare training in VR, the recognition of the body in the centre is not limited to healthcare, nor to the human only, but to the environment.

⁵ Catherine Allen, a specialist in XR audience strategy, highlights an industry tendency to use the spectacle of someone in VR to amuse and entice onlookers, and audiences are concerned about being made fun of, or being seen in a vulnerable state, so that ‘being seen publicly wearing a headset was for many, a deal breaker’ (Allen et al., 2020: 14). Researcher and policy advisor in XR, Verity McIntosh, offers an array of anxieties of the player-to-be, including being watched or recorded; whether the headset will work with one’s hair, headscarf, hearing aid, glasses, or wheelchair; becoming entangled, bumping on someone, being purposely jumped out at, or touched; sensory overload; an unclean kit; whether one’s own sweat, tears or makeup may rub off on the headset (McIntosh, 2018: unpaginated).

⁶ Examples of ‘VR fails’ include: *Mom mistakes PlayStation VR for real life* (Tara, 2017); *Funny VR Fails and Funny VR Moments Compilation Part 1 #vr #metaverse* (Greenpolygames, 2022); *Oculus Virtual Reality Fails on TikTok Compilation* (TikTok Unlocked, 2022) *VR Fails That WILL Make u Laugh* (TheVRhub, 2022); *12 MINUTES OF VR FAILS | #1* (Gamer Jar, 2023).

⁷ A recent study on consumer-related injuries from VR devices examined a US-wide sample of emergency department records from 2013 – 2021; patient age within the data ranged from 13 months to 75 years, and while there was increased risk for skeletal injuries with age, the youngest patients were more likely to be bystanders of family members using VR device; the first such injury was reported in 2017 with 125 estimated incidents, and, with increased VR units sold, ‘by 2021, there was a 352% increase in VR injuries totaling a weighted estimate of 1,336 ED visits’ (Cucher et al, 2023: 1396).

Ingold notes that contemporary discussions on human responsibility in the environment often assume a dichotomous opposition between ‘anthropocentrism’ which values non-human elements as tools to human ends, versus ‘ecocentrism’ which credits the natural world with intrinsic value; despite their conventional opposition, both perspectives share a global perspective placing humans on the periphery of the lifeworld (2002: 218). While anthropology has the human, the *Anthropos*, at its core, rather than focus on humanity at the expense of nature, ‘it is to restore the human being to where it belongs, at the centre of a living world. It is to recognise that this world, which surrounds and envelops us, is much greater than we are, that our very existence depends on our relations towards its inhabitants, and that these relations entail responsibilities and commitments on our part’ (Ingold, in Thomas, 2020: unpaginated). A methodology that highlights the body in the centre of the environment is relevant also in terms of VR’s industry perpetuating practices of colonialism, including mineral extraction, and I return to this in *Chapter 4: VR’s ever-new frontiers*.

In-betweening

Ingold explains the environment as a domain of entanglement, and it is within ‘a tangle of interlaced trails, continually ravelling here and unravelling there, that beings grow or ‘issue forth’ along the lines of their relationships’ (2003: 305-6). The central thread that interweaves my practice and theory is traced on foot, in what I call the ‘camera-walk’. The thread is the *clew* that I simultaneously create, and follow, and wherein I become entangled as I go on, via improvisation, experimentation and iteration; through the ground that I walk, through encounters with people, machines, practices, and ideas. My research emmeshes methods that I form and that form me, so that new knowledge threads may also inform others. Ingold emphasises that the pathways/trajectories along which improvisatory practice unfolds do not describe connections between one thing and another, but lines along which things continually come into being, therefore not a network but a meshwork (2010: 3). I draw from desk study, first-hand VR experiences, and from the ‘camera-walk’ ‘feeding’ into SfM photogrammetry, AR, and CGI Animation. New threads are picked through writing, and through the feedback of collaborators and viewers. This invites the metaphor of braiding that sociologist Ashleigh Watson employs within her ‘methods braiding technique’, explaining that:

‘[b]raiding is a visual metaphor. The strands of a braid are distinct; however, they interweave and each meaningfully impacts the other strands, and the direction and larger shape of the braid as a whole. In methods braiding, multiple methods are simultaneously employed across distinct research phases, with equal significance and attention given to each method in all phases’ (2020: 68).

I may frame the above in my own practice in the interweaving of the nomothetic and the idiographic

through the ‘camera-walk’, whereby theory and practice are threaded through a performative procession enlightened by philosophy, while immersed in a technologically-materialised practice⁸. However, as the pandemic drastically changed the course of my methodology, its strands were not clearly delineated from the start, and unexpected threads emerged through the unforeseen phenomena of practice. Watson’s braiding metaphor appeals to me because it is not only visual but, I would argue, kinesthetic: a braid is a thing created by hands plotting materials together, with fingers skilfully weaving something - one thing - in-between multiples. This encourages me to consider my mixing of methods as an *in-betweening* process, performed by hand and, through my ‘camera-walk’, also on foot. Here, the peripatetic element allows the braids to become tangled, untangled or even tousled by leaving my studio and getting the wind in my hair.

The term *in-between* is a key part of my Animator’s vocabulary. While *keyframes* are crucial positions of a figure, the *in-betweenner*, explains scholar David Carels, is ‘the one who fills in the necessary intermediary steps of that figure to complete its movement’⁹ (2013: 296). The centrality of Animation within my research is because I began researching VR within a Performance Studies milieu at Plymouth University, not as performance artist nor as immersive practitioner, but as an animator – finding myself precisely in-between animation and performance. This position allows me to examine VR also as in-between animation and performance - often employing animations for its environments, VR relies on human bodies performing within it towards *animating* the experience. Equally, the performances are not only human, but also machinic, including computing performance. In this sense, VR is also in-between animation and performance through the computer’s real-time response to the animate bodies experiencing VR’s animations; while the performance of the machine affects the human immersed, the human affects the machine’s performance, and so on.

In-betweening is an animated position - and indeed an animator’s position. It is not a pause over a threshold, neither a middle ground, but a movement that goes back-and-forth-and-back-again; it is a dialogue, and a dance, and a negotiation that vibrates rather than settles. The in-betweens of theory and practice that my PaR instigates also reveal gaps within my knowledge, where I need to find words to describe unexpected sensations (that I feel while practicing) and unexpected sights (that I witness in the practice); this is also why I do not offer a set literature review but continue to engage with texts throughout my thesis. For the field of VR, my study includes texts from the 1990s, teasing out VR’s

⁸ Within my thesis I describe how such an entanglement becomes embodied in a physical building in the centre of Athens (pp.135-140); how it becomes collaboratively augmented through AR and a performative exchange (pp.181-190), leading to a poetry film (pp.191-210).

⁹ Carels’ notion of the museum visitor as a peripatetic to the keyframes offered by the curator or artist, is a key influence for *Deep Waters*, my 2020 site-specific installation (pp.166-7).

early entanglements with philosophies of virtuality, with industry, science, and art. Through such texts, I recognise that much of today's VR discourse is echoing older conversations: questions around empathy, surveillance, (dis)embodiment, on what VR does well, on the fears and hopes it inspires - have been passionately rehearsed for decades; this is in parallel with discourses around empathy¹⁰.

Conclusion

By recounting certain facets of my methodology – *peripatetics*, *etymology* and *translation*, *knowledge grounds*, *the body in the centre*, and *in-betweening* – I have drawn an introductory map that doubles as my rough self-portrait as a researcher-animator. My peripatetic methodology, rooted in the physical act of walking, emphasises the interweaving of knowledge and traveling, and challenges the notion of a single proper path, preferring instead a playful curiosity which wonders/ wanders. Deeply interested in practices of everyday life, I highlight the centrality of the body-moving and attend to the mutual development between co-walkers, in response also to the prevalence of the 'walking in the other's shoes' idiom within VR. Etymology reveals to me the motional-relational roots that inform language, bringing forth the mother-tongue of movement, so that my knowledge grounds are walked with bare feet, in full view of the body in the centre – the body of the researcher, the VR player, the animator. Like a translator, I turn the gestures of a processional shoot into photogrammetric landscapes, and I also I decipher my silent, haptic practice into the articulations of language, knowing that certain idiosyncrasies, like an *idion*, are bound to become lost in translation. Like a museum visitor, I in-between the idiographics of practice and the nomothetics of theory, first on foot, by the 'camera-walk', then by hand, while interacting with my animator's tools in studio practice, while conversing with people and texts, throughout.

¹⁰ Lauren Wispé notices that the field of empathy becomes overgrown with redefinitions and reinterpretations of forgotten origins, so that 'upon the same site, with materials we think are fresh and theories we think are new, we kindle another fire' (1987: 17).

Chapter 2: Black boxes

Introduction

Within ***Gestures around black boxes*** (pp. 39-44), I pay attention to philosopher Vilém Flusser towards an understanding of my VR-informed digital practice as gestures around technological black boxes. ***In-between trauma and healing*** (pp.45-51), sheds light in VR's opacity via artist Harun Farocki's examination of some of VR's military applications, including the training of soldiers to kill as well as the subsequent healing of their trauma. ***VR and the body in the centre*** (pp.52-9), examines VR through some of its image generation, display, and motion-tracking technologies; as an alternative to the dominance of illusion within VR discourse, I 'inject' VR with ideas from Animation Studies that highlight the loop between the human sensorium and VR tracking, in perceptual rather than illusionistic terms.

Gestures around black boxes

Vilém Flusser was born in Prague in 1920; in 1939, aged 19, he fled his city of birth to escape the Nazis, eventually arriving in Brazil with his girlfriend and her family, while his was murdered in the Holocaust. Living in Brazil for over thirty years, he wrote in German, Portuguese, English and French¹¹, and ‘always tried to maintain the point of view of the immigrant, that is, the point of view of the foreigner’ (Krause, 2006: 1). This ‘idiosyncratic, eclectic, seminal, polyglot, peripatetic, and prescient [...] philosopher’ (Jaffe et al., 2021: 2) left Brazil in 1972 appalled by its dictatorial regime and returned to Europe. Media theorist Andreas Ströhl explains that, by the end of the 1980s, Flusser was being invited as a speaker in countless lectures and panels around Europe. After his tragic death in 1991 within a car accident after such an event, he was branded a postmodern zeitgeist guru and a prophet of the media world, which increased the sales of his books but ‘did little to present a truer image of him as a phenomenologically oriented media philosopher’ (Ströhl, in Flusser, 2002: Xxxii). Flusser’s idiosyncratic writing style rarely names his influences, but for Ströhl, the greatest impact on Flusser was by philosopher Edmund Husserl¹², whose phenomenological method made Flusser radically different from the 1970s and 1980s popular media theorists oriented toward poststructuralism and Marxism (Ströhl, in Flusser, 2002: Xi).

My first contact with Flusser was through *Gestures* (2014), a book of essays he had selected and ordered only months before dying. For Nancy Ann Roth, who translated the book to English, the essays uniquely ‘cultivate the reader’s own sense of embodiment, of actually or potentially making the movements under consideration’ (in Flusser, 2014: ix-x). Flusser’s pattern of translating his own essays, resulted in seven different versions of *The Gesture of Writing* in four different languages, making it difficult to search for an ‘original’, ‘definitive’ or ‘complete’ text, and it is ‘as if we are dealing with seven different originals’ (Roth, in Flusser, 2014: Vii-viii). Within the book’s first essay, *The Gesture of Writing*, Flusser says that:

‘I cannot write without first recognizing this power that the words and the languages exercise over me. It is, furthermore, the root of my choice of the gesture of writing’ (2014: 22-3).

Flusser *speaks* to me, because the dialogic method of hesitant questionings and playful appropriations makes it possible for his reader ‘to believe that one actually hears Flusser’s voice or that one is carrying

¹¹ Flusser grew up speaking Czech and German (Ströhl, in Flusser, 2002: iv); he studied English and French at school, and Hebrew was part of his religious education (Roth, 2012: 25).

¹² Roth also notes that while Flusser did not usually credit his source he readily acknowledged his engagement with the work of Husserl, and with phenomenology (in Flusser, 2014: Vii-viii).

on a conversation with him' (Ströhl, in Flusser, 2002: xi). Flusser's work begins 'only after [his] decision to articulate whispered words in the form of letters in the typewriter' (Flusser, 2014: 23). He follows a logical and then a grammatical order, then orthographic and alphabetic code, and the inviting possibility of so-called orthographic errors (2014: 23-4). He asserts that:

'I make all these discoveries with my fingers on the keys of the machine and with the automated movement of the page in the machine. As all this is going on, what was to be expressed is expressed: it is realized. And so, in the course of writing, I am surprised to discover what it was I wanted to write' (2014: 24).

Flusser encourages me to articulate the importance of my hands within my own preferred gesture of Animation: I *handle* my animations by palming, moving, and clicking my mouse, and by pressing keys on the keyboard – not only through my fingertips but with my entire body-moving. Sitting down in front of my computer screen, I lean over the keyboard, move the mouse over the surface of my desk, and my body plays the computer like an instrument. To liken the actions of a CGI animator with playing an instrument may sound hyperbolic to those who have experienced animation only through viewing a final work; engaging with computers and other electronic devices is so ubiquitous that it is easy to consider them nothing but tools for work, rather than as playful instruments for human bodies. Computer scientist Kristina Höök likens how the design of a violin will shape the violinist's muscles and nervous system reactions, to how the computer mouse will shape the muscles and nervous system reactions of the computer user; once both the mouse and the violin have been mastered 'we can shift our focus from explicitly thinking of commands to making them part of our repertory of bodily acts (2018: 157). My gestures tracked by the computer via its peripherals, affect changes to the digital objects – moving, scaling, and rotating them among other actions – and, as I see the objects moving, my own movements adjust to them, in response. Because my practice finds things out by playing, and by wandering and wondering rather than following a set path, my method of straying and strolling while scrolling can be best described as peripatetic. I may paraphrase Flusser to say that, in the course of my filmmaking, I am surprised to discover what film I wanted to make.

Flusser's most influential book was published in Germany in 1983, with the title *Towards a Philosophy of Photography*¹³ (Flusser, 2000). He is preoccupied with images, that belong to the world of magic where everything is repeated unlike the linear world of history. Humans need images to make the world comprehensible, however, as soon as this happens, images turn from maps into screens, obscuring rather than representing the world, until human beings' lives become a function of the

¹³ For Ströhl, the title has created a misunderstanding of Flusser's theory, by comparing him to Benjamin, McLuhan, Barthes, Bourdieu and Sontag; while these thinkers investigate the technical image for its documentary essence, Flusser's approach is very different: instead of asking about the 'realistic' quality of the photograph, his theory takes up the notions of calculation, computation, and projection (in Flusser, 2002: Xxv).

images they create (Flusser, 2000: 9-10). Attempting to tear down the screens, humans tore down the elements of the image (pixels) and arranged them into lines, and thus invented linear writing. Texts are a metacode of images, and while texts explain away images, images also illustrate texts to make them comprehensible. However, when writing obscures images, human beings become unable to decode their texts, and become their function. A state of 'textolatry' arises then, reaching a critical point in the 19th century, and technical images were invented 'to make texts comprehensible again, to put them under a magic spell – to overcome the crisis of history (Flusser, 2000: 10-3).

Produced by apparatuses, technical images are themselves indirect products of scientific texts. The first apparatus, the camera, is a prototype of present apparatuses, and only following the invention of the computer does it become clear that:

'[a]ll apparatuses (not just computers) are calculating machines and in this sense 'artificial intelligences', the camera included, even if their inventors were not able to account for this' (Flusser, 2000: 31).

Traditional images are 'observations of objects', whereas technical images are 'computations of concepts' (Flusser, 2011: 10). While traditional images were mirrors of the world, technical images are projectors indicating a direction; they 'signify models, instructions about the way society should experience, perceive, evaluate, and behave. They signify instructional programs' (Flusser, 2011: 50). Technical images include variations of photography such as 'films, videos, holograms etc' (Flusser, 2015: 73), and the photographic camera and the figure of the photographer are of primary significance for Flusser, who says that '[t]he apparatus does as the photographer desires, but the photographer can only desire what the apparatus can do' (2011: 20).

The notion of the *black box* is one of Flusser's key concepts, who clarifies that the encoding of traditional images took place 'in the head' of the painter, whereas the encoding of technical images goes on in the interior of the black box 'and consequently any criticism of technical images must be aimed at an elucidation of its inner workings' (2000: 16). Photographers can never get to the bottom of what a correctly programmed camera is up to, it being a black box, and as functionaries they control a game over which they have no competence, '[t]he world of Kafka, in fact' (Flusser, 2000: 27-8). The program of each apparatus is fed in and feeds into other apparatuses, and therefore '[t]he whole complex of apparatuses is [...] a super-black-box made up of black boxes' (Flusser, 2000: 71). The black box is a human invention and the product of the nineteenth and twentieth centuries that human beings are permanently engaged in developing and perfecting (Flusser, 2000: 71-2). Invented to function automatically, apparatuses are becoming faster in their calculations they are going beyond the human's ability to control them so that:

‘[a]nyone who is involved with apparatuses is involved with black boxes where one is unable to see what they are up to’ (Flusser, 2000: 73).

The black box speaks of the darkness of Western civilisation: Flusser declares that the Auschwitz camp system gives us a concrete example of the West’s tendency toward the apparatus, where ‘[t]he extermination camp’s program, once it started functioning, developed in an automatic fashion, autonomous from the decisions of the initial programmers, even if it contributed to the defeat of the programmers, as it effectively did’ (2015: 16-7). Because it lies within the initial program of the West, Auschwitz is not a violation of Western models of behavior but the result of their application; new apparatuses such as the Gulags, and those that functioned in Vietnam claim to be different from Auschwitz; some, like the scientific, technical and administrative apparatus claim to be ‘friends of mankind’, but ‘[t]hey are all just like Auschwitz¹⁴’ (Flusser, 2015: 17-8).

While the first Flusserian black box is the photographic camera, Pierre Hébert, a multidisciplinary artist working with performance and animation, highlights another significant historical moment of relevance to my study. He explains that cinema was invented at the meeting point of photography and pre-cinema motion games, resulting in the principle of capturing and reproducing motion using mechanically driven discrete images. While this mechanical image processor became a black box for live-action cinema, unquestioned and neutral beneath decision making, on the contrary:

‘animation is constantly reopening the technical black box [...] [s]o every time an animator animates, he is potentially reactivating this memory of the moment in which the elements of cinema got together to form the tightly-knotted entity that is live action cinema [...] Animation sends cinema back to the moment just prior to cinema's very existence’ (Hébert, 2005: 183).

Animation disrupts the opacity of the technical black box by its persistence to keep opening it, but with technology making distinctions between the arts unstable, a chaotic alternation is taking place between the poles of absolute coalescence and sudden disruption. Hébert favours disruption, because the pole of coalescence darkens the real challenges of technology, and mythologises the common experience of technology as the infernal core of modern life; interestingly, he suggests that an extreme case of this tendency is ‘the dream of virtual reality’ (2005: 185). For Hébert, technological art that obscures its technological nature - regardless of realism or fantasy - also obscures the human body in the centre of the artistic activity and fuses the different art disciplines so that ‘the whole thing

¹⁴ There is a pertinent connection here with the links between the military and video games, and with VR applications simultaneously training soldiers to kill as well as treating them for PTSD, which I will soon elaborate upon (pp.46-9). The concentration camp is also inextricably linked with American settler colonialism, which I explore in Chapter 4 (pp.92-99).

works like magic' (2005: 186).

It is through his *Gesture of Video* essay that Flusser offers me a way – or a hope – of resistance to the totality of the black box. He examines video as a new tool, whereby a tool is an object produced to serve a particular purpose; while traditional, familial ones no longer raise questions, the purposes of new tools have not yet played themselves out, which makes them 'dangerous', as their formative intention can still be deflected in a different direction; because the purposes of the tools that surround us are not necessarily our own, but rather, the purposes of those who made the tools - to change their direction means to be free (Flusser, 2014: 142-3). Flusser explains that:

'[t]he new tools are fascinating because they, more than anything else, conceal unknown virtualities within themselves and because they permit acts of emancipation' (2014: 143).

While the photographer is required to choose a position, the decisions of a video maker standing in front of a monitor 'will not need to be so objectifying as those of the photographer [and] [t]hey can be made in relation to the scene as well as within the scene (Flusser, 2014: 144). Importantly, unlike film, videotape can be 'read' by the participants immediately after recording so that:

[w]ithin the scene, they need not be actors only, as is the case for film. They are subjects and objects at the same time, those who store and those who are stored. The tape opens a dialogue between itself and the scene, whereas the film is a discourse about the scene and forbids any immediate dialogue. Videotape is a dialogical¹⁵ memory (Flusser, 2014: 144).

The potential for humans to engage in dialogue through an apparatus such as a video camera in a less objectifying manner is important for my practice, and I apply Flusser's idea of the 'dangerous tool' in my practice with a *GoPro*, which I elaborate upon within *Towards the camera-walk* (pp.x-x). Equally important is an understanding of all technical images as projections, including filmic images, CGI images, and those of VR. That all apparatuses are calculating machines disrupts a clean distinction between analogue and digital photography, and, as Farocki summarises, 'Flusser has remarked that digital technology is already found in embryonic form in photography, because the photographic image is built up out of dots and decomposes into dots' (in Elsaesser, 2004: 197).

Through Flusser, concerns around a perceived lack of indexicality of animated documentary and of CGI images as inherently fake versus the truth of analogue photographic and filmic capture can be reconsidered, with a renewed attention to gestures rather than only apparatuses; this is also of

¹⁵ A distinction between 'discourse' and 'dialogue' is important for Flusser: discourse preserves and distributes information within a given society, like most print and broadcast media, whereas dialogue as a free exchange of information stored in memory (human or artificial) is the only way to generate new information; while both discourse and dialogue modes are essential, discourse is overpowering dialogue (Roth, in Flusser, 2014: 178).

relevance to VR which is created with technical images including 360-video, digital photogrammetry, and CGI Animation. Crucially, the gestures of artists, including animators, can be ignored by both industries and theorists favouring an idea of CGI as techno-magic, or as *just* text, code, or algorithm – obscuring the body in the centre. Author Joseph Darlington explains that within large animation studios, skilled work is passed in-between specialist departments in such a way that it appears to dissolve in an unknowable arrangement of humans and machines, which by displacing labour in favour of the machines, gives the impression that these movies are made by computers. The digital is not inherently mystical, and the digital workflow creating labour fragmentation ‘is as much a result of post-globalised economics as technological function’ (Darlington, 2018: 1254). This ‘capitalist mysticism’ (Darlington, 2016: 249) is demystified by scholars such as Trebor Scholz, who points at similar processes in other areas of the digital economy, where, for businesses including Amazon, Google and Facebook, it is vitally important that the human worker is invisible to the user, and the work is presumed to be done by ‘an algorithm’¹⁶ (Scholz, 2016, in Darlington 2018: 1254).

In this text I have paid attention to Flusser’s notions of the black box and technical images; of great relevance are Harun Farocki’s operational or operative images, as is the relationship between Flusser and Farocki. In the following writing I look at the way that Farocki opens the military black box, at his expressive, *animated* hands in-between screens, and at his examination of the entanglement of VR’s military and therapeutic applications.

¹⁶ Etymology is again of value here, as the very word ‘algorithm’ carries a certain mystique. The science of calculation by nine figures and zero (Stone, 1972: 347) was named ‘algorism’ after the Persian polymath Abū ‘Abd Allāh Muḥammad ibn Mūsā al-Khwārizmī, born in the 8th century BC, but the word became corrupted by the Greek root of ‘arithmetic’, with people forgetting the original derivation of the word (Knuth, 1997: 2).

In-between trauma and healing

Harun Farocki illuminates his operational or operative images by placing together *phantom shots* – 1920s film recordings from cameras such as those hanging under a train – with 1980s terrain-detecting cruise missiles, and military vehicle cameras in the 1991 Iraq war (2004: 13). Such pictures, ‘made neither to entertain nor to inform’ (2004: 17), do not represent an object but are part of an operation; they are supposed to replace the work of the human eye, similar to how factory robots model human labourers until the latter are rendered obsolete. Operational images derive from Roland Barthes’ discussion of the operational language of the woodcutter who speaks the tree rather than of the tree, the latter being the manner of meta-language (Farocki, 2004: 17). However, the operational image is not only a ‘working image’ but also the result of a calculation, and Vilém Flusser’s technical image resonates in Farocki’s work (Panterburg, 2016: 52).

Farocki reviewed Flusser’s work in 1985, and directed a television program, *Catch phrases – Catch Images. A conversation with Vilém Flusser* (Farocki, 1986) where the two men discuss the cover of the tabloid newspaper *Bild Zeitung*. We see them gesturing over the front page, sitting in a ground-floor Berlin café, where only a glass separates them from the pavement (Fig.3). To be on the level of the street befits Flusser, whose thinking ‘is as rigorous as the best academic philosophy, but it is as poetical and clear as the best street philosophy, that is, the philosophy that lives outside of the academic ivory tower’ (Krause, 2006: 2). While operational and technical images are distinct, there are overlaps between the two thinkers happening on the level of gestures, and for this I pay attention to Farocki’s 1997 video-essay *The Expression of Hands*. It begins as a frame within a frame, a video monitor under which a hand rests. The monitor is playing a film excerpt where, recounts Farocki in a voice-over, “a man and a woman who don’t know each other come together” observed by two policemen who do not understand the act as it plays out: the man’s hand riffles through and removes something from the woman’s handbag, and he escapes the confused policemen. The image freezes, with the sound of a button pressed. Farocki says that “it is not easy to grasp this sequence of images”; with this, the film excerpt starts playing backwards, the image on the monitor moving leftward; along with it, the camera also starts panning left, passing over a pile of papers with storyboard frames and the hand resting on them; the camera stops over another monitor which begins to play the same film excerpt of the train robbery, and Farocki starts explaining the actions taking place.

The camera pan has thus disclosed the setup of the video-essay within the first two minutes: there are two monitors, left and right, facing upwards; a third one, less visible to the viewer, is in the middle, facing Farocki and his hand in-between. I take three frames along the camera pan and composite them

together, and the resulting panoramic image traces the distance between, revealing the setup (Fig.4). The image brings to mind Farocki's two-screen installation *Interface* (1995), whose title denotes the space 'between the monitors facing the author, and the intermediary position occupied by the spectator' (Gustafsson, 2021: 11). *Interface* has Farocki facing the control desk, with his hand in-between two monitors, himself doubled in the two-screen installation (Fig.5). Media scholar Henrik Gustafsson explains that this new working format adapts to the demise of film theatres, moving towards festival and art gallery screenings, and more importantly, from analogue film to magnetic tape and digital file, and from the editing table to the mixing board. This leads to the method of 'soft montage' wherein '[w]orking from two sides, going back and forth, soft-montage proffers a formal equivalent to thinking with one's hands' (2021: 11). Gustafsson recognises the most prominent feature in Farocki's oeuvre to be his own hands (2021: 9) and proposes an understanding of his filmography as offering 'an encyclopaedia of gestures, a form of chiro-praxis in its own right, and a search for alternative of forgotten modes of manual communication and collective imagination' (2021: 1).

It is interesting therefore to see, in *The Expression of Hands*, a kind of soft-montage performed by the overhead camera witnessing the dialogue taking place between film fragments. The camera travels repeatedly between the two video monitors as each one speaks; at the same time, the camera movement *is* the speech in-between. Farocki's hands make haptic sense of the screen gestures through playing them back-and-forth, through drawing a storyboard, leafing through books, writing on paper and on his own hand, his voice heard along voiceovers, titles and subtitles. He reveals what is hidden by returning to the same clips repeatedly, getting 'hands-on' with gestures, including erotic ones: the man opens the woman's purse and her own lips open up; drawing her mouth repetitively, Farocki's says that "the hand commits a crime and appears to arouse desire". Some of Farocki's clips were already recycled, with 1930s American propaganda images job-creation schemes re-claimed for a final war effort against the Germans and the Japanese. A Nazi film from 1943 shows the supervisor of a canon production line getting his hands dirty with the machine lubricant, quite sensually. In contrast, a March 1945 Nazi cultural newsreel shows the hand-crafting of a Stradivarius violin, and Farocki comments that "this film shows no bombed buildings, no soldiers, no camps, no dead, not even a car. Once again manual workers are on view. Once again manual skill is shown". By screening the viewer from the crimes committed, history is excised and exorcised.

With the commercial decline of VR in the mid-1990s, clinical VR took over through projects aiming to alleviate veterans' post-traumatic stress symptoms (Crawford-Holland, 2019: 58). Such a project appears within Farocki's 2009-10 video installation *Immersion III: Serious Games* (Fig.6), comprised of

four films. *Serious Games I Watson is Down* begins with a split screen: on the left is a CGI armoured vehicle, travelling on a highway surrounded by desert terrain. The right side of the frame shows a CGI mine explosive, awaiting. Young male soldiers are facing computer screens, driving the CGI vehicle as a team, while their instructor, behind another computer, uses his mouse and keyboard to plant traps. Watson, the soldier whose name appears in the title, dies in the game; his vehicle goes back on the road, with the final shot of the film going back to the beginning – a filmic loop based on a game loop that perpetuates a war loop, wherein soldiers are trained to survive, to kill, and to be killed. *Serious Games II Three Dead* begins with an animated CGI scene of a compound of buildings in the desert, followed by a live-action view of what could be their ‘real’ versions. The block-like regularity of the physical buildings betrays their function as a simulation: this is a military training camp in California, with extras performing as Afghans and Iraqis within a theatre of war which is at times played for a tourist audience. With buildings made from containers, it looked ‘as though we had modeled reality on a computer animation’ (Farocki, 2010: unpaginated).

The uncertain terrain straddled by animation, simulation and reality continues in *Serious Games III Immersion*, with a demonstration of Virtual Reality Exposure Therapy (VRET) to an audience whose reactions can be dimly heard; a highly distressed soldier is reliving a day when his comrade got blown to pieces while they were in Iraq. Orchestrating the virtual event behind her computer screen, the therapist asks him to ‘stay’ with the experience, persisting even when the soldier feels nauseous and asks to stop. What appears as an ethically problematic exchange between healer and patient unexpectedly ends with applause – it is revealed that the present audience, including the therapist and the soldier, are all clinical therapists receiving training by role-playing. The ‘soldier’ smiles but admits that the nausea was actually half-real. Everybody in the room is partaking in a demonstration which is another simulation of a simulation.

For curator and critic Pieter van Bogaert, the reintroduction of traumatized soldiers to the conditions of war in VR, is a kind of going back to the beginning of a technology developed by the military, taken over by game designers, and sold back to the military apparatus where it originated (Bogaert, 2009: unpaginated). Farocki explains that the kind of images that VRET employs are nowadays the standard, and:

‘[t]his is probably due to all that is possible, that you can navigate within the image, this carnival effect, that you can turn your head and see whatever you want to within the limits of the programme, that you can walk through it, that it’s interactive, and so forth’ (in Eshun, 2012: 70).

The ‘carnival effect’ brings attention to the Head Mounted Displays (HMDs) worn by the therapists-playing-soldiers, that ‘concealed their faces like masks’ (Farocki, [2011] 2014: 92), so that their

wearers are anonymised, 'wearing the 'black bar' on their faces, so to speak' (Farocki, [2009] 2012: 66). I return here to the connections between Farocki and Flusser on a level of gestures: within his essay *The Gesture of Turning a Mask Around*, Flusser uses the carnival of Rio to speak of three types of mask gestures: of the participants, of the critical observers, and of the mask turners, although anyone can carry out all three. The participants dance on the streets, transforming the city in a giant mask, the critical observers distribute prizes, while the mask turners – the ministerial bureaucrats – are away, because carnival is over for them once programmed. Both dancers and critics know that the carnival is not spontaneous nor cyclical rhythm 'appropriated by a system, that it is "animated"' (Flusser, 2014: 91-3). Within *Immersion: Serious Games*, Farocki is unmasking moments of mask-turning within training sessions, as therapists cycle through the gestures of healer and programmer, soldier and performer, object and subject, through role-playing.

Farocki has persistently documented such exchanges in other works, and Bogaert acknowledges role-play as one of his key themes: observing training sessions, including for midwives, drivers, and unemployed workers, these works 'demonstrate the machinations that prepare people for a comprehensible reality: comprehensible and virtual' (Bogaert, 2009: unpaginated). Within the VRET session, however, the mask is also physical – the VR headset – and its 'inside' is 'turned around' through the first-person 'virtual camera' view of the VR player, as seen on the screen by the therapist and the audience. Unlike them, the mask-wearer can only experience the program while 'blindfolded' to the 'real world', so his immersion is total; the audience can see a (flat) version of the VR on the instructor's monitor, and see the performer in action – a gaze which he cannot reciprocate. This vulnerability of the VR performer as engulfed lab subject interests me - is 'wearing the black bar' of VR an act of anonymising, a disappearing act which traumatises even while healing?

Within *Serious Games IV A sun without Shadow*, Farocki revisits and recycles images from the previous films in the tetralogy, reflecting that 'the pictures with which preparations were made for war are so very similar to the pictures with which war was evaluated afterward. But there is a difference: The program for commemorating traumatic experiences is somewhat cheaper. Nothing and no-one casts a shadow here' (Farocki, 2010: unpaginated). Whether Farocki means that VRET is *produced* more cheaply, or that the graphics *look* cheap (or both), the system supporting them when the demonstration takes place in 2009¹⁷, would have been expensive. In 2018, Mel Slater notes that VR has been around in something like its present form since the late 1980s, but what has changed is accessibility, graphics, and computing power. While a contemporary system including hands and feet

¹⁷ Farocki says that the session took place in the end of January 2009, within the 'rather dilapidated casino at Fort Lewis' (Farocki, [2011] 2014).

tracking can cost a few hundred euros, and is driven by a PC or Mac with an up-to-date graphics card, a similar capability in 2011, before the advent of the first Oculus, would have cost thousands, and hundreds of thousands in the early 1990s (2018: 431). The participants' reactions are also telling: the young soldiers in training remain composed, despite the better rendering, and Watson faces his death quite dispassionately. The VRET therapist-as-soldier, on the other hand, appears emotionally affected in his role-playing, and concedes that the nausea was half-real. The shadowless 2009 VRET may relate to how VR 'requires substantial computational power to generate 90 frames per second at high resolution with good-quality antialiasing' (Denes et al., 2019: 2072). VR devices must detect head movements and generate different views of the same scene with low latency, and the calculations of illumination and shadowing required become more complex depending on the number of objects and light sources (Pardo et al., 2018: 131).

Mel Slater explains that, alongside significant computer graphics advances over the three decades, evidence suggests that visual realism is less important than initially thought, and people found VR compelling even in the 1980s and 1990s with far worse quality (Slater, 2020: 3-4). Within an experiment comparing combinations of either low or high texture resolution and low or high lighting quality (including one with a black and white grid texture), *all* conditions 'produced similar increases in physiological response implying that presence was experienced [...] even in the minimalist rendering of the environment' (Zimmons and Panter, 2003: 294). Two further experiments (Slater et al., 2009; Yu et al., 2012) found that the quality of the rendering did not influence participants' responses, but dynamic elements, such as real-time shadows and reflections that moved with the movements of the participant, did so (Slater et al., 2020). What I understand from the above is that the *moving-along* of the elements *with* the player is what *moves* him, even with seemingly 'cheap' image quality, which cannot be grasped from the graphic's appearance on a flat and unresponsive screen¹⁸. In the next section, I begin to examine the experiential affordances of VR, through the technologies of its generation and display.

¹⁸ This creates a problem in illustrating VR through still images, which contributed to my decision not to include stills of VR experiences by other creators, as I noted in my *Thesis Introduction* (p.15).

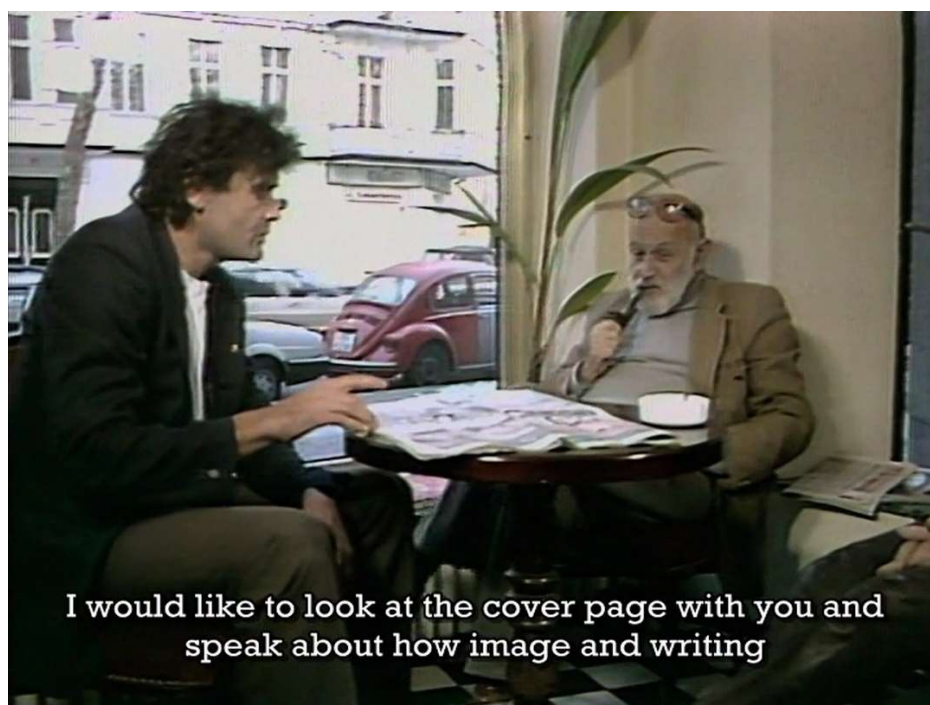


Figure 3. Still from *Catch phrases – Catch Images*. A conversation with Vilém Flusser ©Harun Farocki 1986

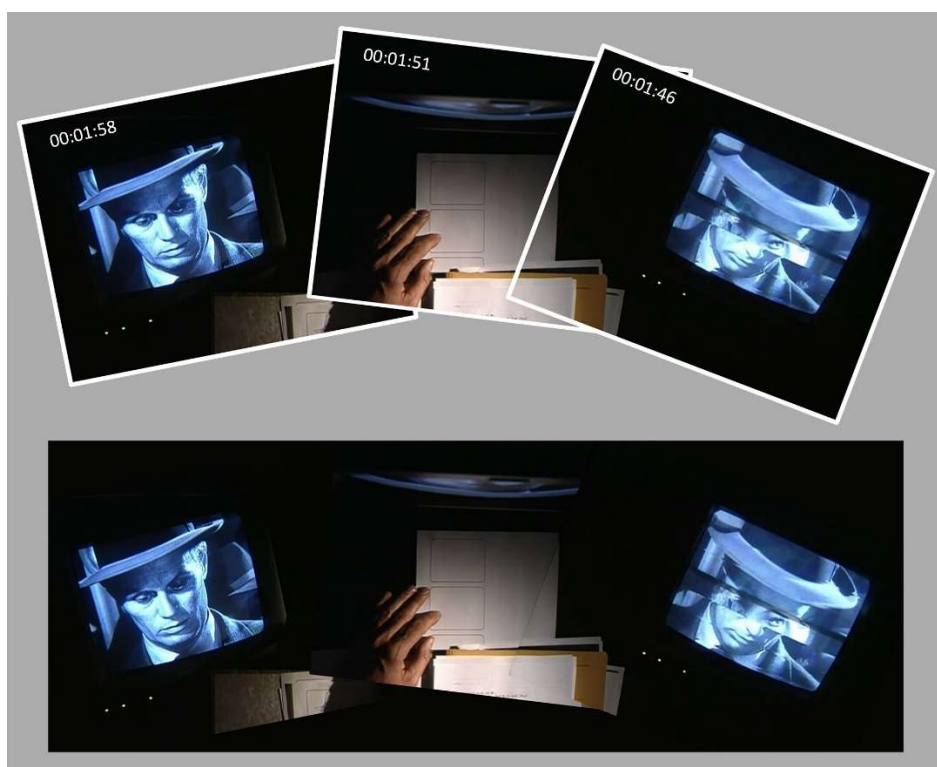


Figure 4. Composite image with three stills from Farocki's *The Expression of Hands* (1997)



Figure 5. Stills from two-screen installation *Interface* ©Harun Farocki 1995



Figure 6. Stills from *Immersion III: Serious Games* ©Harun Farocki 2010

VR and the body in the centre

VR's affordances are hard to grasp away from the headset. Chris Milk describes VR as a very experiential medium, and 'it's a machine, but inside of it, it feels like real life, it feels like truth' (2015: unpaginated). Rather than observing the world through a window, as in film, with VR 'you feel present in the world that you're inside and you feel present with the people that you're inside of it with' (Milk, 2015: unpaginated). The notions of 'presence' and 'immersion' prevail within VR discourse but also predate and exceed it¹⁹, and within this text I pay attention to both, by first looking at some of VR's technologies of generation and display.

According to VR and neuroscience researcher Gal Raz, the two main categories of image generation in VR are 360° video cameras and computer-generated imagery (CGI). The former captures events by omnidirectional 360° video cameras; the resulting 360° video is rendered into a panoramic monoscopic or stereoscopic movie, where 'the user is limited to panning around the virtual scene [...] but she cannot displace herself and move around within the scene' (2019: 996). Alternatively, CGI-VR content can be designed using game engines like Unity3D and Unreal, that are software packages offering access to a large database of digital 'assets' including models and sounds. CGI-based VR allows for the modeling of the user's body and its representation in the virtual environment, whose viewing distance and angles can be updated in real time with the movement of the user (2019: 996). For Raz, VR's user-avatar relations move beyond the cinematic and gaming engagement; he compares 360° video works where the user interacts with a 'void witness' resulting in impersonal agency, versus 'the relations between the user and her virtual incarnation in VR, which facilitates first person presence, agency, and embodiment' (2019: 1004).

The notion of 'degrees of freedom' (DoF) helps to describe VR's experiential affordances. In simple terms, 360-video (or 360° video, or spherical video) requires headsets that offer at least three degrees of freedom (3DoF), whereby 'the headset detects rotational movements of the head along the x, y, and z axes and adapts the content viewed accordingly' (Ceuterick, 2021: 325). Spherical video is formed by a flat *panoramic* video, deriving from the recordings of omnidirectional cameras, or as rendered animations and motion graphics exported in a panoramic video format. CGI-VR's *six* degrees

¹⁹ Speaking on cinematic space, Sociologist Tim Recuber notes that immersion was used as a term to metaphorically describe emotional or intellectual involvement with the work of art, whereas today the absorption of the spectator is based on the certainties of technological advancement rather than artistic processes (2007: 320-21).

of freedom (6DoF) include the added possibility of moving within the digital space, in all directions, as the headset 'also adjusts to the viewers' vertical, lateral, and horizontal movements in space' (Ceuterick, 2021: 325). CGI-VR is created through digital assets and environments shared by CGI Animation and Game Engines, that are not fixed like video's two-dimensional, recorded images. However, animation can *also* be experienced in headsets with 3DoF, where the player is spherically enveloped in the project's world rather than free to walk inside it; one such project is the multi-awarded *Notes on Blindness: Into the Darkness*²⁰ (La Burthe et al., 2016), initially available through the now discontinued 3DoF *Samsung Gear VR*.

I note that practices relying on technological innovation can 'lose their footing' when a device becomes discontinued or inaccessible. Accordingly, some definitions of VR from its first wave may appear 'out of step' today when referring to 'electronic simulations of environments experienced via head-mounted eye goggles and wired clothing' (Coates, in Steuer, 1992: 73); 'simulated environments [that] are usually visited with the aid of an expensive data suit which features stereophonic video goggles and fibre-optic data gloves' (Greenbaum, 1992: 58); 'three-dimensional realities implemented with stereo viewing goggles and reality gloves' (Krueger, 1991: Xiii). Today, the data suit and gloves are *still* in development but not commonly encountered within VR descriptions, thus appearing superfluous. Already in 1992, researcher Jonathan Steuer criticises the above for how they are limited to 'goggles 'n' gloves' systems, and argues that a solely technical approach to VR as a collection of machines serves mostly as a marketing tool for the producers of such technologies, but fails to provide insights into the processes and effects of using VR systems. Steuer refers to Krueger crediting Lanier, CEO of VPL, as coining the term *virtual reality* in 1989 (1991: Xiii) adding that VPL was a manufacturer of gloves, goggles, and other VR products (Steuer, 1992: 73).

Proposing a definition of VR as a type of experience²¹ rather than as a collection of hardware, Steuer addresses 'presence' as the sense of being in an environment and 'telepresence' as the experience of presence in an environment by means of a communication medium (1992: 73-76). Telepresence was coined in a 1980 article by founder of MIT's Artificial Intelligence (AI) laboratory, Marvin Minsky, while anticipating a future economy of working from a distance, even in another planet, through remote-controlled mechanical hands. The word 'emphasizes the importance of high-quality sensory

²⁰ This project has also been discussed for its empathetic effects, and I return to it in subsequent writing.

²¹For Steuer, defining VR as a type of experience rather than a collection of machines will provide a concrete unit of analysis for virtual reality, a set of dimensions over which virtual reality can vary, and a means for relating VR to other types of mediated experience (1992: 73-76).

feedback and suggests future instruments that will feel and work so much like our own hands²² that we won't notice any significant difference' (1980: unpaginated). Steuer's use of the term differs because, while building on telepresence to free virtual reality from goggles and gloves systems, he simultaneously frees telepresence from a future mechanical hand paradigm by applying it also to past mediating technologies that may not even involve any computing. Steuer explains that:

'presence refers to the natural perception of an environment, and telepresence refers to the mediated perception of an environment. This environment can be either a temporally or spatially distant real environment (for instance, a distant space viewed through a video camera), or an animated but nonexistent virtual world synthesized by a computer (for instance, the animated world created in a video game)' (1992: 76 emphasis in original).

By employing the concept of telepresence, argues Steuer, 'virtual reality can now be defined without reference to a particular hardware system: *A virtual reality is defined as a real or simulated environment in which a perceiver experiences telepresence*' (1992: 76 emphasis in original). Steuer proposes that such a definition can be applied to past, present, and future media technologies, including the telephone, reading letters, studio music recordings, looking through remote cameras, and operating mechanical hands; newspapers, magazines, television, and video games all create virtual spaces that can evoke a sense of telepresence²³ in the viewer or reader (1992: 76-80).

Mel Slater describes telepresence or presence as the illusion that you are located inside the rendered virtual environment, the 'sense of being there' for which he reserves the term 'place illusion' (PI); it is *'the strong illusion of being in a place in spite of the sure knowledge that you are not there'* (2009: 3551 emphasis in original), and 'the human response to a given level of immersion' (2009: 3552). Immersion for Slater is an objective property of a system, depending on the extent to which a VR system can support actions like moving one's head or eyes to change gaze direction, or bending down to see underneath something; these actions, enabled by head tracking, result in meaningful changes in virtual environment perception. Valid sensorimotor actions consistently change images across sensory modalities, while valid effectual actions enable participants to make changes in the environment, and Slater calls their union 'the set of valid actions' (2009: 3550) Examples of *invalid* sensorimotor actions include reaching out to touch a virtual object when the system lacks haptics, as

²² Minsky's telepresence is qualified through haptic feedback rather than in visual terms, and there is no mention of virtuality nor virtual reality in his text; he had been inspired by Robert A. Heinlein's 1948 novel, *Waldo*, whose young hero constructs devices to overcome myasthenia gravis, a disease causing profound muscle weakness; the hero succeeds in spending his time in space while operating factories on Earth, and Heinlein had many suggestions for Minsky's article on telepresence (1980: unpaginated).

²³ For Steuer, the two major determinants of telepresence are *vividness*, referring to the ability of a technology to produce a sensorially rich mediated environment and *interactivity*, which is the degree to which users of a medium can influence the form or content of the mediated environment (1992: 76-80).

well as those resulting in perception from outside the virtual environment. Slater describes immersion ‘not by displays plus tracking, but as a property of the valid actions that are possible within the system [...] [and] the level of immersion is completely determined by the physical properties of the system’ (2009: 3551) Slater introduces the term ‘plausibility illusion’(Psi), which is the illusion that what is happening is real even though you know that it is not (2009: 3556).

Along with PI and Psi, body ownership illusion (BOI) is a central point of reference within VR. Mottelson et al. explain that BOIs occur when participants experience that their actual body is replaced by a body shown in VR, and the fundamental principle behind all subjective embodiment measurements in VR research is based on the experimental paradigm of the rubber hand illusion²⁴ [RHI] (2023: 19). Slater et al. were the first to successfully reproduce RHI in VR, using a projection screen, stereoscopic goggles and a tracker (Slater et al., 2008), with further research expanding to full body illusion. For Maselli and Slater, first person perspective is a necessary condition, and full body illusion can result from the sole effect of seeing a realistic virtual body in the same location and posture as the physical body (2013: 10). Through their study of the cumulative evidence on BOIs from 111 research papers published between 2010-2021, Mottelson et al. shed light on the sensory prominence for inducing BOI, with visuo-motor synchrony emerging as the prime factor for outcomes of body ownership and agency, over congruence of realism, tactile stimuli or perspective – a finding that supports that avatar realism is not a critical top-down factor; about half of the studies in their meta-review found avatar appearance to affect body ownership while the other half did not; for agency, the appearance of the avatar has little importance, and visuo-motor synchrony showed to be the only reliable manipulation for induction of BOI (2023: 20).

The predominance of illusion towards an understanding of embodiment in VR meets an elegant counter-proposal by media theorist Deborah Levitt, who suggests that VR’s various illusions—including illusion of presence, PI, Psi, and BOI – lie at the source of many of VR’s utopian and dystopian formulations, and concern features that might be better referred to as ‘presence effects’, ‘worlding effects’, and ‘embodiment effects’²⁵ (2018a: unpaginated). Illusion also encourages me to apply the

²⁴ RHI was articulated through an experiment on body self-identification conducted in 1998 by neuroscientist Matthew Botvinick and psychologist Jonathan Cohen: a visible rubber hand was placed beside the participant’s hidden hand, and both hands were synchronously stroked with small paintbrushes as the participant sat with eyes fixed on the artificial hand; responding to a questionnaire after ten minutes, their answers indicated that they seemed to feel the touch of the viewed brush, as if the rubber hand had sensed the touch; importantly, if the stroking was asynchronous, the ownership illusion failed (Botvinick and Cohen, 1998).

²⁵ What Levitt considers most interesting is how, for regular users, the perceptual apparatus of VR may enable new forms of subjectivity and sociality, a tutorial on how to live in a multiplicity of worlds through intersections between perception, computation and extra-human scales (2018a: unpaginated).

scholarship of Animation into VR, for the way that illusion also appears prominently in many definitions of Animation²⁶. Animation and film theorist Tom Gunning defines cinematic animation as the technological production of images in motion, where animation is understood as the production of the perception of motion through technological means, whether simple like a flip-book or complex like CGI (2014: 2-3). Crucially, Gunning emphasises that:

‘I say producing the perception of motion, rather than the illusion of motion, which carries a tone of denigration and a distrust of perception. In animation the human sensorium is transformed (activated) by its encounter with a mechanical device though a controlled process of perception’ (2014: 3-4)

Building on Gunning, I propose that the effect of animation can be compared with that of VR: while a VR system depends on more than the threshold of speed of its images, and its control of presentation adjusts differently to the player’s movements wearing a 3DoF headset over a 6DoF one – what is key in both is a matter of perception. Here, I paraphrase Gunning in VR terms, to offer that *in VR the human sensorium is transformed (activated) by its encounter with a technological device though a controlled process of perception*. I note that the idea of activation is doubled/mirrored within a VR context - because *VR is also activated by its encounter with a human through a controlled process of technological sensing and tracking*. The human body is a necessary condition for VR, because a film may continue to play when a viewer leaves the room, but VR needs the presence of the experiencer to function (Levitt, 2018a: unpaginated). Furthermore, the experiencer has to be in motion for the system to track the player rather than enter ‘sleep’ or ‘idle’ mode - so the player must be seen by the program, whether or not the player sees their own avatar.

The clash that I recounted earlier, between Cholodenko’s call for the cinematic animator’s death towards a spectral and untrackable author (2007) versus Well’s attention on the whim, intention, and bravura of the animator (1998) finds an analogue in the discourse around the possibilities of presence and/or absence of the human body in VR. My position is that the human player in VR is firstly its *animator*, and the space of VR also depends on her whim, intention and bravura, as expressed and received through her bodily gestures – a bravura that also entails the possibility of physically and psychological trauma, and/or exploitation as blindfolded lab subject or meta-consumer. Levitt

²⁶ Examples of the prevalence of illusion in definitions of animation include how animator and director Gene Deitch describes his work as ‘[t]he recording of individually created phases of imagined action in such a way as to achieve the illusion of motion when shown at a constant, predetermined rate, exceeding that of human persistence of vision’ (Deitch, 2015: unpaginated). For Paul Wells, ‘a working definition [...] of animation in practice, is that it is a film made by hand, frame-by-frame, providing an illusion of movement which has not been directly recorded in the conventional photographic sense. (Wells, 2013, p.10). Critic and historian of animation Charles Solomon asserts that, within animation ‘the illusion of motion is created, rather than recorded [...] [and] the imaginary is recorded frame-by-frame’ (Solomon, in Furniss, 1998: 5).

explains that '[t]he sensing and tracking of human embodiment and perception, a source of anxiety in relation to contemporary modes of surveillance, is the stuff of VR as a medium and so what enables its positive possibilities' (Levitt, 2018a: unpaginated), and in the following section I address the overlap of such anxieties and possibilities through artist Hito Steyerl and performance scholar Sita Popat on VR, aided also by the phenomenological philosophy of Sheets-Johnstone.

Steyerl considers VR as a new paradigm which she calls *Bubble Vision*, shaped by rounded lenses, spheres and orbs - like those that Mark Zuckerberg and his social VR chief used to teleport through Facebook Space, within a demo released in 2017. Paying attention to the repeated statements in the demo that 'they are really there' Steyerl describes the seeming paradox whereby:

'in VR and also in 360 degree video, you're basically at the centre of the scene. Everything revolves around you, like a spherical universe, yet at the same time, your body is usually missing from the scene. So you're both at the center, yet you are not there. Maybe if you're lucky, you will have hands or a head sometimes, but your body is usually missing from the scene. Bodies become nonexistent. They become transparent' (2018: unpaginated).

A question arising is whether the 'body missing from the scene' problem also applies outside of VR: does one become missing or transparent when they do not see their body? Is awareness-of-the-self solely reliant on vision-of-the-self? Maxine Sheets-Johnstone asserts that:

[t]here is more to being a body than meets the eye. The living body is more than a thing extended in visual space. It is first and foremost the center of a tactile-kinesthetic world that, unlike the visual world, rubs up directly against things outside it and reverberates directly with their sense. The tactile-kinesthetic body is a body that is always in touch, always resounding with an intimate and immediate knowledge of the world about it. Reduced in status to a visual object, the body loses this quintessential sensorium' (1994: 16).

Could Steyerl's emphasis on the virtual body as nonexistent be in fact reducing the living body into nothing but a visual object? Already in 1999 Murray and Sixsmith argue that the experience of inhabiting the body in VR is not prescribed by the VR developer but has an existence and direction of its own. They assert that to manufacture the disappearance of the body in VR solely visually is a poor method of eliminating the phenomenal body which, in its kinesthetic and proprioceptive modes of presence, continues to surface in perceptual experience - it is always there, but we do not always have to be conscious of it; they describe the experience of VR as embodied, but also social, racial, ethnic, gendered, and cultural, and the fact that VR has developed in an occularcentric way might be grounded in Western culture's emphasis on vision. Murray and Sixsmith suggest that very different implications for experiences of embodiment can be instantiated through Sheets-Johnstone's tactile-kinesthetic body rather than the purely visual one (1999: 320-323).

How can the tactile-kinesthetic body, 'the sentiently felt body, the body that knows the world through

touch and movement' (Sheets-Johnstone, 1994: 5), offer resistance to VR as having a disembodiment effect? Sita Popat explains that this claim has beleaguered VR from its early days, through popular culture repeating the pattern of William Gibson's writings of the body as becoming obsolete; on the contrary, she argues that, rather than distancing us from our bodies, VR environments can enable us to relocate ourselves as embodied beings (2016: 1-2). She highlights the crucial role of the proprioceptive senses – internal connectivity, spatiality, and movement – in grounding experience, so that she knows the position of her arms without being able to see them: touch contributes to presence, but it is the action of reaching out to touch rather than the achievement of contact that provides the constituting effect (2016: 3). I note here the difference between Popat and Slater's positions when he considers that reaching out to touch a virtual object when the system lacks haptics constitutes an invalid sensorimotor action (2009: 3551) whereas Popat sees the reaching out itself as effect-producing.

Popat draws from performance installation *White Island* (Gibson/Martelli, 2014), where she wore an Oculus Rift headset and drifted in a virtual hot-air balloon over an Arctic landscape. Crucially, because there is no avatar representation in the virtual world, the participant's body appears to be 'missing in action' by not being seen, and yet it continues to see: Popat describes herself as experiencing 'a kind of missing or phantom body that exists only proprioceptively' (2016: 7). I note the fascinating relevance with RHI – and yet it is not *a* missing limb that she experiences but an entire phantom body, and the phantasmic element is in resistance to a purely visual source or the lack thereof. Popat's body was highlighted by its visual absence, and her physicality was strongly present through her 'proprioceptive senses [feeling] the interconnectivity and movement of [her] muscles, tendons, and joints' (2016: 8). Popat draws from Sheets-Johnstone's understanding that '[s]pace at its source is a corporeal space defined by the intrinsic spatiality of animate form and the inherent spatial possibilities of the tactile-kinesthetic body' (in Popat, 2016: 9). Whether an avatar is visible or not, Popat asserts that:

'[m]y body always knows where I am in corporeal space, and I make cognitive sense of that corporeal space in relation to the world that I see around me, folding physical and virtual together rather than experiencing a binary division. My body cannot be missing because my corporeal space is "here," engaging in action' (2016: 10).

It is relevant here to return to the findings of Mottelson et al. on visuo-motor synchrony emerging as the most important factor for outcomes of body ownership and agency (2023: 20). Popat's lack of avatar is not affecting her presence within *White Island*, and her body cannot be missing also because the VR system depends on it: what *has* to persist in the VR experience is not a body image, but the corporeal, animate body of the player who animates the experience. Under this light, a truly

disappearing body for VR is one that has taken off the headset; there are reasons to remove the headset, including motion sickness or injury, and reasons to put it away – such as a global pandemic that curbs equipment exchanges and restricts us within ‘support bubbles’, which affected my own doctoral research as I recounted within my thesis introduction.

There are also reasons to be deeply weary of the headset - reject it even - for the ways that the corporeal becomes consumed by corporations. Indeed, Steyerl emplaces *Bubble Vision* together with social media as emblematic of globalisation, linking VR with data-based predictions, whereby 360-spherical video teaches humans how to be their own ghosts while they become invisible. She links the golden age of Dutch painting to the beginning of the Anthropocene: soap and glass bubbles became popular in Vanitas artworks when man becomes central in shaping their own environment; modern man is supposed to be at the centre of nature as well as at the centre of 360-degree spheres, but in both cases, the central person may be missing. Quoting Lanier, Steyerl argues that ‘to build a universe in virtual reality, you need to mentally basically eliminate one single person from her surroundings, which means that this whole, our universe actually consists of people-shaped holes within bubbles’ (2018: unpaginated). However, Lanier excises ‘a person-shaped cavity’ from the universe, it is not to eliminate the person but to describe ‘an ideal virtual reality setup as a sensorimotor mirror; an inversion of the human body’ (Lanier, 2017: 74). The human *cannot* be missing, because VR cannot function without one, and its person-shaped hole awaits a human so it can perform by being performed. An engulfed human is no less scary than a transparent one, and as Levitt makes clear, VR ‘captures you in the world inside the head-mounted display. But in this spatio-temporal capture in which you are, in effect, kidnapped by the apparatus, other worlds may be opened’ (2018a: unpaginated).

It is important to remember that the body ‘kidnapped in VR’ – with or without an avatar and with the real world hidden from them - remains seen both by the apparatus tracking its movements (and by extension by the corporations that own the software, hardware and web connections) as well as by any other witnesses in the room. This is clear in Farocki’s *Serious Games III*, with the therapist-soldier scrutinised by both instructor and audience, while being ‘caught’ in the program. Under this light, the body in VR is *never* missing nor transparent; on the contrary, the body is *overseen* both in the sense of being monitored, but also as *excessively* seen, particularly as the newer headset models contain cameras that capture the player’s facial expressions and track their eye movements. How can room be made for empathy in such a tight hold of the human in the centre? In the following chapter, before dealing with VR’s empathies, I begin by addressing some of the slipperiness of the notion of empathy.

Chapter 3: Empathy's Shoes

Introduction

VR and empathy were present within multiple discourses when my research journey begins in 2017, often accompanied by the expression 'walking in someone else's shoes'. Because this Anglo-American idiom does not easily translate in other languages and cultures, its persistence as an explainer of what empathy *is* and of what VR does well, bears investigation: what are the synergies between walking, shoes, and empathy? Within ***Slippery Shoes*** (pp.61-5), I examine empathy's linguistic origins towards illuminating the complexity of its meanings, and in ***Stolen Shoes*** (pp.66-71) I articulate the colonialist baggage that is perpetuated through language, even with well-meaning intentions. Within ***VR's Empathies*** (pp.72-83), I survey various analyses, criticisms, and alternative approaches to the concept of the 'empathy-machine', drawing from texts and from my personal experience of certain VR works that have been discussed in terms of empathy.

Slippery shoes

For philosopher Peter Goldie, the term empathy is often used without enough clarity, and with little agreement amongst psychologists or philosophers on what it is (Goldie, 2000: 194-195). Empathy has been described as ‘elusive’ (Basch, 1983) and ‘somewhat slippery’ (Eisenberg and Strayer, 1987: 3) so it is possible that mentions of shoes lend it some much-needed *friction*. Empathy ‘is often portrayed as walking a mile in another person's shoes [...] [meaning] that we can’t really understand someone else’s experience unless we place ourselves in their situation’ (Dowd et al., 2010: 421). Philosopher Alvin Goldman explains that ‘[w]hen empathizing with another, you often reflect on that person’s situation [...] and imagine how you would feel if you were in his shoes’ (2011: 36). The shoe does not always fit, and Goldie attests that ‘in-his-shoes imagining is an imaginative project which is distinct from empathy, although they are often not distinguished clearly enough in much discussion of simulation theory’ (2000: 199). While the writers above come from the field of psychology, I find resistance in the words of new media theorist Wendy Hui Kyong Chun, whose response is humorous but cutting: ‘if you’re in someone else’s shoes you’ve taken their shoes’ (Chun, 2016: unpaginated). Such a consideration makes the idiom appear somewhat slippery, along with empathy.

Empathy’s opacity is sometimes clarified etymologically as deriving from the Greek *empathēia* (Hojat, 2007; Cournoyer, 2011, Bennett and Rosner, 2019). It can also be explained by distinguishing it from sympathy; a Royal Society of Arts animated film, voiced by Brené Brown, begins with her question-and-answer: “So what is empathy, and why is it very different than sympathy? Empathy fuels connection. Sympathy drives disconnection” (in RSA, 2013, unpaginated). Apart from the various non-aligned empathies in the fields of social sciences, psychology, aesthetics and philosophy, some seem strikingly antithetical. Empathy as a ‘sharing of feelings’ or ‘understanding’ could not be more different to modern Greek *empathēia* as being consumed by intense feelings of enmity, malice, or hatred. The word does derive from ‘in’ and ‘pathos’ but the pathos is one’s own: an egotistical ‘impassionment’ breeding malevolence towards others. *Empathēs*, the adjective from which *empathēia* is derived and which first appears in the first century CE, meant ‘passionate’ in the general sense (Passow, in Breithaupt et al., 2015: 24), and ‘[e]mpathēia named an intense passion or state of emotional undergoing. Pathos²⁷ comes from pathein: to suffer or undergo’ (Depew, 2015: 100).

²⁷ *Pathê* are usually translated as ‘feelings’, ‘affections’, ‘emotions’ or ‘passions’ (Frede, 2013: 36).

This brief account of certain frictions between *empathia* and *empathy* does not seek to restore nor to reclaim a ‘correct’ *empathy*, but neither can it be dismissed as a mere linguistic glitch between two common-rooted words as etymological *faux-amis*. Rather, it traces my initial, intuitive unease as a Greek speaker towards a concept ‘so widely and unquestioningly viewed as ‘good’, its naming can represent a conceptual stoppage in conversation or analysis’ (Pedwell, 2012: 281). Equally, ‘to walk in another person’s shoes’ is widely employed to explain *empathy* among English speakers, but a metaphor that is accepted wisdom in one language, may ‘stick out like a sore thumb’ in another. What certainly ‘sticks out’ to me is the prevalence of this expression both to explain *empathy* *and* to assert what the *empathy-machine* *does well* such as when Jaron Lanier argues that:

‘hypothetically, [VR] can be the most vivid medium, and can give you a concrete feeling for what it is like to walk in someone else’s shoes. Artists like Chris Milk have used VR to document the experiences of refugees in a new first hand manner, for one good example’ (in Eggers, 2017: unpaginated).

While Milk does not use the ‘walk in another’s shoes’ expression himself in his TED-talk (2015), this was precisely how Lanier described the project, in shorthand. Another example of this shorthand use is within an article from the *Journal of Medical Imaging and Radiation Sciences*, which concludes that ‘VR may provide an effective and wide-ranging tool for the learning of care recipient’s perspectives, allowing participants the opportunity to perceive what it is like to walk in the shoes of another’ (Brydon et al. 2021: 475). The expression is present on the website of *Project Empathy*, a collection of experiences employing VR because it is ‘an empathy machine and allows us to feel for a moment what it’s like to walk a mile in someone else’s shoes’ (Wong and Jones, 2016: unpaginated). I note the presence of *miles* within the wording, and while the project was created *after* the *empathy-machine* was named as such in 2015, *miles* appear also in the title of *Walk A Mile in Digital Shoes: The Impact of Embodied Perspective-Taking on The Reduction of Negative Stereotyping in Immersive Virtual Environments* (Yee and Bailenson, 2006). This article is also cited in *Many ways to walk a mile in another’s moccasins: Type of social perspective taking and its effect on negotiation outcomes* (Gehlbach et al., 2015). The prevalence of the expression, and the intriguing additions of *miles* and *moccasins*, requires that I stop focusing on VR and follow the trail of *empathy* in itself; importantly, my aim is neither to refute nor defend *empathy*, neither to encapsulate its meaning, but to *respond* to the persistence of an Anglo-American saying that is presented as a teleological high point of emotional connection, through a saying that ‘speaks for itself’ but, as explained earlier, does not convince me as a non-native English speaker. Tracing the concept of *empathy* was a task which psychologist Lauren Wispé evocatively portrays as fieldwork:

‘[i]t was difficult because every decade or so a new growth of psychological concepts, or new

uses for old ones, makes the old field impassable. The trails back have become overgrown with redefinitions, reinterpretations, and benign neglect. We no longer remember the important debates in which these concepts took place. We don't even remember where they originated and with whom. They have disappeared like the smoke from a long burned-out campfire. Then upon the same site, with materials we think are fresh and theories we think are new, we kindle another fire' (1987: 17).

Wispé's account resonates with me because it alludes to knowledge as gained through the feet, taking me back to the *hodos* (road) within method, to the *vestigio* (foot-track) of investigation, and to the primacy of the body moving for living and learning. Her words also vividly suggest that writings on empathy may also be rewritings and rehearsings of old-terms-as-new; that erasings are necessary for a clear ground to write upon; that new knowledge requires some forgetting. Wispé explains that the modern notion of empathy was translated, utilised, borrowed, cherished and revitalised from the nineteenth century to present days (1987: 17). It begins as a German aesthetic term - *Einfühlung*²⁸ - translated into English, via Greek. Meaning 'in-feeling', it was used in 1873 by German psychologist Robert Vischer²⁹, to name the placing of human feelings into inanimate things, plants, animals, or other humans in a specific way, fusing a human's experience with an object's experience so that it no longer feels like the human's own experience, but instead like that of the object (Depew, 2005: 100). As Wispé explains, 'Vischer's psychology of aesthetic appreciation involved a projection of the self into the object of beauty' (1987: 18).

Theodor Lipps was among the German psychologists who developed the concept of *Einfühlung* towards explaining how a person grasped the meaning of aesthetic objects as well as the consciousness of others; for Lipps, the object of beauty may provide the object of aesthetic satisfaction but it is the self that feels various internal activities such as striving, yielding, and overcoming obstacles (Wispé, 1987: 19-20). Montag et al. assert that Lipps' *Einfühlung* entails fusion between observer and subject, as an unconscious process based on 'natural instinct' and 'inner imitation', so that when the observer is watching an acrobat on a tightrope, the acrobat's 'perceived movements and affective expressions are "instinctively" and simultaneously mirrored by kinesthetic "strivings" and experience of corresponding feelings in the observer' (2008: 1261). Depew argues that, for Lipps, 'the object of aesthetic experience is the sensuous aesthetic object itself, which we contemplate from a suitable "aesthetic distance" or with the characteristically aesthetic "disinterest"

²⁸ Wispé names Vernon Lee (Violet Paget) as being the first to translate *Einfühlung* into English as 'sympathy' within a lecture she gave in 1895; for Wispé, Vernon Lee also independently discovered the basic idea of muscular mimicry and *Einfühlung* (1987: 18).

²⁹ *Einfühlung* may have been coined by the philosopher Rudolf Hermann Lotze in 1869 (Depew, 2005:106), and the verb *einfühlen* is first encountered in Herder's writings, and soon after in Novalis's fragment *Die Lehrlinge zu Sais*, published posthumously in 1802 (Curtis, 2015: 360).

of which Kant spoke. Our own feeling states are not the object of aesthetic experience [...] but merely the ground of their possibility' (2005: 100). Strikingly, Depew stresses that Lipps' own use of the word *empathia* for *Einfühlung* in 1910 is because 'he meant just what the late Greek term meant – an especially intense state of feeling – with the added inference that we experience feeling states this intense as belonging to an external object that occasions them' (2005: 101). Lipps' *Einfühlung* forms part of an expressionist turn in aesthetics, against a 'sympathetic' view of 'feeling together' linked to idealism; empathy, continues Depew, was coined to replace or redefine sympathy, which gradually changes 'from the sense of universal attunement and resonance in romanticism to the smarmy sense of pity and superiority that the term now connotes' (2005: 105). Scholar Robin Curtis attests that the notion that empathetic resonance could be a key element of everyday as well as an aesthetic experience, was already in the air in the 18th century, and can be glimpsed within certain writings of Gotthold Ephraim Lessing from 1757, and Adam Smith's 'fellow-feeling' from 1759 (2015: 360).

Unlike the complex and disputed patronage(s) of *Einfühlung*, the 'birth' of modern empathy is generally agreed to have taken place in 1909, as the English-born, United States-resident, German-educated psychologist Edward B. Titchener translates *Einfühlung* while discussing kinesthetics, explaining that:

'[n]ot only do I see gravity and modesty and pride and courtesy and stateliness, but I feel or act them in the mind's muscle. This is, I suppose, a simple case of empathy, if we may coin that term as a rendering of *Einfühlung*' (1909: 21 emphasis in original).

Titchener does not offer a source for *Einfühlung* (Watson et al., 2021: 719) but this is a key moment when an aesthetic German term is anglicised via a neologism analogous to sympathy, as Titchener explains at a later text: '[e]mpathy (a word formed on the analogy of sympathy) is the name given to the process of humanising objects, of reading or feeling ourselves into them' (Titchener, in Jahoda, 2005: 162). Crucially, Titchener did not mean 'identification', as the word would be *Einsfühlung*, nor did he mean 'vicarious feelings', which would be *Nachgefühl* (Wispé, 1987: 21). If the linguistic birth of the term empathy happens in 1909, its meaning and function extends beyond the word itself, and 'there are perhaps as many definitions as there are authors in the field' (Cuff et al, 2016: 144). Elusive as empathy is, *Einfühlung* is also hard to define; curator Magdalena Nowak explains that while the German word gets translated into English as 'empathy' or 'feeling into', other close notions including 'sympathy' or 'understanding' have become mixed together, or have superseded one another over time (2011: 302). Historian Iain Boyd Whyte notes that, as early as 1917, Russian formalist Viktor Shklovsky challenged the easy emotional resonance between object and viewer with his theory of *ostranenie* (defamiliarisation), according to which the function of art is to make the object unfamiliar, towards increasing the length of perception, because '[a]rt is a way of experiencing the artfulness of

an object: the object is not important' (in Curtis, 2014: 354). With this position becoming influentially developed in the *Verfremdungseffekt* (estrangement effect) employed in the theater of Brecht, 'defamiliarization dispatched empathy to the rust-belt of aesthetics (Whyte, in Curtis, 2014: 354).

While relegated in terms of aesthetics, empathy's presence in psychology not only persisted but multiplied. Psychologist Daniel Batson identifies 'eight distinct phenomena that have been called empathy' (2009: 3) and notes that, while empathy is most often contrasted with sympathy, the exact same state that some scholars label empathy others label sympathy (2009: 8). Psychologist Paul Bloom dismisses the subtle differences in empathy definitions, and names a typical sense of empathy as '*the act of coming to experience the world as you think someone else does* (2017: 19 emphasis in original). Empathy's moral genealogy links with Adam Smith's sympathy as the capacity to place ourselves in someone's situation 'and become in some measure the same person with him, and thence form some idea of his sensations, and even feel something which, though weaker in degree, is not altogether unlike them' (Smith, in Bloom, 2017: 19). Bloom notes how the 'popular metaphor [...] of putting yourself in another person's shoes, lumps together knowing what someone thinks and feeling what someone feels' (2017: 60). The very persistence of these shoes continues to 'trip me up', therefore, rather than follow the complex histories of the many varied forms of empathy, in the next section I seek the root of the metaphor itself.

Stolen Shoes

Seeking the origin of 'walk in another's shoes', I am offered a *clue* in what appears to be its older form as 'walk a mile in his moccasins'. An American colleague tells me that this saying was in his family house, as a framed quote with the words 'Oh Great Spirit, Grant that I may not criticize my neighbor until I have walked a mile in his moccasins', and an online search reveals a number of 'vintage' plaques in plastic, metal or wood, bearing those words. I hear a similar phrase within the 1949 educational film *Lo Lo Mia*, whose voice-over requests to 'let us borrow Red Man's prayer in saying 'adieu'. Oh Great Spirit, maker of man that others may say Lo Lo Mia too, forbid that I judge any man until I have walked for two moons in his moccasins' (Periscope Film, 1949).

Within the 1974 summer issue of the American Library Association, Nancy E. Gwinn traces the origin of the quote after a patron's request. She finds multiple non-attributed versions usually called 'an Indian prayer'; one includes walking 'two months in his moccasins' (Woods, in Gwinn, 1974: 150). The Reverend of St. Francis Indian Mission in South Dakota explains that the prayer 'is traditional among the Indian people, especially in the northern plains. We have used it as a sort of trademark for some twenty years, always hoping some day to find the author. There are some slight variations of it, since the word 'mile' is not to be found in the Indian vocabulary. The variation is usually 'day' or 'moon'' (Rev. Demeyer, in Gwinn, 1974: 150). His remarks are confirmed by a specialist in Indian affairs at the Library of Congress, who notes that several searches have had little information; the Indian Committee of the National Council of Churches was using it frequently, calling it a traditional Indian saying; for Gwinn, 'it looks as though this will remain an unsolved mystery' (1974: 151).

The saying can also be seen in action within a document from the party election strategy of Canada's Co-operative Commonwealth Foundation (CCF) party in 1960, addressing party candidates whose ridings contained a significant number of 'Indian' voters just after they had been given the provincial vote; it suggests that:

[u]ntil we have 'walked in the Indian's moccasins' we have little chance of gaining his confidence or of influencing him in any way. It seems to me that integration of the Indian into the social and economic life of Saskatchewan is the desirable goal and this will become more acceptable to him if we can put across our socialist idea of 'sharing' and 'production for use' (Sturdy, in Barron, 1997: Xviii).

Author Laurie Barron explains that the phrase 'was probably borrowed from a Catholic Sioux prayer in reference to the Christian message of brotherly love and forgiveness in the New Testament, but its origin is uncertain because the phrase had been used by various Indian groups as far away as

California' (1997: xviii). While the aim of walking in Indian moccasins implied a degree of sympathy for Native aspirations and culture, Barron concedes that it invited a measure of CCF involvement that would prove to be both paternalistic and heavy handed (1997: xviii).

There is a similar fatherly approach in Harper Lee's fiction narrative *To Kill a Mockingbird*, also from 1960, where Atticus Finch teaches his daughter Scout 'a simple trick to get along a lot better with all kinds of folks. You never really understand a person until you consider things from his point of view, until you climb inside of his skin and walk around in it' ([1960] 2015: 33). Walking 'in the Indian's moccasins' appears to be such a 'trick' for the CCF party to win-over Aboriginal voters, and its success lies in the application of a supposedly Sioux phrase into English. The 'borrowing' excuses itself as a homage to 'the Indian', as distinct nations are assumed to share the same spirituality. *Whose* are the moccasins - and who may borrow the expression? One could argue that a saying needs no consent to be evoked - but this is an election strategy where there are votes to be gained; in this sense, the for-profit appropriation of the (supposed) Sioux-attributed saying is 'walking over' the colonised in the name of their supposed own values.

Returning to *To Kill a Mockingbird*, I note that climbing inside of the skin is mentioned prior to walking around in it. Social work scholar Susan Gair explains that 'getting into the skin of' is a conceptualisation of empathy which may be offensive to some Indigenous groups (2013: 137). I listen to what philosopher and theorist of decolonisation Seloua Luste Boulbina says while reading Frantz Fanon's 1952 *Peau noire, masques blancs*: '[t]hose who have been colonized prioritize saving their skin above all else' which means 'undoing the fatal link that asymmetrically unites colonizer and colonized [...] [and] Fanon is not just talking about the black skin for which white masks are prescribed and in the end proscribed. He is referring to the skin of the colonized subject as such' (Boulbina, 2019: 171). Through Boulbina, I understand how 'getting into the skin of' can be offensive, because '[e]very word that removes skin can be a wound [while] [t]he colonized person's body does not belong to him or her' (2019: 174-175).

Professor of Israeli literature and culture Adia Mendelson-Maoz says that the expression 'don't judge a man until you have walked a mile in his shoes' and Harper Lee's idea that to understand the other you need to climb into his skin and walk around in it, both emphasise the need to understand the Other by putting oneself in their place³⁰. However, what is stated is an intention rather than an ability, since one can never truly be someone else's position; rather than a 'Cherokee aphorism', the saying

³⁰ Mendelson-Maoz offers another variation on the idiom, whereby, '[i]n the Mishnaic tractate *Pirkei Avot* (a compilation of ethical teachings and maxims), it is stated: "do not judge your friend until you reach his place" (2019: 159).

seems to have originated from a 19th century poem by Mary T. Lathrap, entitled *Judge Softly* (Mendelson-Maoz, 2019: 159). It is of particular interest to my study that Lathrap (1838-1895) was one of the founders of the Michigan Woman's Christian Temperance Union, and a licensed preacher in the Methodist Church (Bordin, 1981: Xiii), as her poem echoes a biblical viewpoint of 'Judge not lest ye be judged' (Matthew 7: 1), by imploring:

Pray, don't find fault with the man that limps,
Or stumbles along the road.
Unless you have worn the moccasins he wears,
Or stumbled beneath the same load.

There may be tears in his soles that hurt
Though hidden away from view.
The burden he bears placed on your back
May cause you to stumble and fall, too.
[...]
Don't be too harsh with the man that sins.
Or pelt him with words, or stone, or disdain.
Unless you are sure you have no sins of your own,
And it's only wisdom and love that your heart contains.
[...]
Take the time to walk a mile in his moccasins.

(Lathrap, no date)

The poem points at the man who appears to be out of line but may be in pain – that he is Native American can be surmised by his moccasins – and the understanding towards his hurting should be extended to his sinning, so one should not judge him too soon nor too harshly. The voice of the poem is of a Christian preacher admonishing kindness towards the walker's suffering, albeit without acknowledging the roots of his suffering. Neither does the poem suggest helping the limping man to carry his heavy weight; rather, by sympathising with and pitying the Other, the witness will become a better Christian. The proposition of walking 'a mile' suggests a calculation of space/time that does not relate to the many indigenous geographies, but rather links with the colonial preoccupation of claiming land through measuring it. The significance of the *Judge Softly* poem lies in its precise time and place, and in the role of Christian rhetoric and action towards the subjugation of Native Americans, and while the poem walks in the limping man's moccasins in 1895, the foundations for his pain had begun much earlier. A year of interest is 1848, when, to clear the way of white population cutting through Indigenous lands on their way to the Pacific coast, plans were put forth that evolved into a reservation policy seeking to concentrate Native Americans into restricted areas (Prucha [1975] 2000: 76-81). 'Indian Commissioner' William Medill's speech from November 1848, announces a policy 'to colonize our Indian tribes [...] confining each within a small district of country, so that, as the game decreases and becomes scarce, the adults will gradually be compelled to resort to agriculture

and other kinds of labor to obtain a subsistence [...] [and] it is only then that there is any ground to work upon for civilizing and Christianizing him' (Medill, in Prucha [1975] 2000: 77).

Christian missionaries would be in charge of the education of children (Medill, in Prucha [1975] 2000: 77), and researcher of American religions Tammy Heise asserts that, although nearly all missionaries understood their efforts as benevolent reform, 'their work as ministers, farmers, teachers, and (eventually) federal bureaucrats charged with administering U.S. Indian policy cannot be separated from the American colonial project to dominate Native peoples' (2017: 2). Returning to the idiom, *when* did a Christian poem become Native American wisdom? American etymologist Barry Popik also attributes the saying to the *Judge Softly* poem, and finds its earliest mentions as an 'Indian axiom' taking place in speeches conducted in the 1920s and 1930s by Dr. Erl A. Bates, an expert on Indian affairs of Cornell University (Popik, 2015: unpaginated). The fluctuations of footwear, time, and space between the various versions appear like a series of re-measureings: from a mile to a day to two moons, from Christian poem to Native American prayer, from moccasins to shoes, from Indigenous land to settler's land. The many evocations of the idiom as 'Native wisdom' when the saying appear as settler wisdom, suggests an extended practice of misappropriation. While Native Americans were expected to follow 'the white man's road' (Hoxie, [1984] 2001: 33), the white man gives himself permission to 'walk the walk' by a saying supposedly shared by multiple Indigenous nations – when in fact it is settlers talking amongst themselves.

When, more recently, the saying *is* attributed to the *Judge Softly* poem within discourse around empathy and perspective-taking (Ollivere, 2017; Patey, in Akkent and Kovar, 2019; Weyant, 2019; Moon et al., 2020), its birth within a missionary-settler-colonialist milieu is not acknowledged, and the quote testifies the power of empathy through poetic metaphor. I must emphasise here that I am not questioning the validity of those discourses, but I highlight the lack of questioning of the poem's origins. To understand how the idiom continues to metaphorically reverberate, I listen to media theorist Siegfried Zielinski's explication of the function of metaphor; he asserts that:

'[m]etaphors are constructed to enhance, to compress, to enrich, to uplift something; otherwise, they would only proliferate in the imagination of their constructor. This "something" is either spiritual or physical. Metaphors are constructed to ennoble the physical with the aid of the spiritual or to visualize the spiritual, make it profane and concrete (objectify it) by a comparison with the physical' ([1997] 2019: 52).

When the listener/reader of *Judge Softly* was urged to walk in another's moccasins, the metaphor was constructed so that something spiritual (Christian compassion) may bridge the two (poetic) bodies of the witness and of the stumbling man; by extension, it is to bond the Christian reader, not with the moccasin wearer, but with their own Christian faith. It is not easy to put the Other's moccasins on, it

is an effort that warns of potentially hurting feet. Within the poem, the reality of settler colonialism curtailing the freedom of the Native American is ennobled and enabled through an evocation of the spiritual - the limping man makes the settler more holy by augmenting his compassion. When the poem is reincarnated during the 1920s-1930s as Native American wisdom, a fictional, hybrid spirituality is conjured and gratefully drawn upon, because it 'makes non-Indian people "feel more 'American"' to identify as and with Indians while ignoring the real-life implications of doing so' (Stern, in Shanley, 1997: 677-8). If I may borrow Wendy Hui Kyong Chun's words - that walking in their shoes is stealing their shoes - the moccasin version is performing a double stealing by imposing an imagined spirituality which turns the native into a proto-Christian, an unfinished faithful. When, at a later time, empathy is the new compassion or the new sympathy, and is explained as 'walking in another's shoes', the metaphor concretises an act of imagination already deemed good by likening it afresh with something easy to grasp – the physical act of walking made more intimate through the Other's shoes. The Christian logos and the Native moccasins have been put aside, as has the pain and suffering. Indeed, one of the potential benefits of empathy as opposed to sympathy is that one need not suffer along with the other³¹.

Reading *Judge Softly* as a poem that sympathizes with the Native American whose freedom and ancestral land have been stolen, allows a view of the 'walk in another's shoes' idiom next to the place of his confinement, and thus the idiom's place of origin. The reservation is another kind of concentration camp, and another kind of black box³². Linking American reservations to extermination camps is not an exaggeration. Artist Lawrence Paul Yuxweluptun, born in British Columbia of Coast Salish and Okanagan ancestry, explains that indigenous peoples were prisoners of war, and the reservation is 'a colonial internment camp, a concentration camp' (Alcalay and Yuxweluptun, 2016: 35). Writing from an African perspective, researcher of colonialism and post-colonialism Mahmood Mamdani calls America 'a pioneer in the history and technology of settler colonialism' (2015: 608), and asserts that '[t]he prototype³³ concentration camp from which the Nazis drew inspiration was not

³¹ Hodges and Myers explain that empathy is often defined as ' [understanding] the other person's experience as if it were being experienced by the self, but without the self actually experiencing it. A distinction is maintained between self and other. Sympathy, in contrast, involves the experience of being moved by, or responding in tune with, another person' (Hodges and Myers, 2007: 296).

³² Flusser asserts that the extermination camp is not a violation of Western models of behaviour, but the result of their application (2015: 17).

³³ Mamdani recounts the ethnic cleansing of South Africa's 'Natives Land' Act of 1913, dividing 87% of land for whites and 13% for 'tribal homelands' called 'reserves', that were modelled and named after American reservations from the previous century. Following South Africa's independence from Britain in 1910, the new settler government sent a delegation to North America for studying purposes, whereby '[t]he American reservation became the South African reserve' (Mamdani, 2015: 608).

the one built by the British to confine Boers during the Anglo-Boer War; rather, it was the reservation built to confine Indian tribes [...] in mid-nineteenth-century America' (2015: 608).

Whether empathy's meaning(s) can be crystallised and whether it is 'good' or 'bad', are beyond the scope of my research; however, when the 'walk in the other's shoes' expression is brought up, we should not ignore its origins in American settler colonialism and the subjugation of Indigenous People. Whatever the intentions of the speaker, they are reciting the poetry of colonialism - the settler expressing concern for the suffering of the colonised when in fact they are functionaries of a program producing and perpetuating that suffering, imaginatively enacting a kind of masquerade where they take over the body of the victim to cleanse themselves of sins. When VR is said to 'give you a concrete feeling for what it is like to walk in someone else's shoes' (in Eggers, 2017: unpaginated), the rhetoric of the idiom concretises the value of the empathy-building industry by betting on an already positive construction, because 'walking in the other's shoes' is what empathy is (and walking, potentially in an Other's avatar, is what VR offers on top). When brought up in conversations around VR, the idiom is not explained and its value depends on an existing awareness and acceptance of its Anglo-American empathetic connotations, which is why it may sound less convincing in cultures/languages where that expression was not already in use. VR as 'empathy-machine' even reclaims the old moccasins now turned digital, but what is crucially forgotten is that the idiom stems directly from a Christian settler rhetoric of compassion towards the colonised, and settler colonialism's 'logic of elimination', whereby the disappearance of the original inhabitants is engineered everywhere except in nostalgia (Wolfe, in Shoemaker, 2015: unpaginated).

VR's Empathies

At this point I may face another question: how do empathetic VR's 'stolen shoes' concern me - a white Southern-European - and is this my story to tell? My answer is that, partaking in VR, Game Engines and CGI Animation practice, I cannot overlook their military births, including the particular affinity between games and the war industry within the 'military-entertainment complex' (Lenoir, 2000; Lenoir and Lowood, 2005; Lenoir and Caldwell, 2018). Neither can I ignore Silicon Valley's conjuring of a digital spirituality that appropriates indigenous knowledge towards neo-liberalism, and the identity tourism that persists in so many anti-racist initiatives; social media promising deep connection and improved humanity whilst 'washing their hands' of their own involvement in practices of hate (Nakamura, 2020). And while I have articulated the settler colonialist rhetoric that 'walking in the other's shoes' expression perpetuates, the discourse around VR's empathic potential is much extended, and in this text I look at some of the analyses, criticisms, as well as alternative approaches to the 'empathy-machine'. For this, I draw from a variety of texts, as well as personal experience of certain VR pieces that have been discussed in empathetic terms.

VR as 'empathy-machine' was articulated by Chris Milk during his 2015, TED-talk, where he explained cinema allows viewers to feel empathy for people and worlds that are different from their own, but remains static; wanting to build 'the ultimate empathy machine', Milk was led to VR because rather than observing the world through a window, 'you feel present in the world that you're inside and you feel present with the people that you're inside of it with' (2015). His 2014 VR film *Clouds over Sidra* follows the life of a twelve-year-old Syrian girl who had been living for a year-and-a-half in a refugee camp in Jordan with her family, and Milk shares with his TED talk live audience, on a large screen behind him, a wide rectangle version of the VR film – the flat panoramic video. He reassures them that inside the headset they are sitting on the same ground as Sidra, and 'because of that, you feel her humanity in a deeper way. You empathize with her in a deeper way' (2015). He explains that they have already showed this film in VR to the World Economic Forum in Davos, to a group of influential people whose decisions can affect the lives of millions, and would not otherwise be sitting in a tent in a refugee camp in Jordan but:

"in January, one afternoon in Switzerland, they suddenly all found themselves there. (Applause) And they were affected by it" (Milk, 2015).

The above text is transcribed from Milk's TED talk video recording, and his words are accompanied on the screen behind him by a still image of the Davos participants wearing headsets. Milk allows a short pause inviting a reaction, but the applause suggests that the very *promise* of VR's affect, affects the

audience, rather than a first-hand experience. Researcher of documentary and digital cultures Mandy J. Rose says that Milk's talk has been highly influential in promoting a link between VR and empathy, a ubiquitous association often uncritically repeated (Rose, 2018b: 141). She asserts that, 'in the first generation of VR nonfiction, affect has in general been privileged over understanding; the experiential potential of VR translated into work aimed at generating compassion rather than oriented towards equity, justice, or rights' (2018b: 144). A different approach is taken by media theorist Grant Bollmer who argues that technologies intended to foster empathy presume to acknowledge the experience of another, but their user in fact absorbs the other's experience into their own (2017: 64). Bollmer includes Milk's VR projects among a type of work whose empathy 'should be framed as another chapter in the long metaphysical legacy of bodily transcendence through technology' (2017: 66). Bollmer moves away from technology in order to understand the limits of empathy over VR, and notes that:

[f]or Levinas and many of those following him, facial expression provides knowledge that subjectivity is relational, overflowing, and collective. Seeing the face of another, and recognizing that face *as* the face of another, is a foundational act that defines one both as an individual and as an essentially social being. I see others and recognize myself as distinct from them, but also recognize myself as having something in common with shared movements and expressions, written as they are on the face (2017: 69 emphasis in original).

Bollmer explains that the face, and our readings of it, offer us binary differentiations between self and other, inside and outside, visible and hidden, totality and infinity; in the name of 'empathy', these 'require the shattering of the surface that is the face, of getting under the skin to 'understand' another person (2017: 71). Instead, he calls for *radical compassion*, an ethical stance that embraces openness because '[c]ompassion is about the potentials of not understanding another, of not feeling what they feel, in a way that does not negate or ignore the experience of another but is open to it, even if it can never fully grasp it' (2017: 72 emphasis in original).

Another antidote to empathy in VR terms can be sympathy: Ramirez et al. claim that it is 'almost always impossible for VR simulations to show a user 'what it's like' from another person's point of view'³⁴. Such simulations are at best misleading and at worst amount to an objectionable form of manipulation' (2021: 528). Rather than first-personal empathy, they suggest that designing simulations to generate sympathy will resolve several ethical issues; simulations aiming to affect the

³⁴ A relevant large-scale study was conducted by Herrera et al., comparing traditional and VR perspective-taking towards building long-term empathy. The study found that VR perspective-taking tasks significantly improved participants' attitudes and motivation to support homeless initiatives over eight weeks, compared to less immersive tasks or those that just imagined the experience. Narrative-based and mediated interventions were more effective in increasing self-reported empathy, suggesting VR tasks may be more effective in promoting prosocial behaviours (2018: 33).

user by making them ‘engaged witnesses’ will deliver moral intuitions which subjects can treat as their own rather than believe they are meant to occupy another’s perspective, and may potentially result in longer-lasting effects (Ramirez et al. 2018: 540). Kate Nash also warns that VR carries with it a risk of ‘improper distance’ (Chouliaraki, 2011). Building on Chouliaraki decrying Western communication practices that subordinate the voices of distant others while simultaneously distancing the Western spectator from their own position of privilege, Nash asserts that ‘VR runs the risk of producing improper distance and an ironic mode of moral engagement when it invites forms of self-focus and self-projection rather than a more distanced position that allows for recognition of distance between the self and other’ (Nash, 2018: 125). Deborah Levitt calls for ‘a version of empathy that embraces alterity, that is, that includes an awareness of the other’s otherness’ (2018a: unpaginated). For Levitt, one of the problematic aspects of VR as empathy machine is that an alignment-via-virtual camera does not equate seeing through someone’s eyes: such an approach disavows individual histories and frames of reference co-constituting our perception of a world. She emphasises that individuals’ bodies are different and perception is bound to forms of embodied experience including smell, taste, touch, kinesthesia and proprioception (2018a: unpaginated).

For Levitt, a good example of VR’s capacity to put us in different worlds and modes of embodiment is *NeuroSpeculative AfroFeminism* (Hyphen-Labs, 2017), part of ongoing research on VR’s impact on reducing bias and fear by providing engaging portrayals of black women; within the VR experience, ‘[p]articipants see themselves in the mirror as a young black girl [...] about to experience cutting edge technology involving both hair extensions and brain-stimulating electrical currents. In the VR narrative, the electrodes then prompt a hallucination that carries viewers through a psychedelic Afrofuturist space landscape’ (Hyphen-Labs, 2017). Documentarian and researcher Kim Munro experiences this VR project within the i-Docs festival in 2018, and finds that it ends too soon, leaving her wanting more of this other-world; she listens to the presentation by one of Hyphen-Lab founders, Carmen Aguilar Y Wedge, who says that by positioning the audience as a black woman, which for most people would be the position on an Other, they are more able to imagine what it’s like to have a black body; this perspective has the potential to decrease prejudice and bias (in Munro, 2018: 164). Munro notes that the scaled down and decontextualised version of the work somehow diminishes the potential to position the audience as the intended Other (2018: 164).

From my own experience of the work, I am delighted by the design of the piece, which uses CGI Animation playfully and without sacrificing any of the environment and character’s vividness through a refreshingly non-photorealistic style. At the same time, I feel uneasy with its description as ‘a virtual reality installation that puts users in the body of a black woman in a hair salon’ (Mercer, 2018:

unpaginated). While the animated character/avatar, as appearing in the salon mirror, mirrors the movements of the VR player, is that avatar truly *a* black woman – and should any VR application repeat a ‘climbing into the skin’ kind of empathy? Neuroscientist and creative director Ashley Baccus-Clark, one of the founders of Hyphen-Labs and the project’s lead researcher, refers to how it has been shown in neuroscience labs that ‘if you put someone who is not, let’s use a black woman for example, in the body of a black woman, and give them control or agency over that avatar, it’s been shown to decrease a prejudice or bias toward someone of that color or that nationality’ (in Mercer, 2018: unpaginated).

On such research claims, it is relevant to refer to a recent review of 20 years of research in prejudice and racial bias through virtual humans, by Hatfield et al., whose findings ‘indicate that examining racial biases of white people taking body-ownership over Black avatars has little scientific rationale or justification’ (2022: 6 emphasis in original). With some of the examined studies shown to exacerbate white favouritism, such experimentation may contribute to systemic racism; because such studies are primarily shaped by white scholars, everyday privilege is not considered, and racism is reinforced; the negative impact of virtual embodiment as positioning audience in someone else’s shoes should be considered for how it reproduces social hierarchies (Hatfield et al, 2022: 6). They note the very different approach by Kaatz et al. (2017) and Roswell et al. (2020) for how:

‘their avatar has a name, backstory, and future goal. The avatars have an identity, unlike other embodiment studies that ask white participants to take over a nondescript Black avatar like a costume’ (Hatfield et al, 2022: 6).

What I understand from the above, is that the premise of *NeuroSpeculative AfroFeminism* as a means of entering or controlling a black woman’s body is doing an injustice to a project that is in fact *not* offering the avatar as a costume, but forms part of a speculative, playful and deeply serious universe that centres Black experience, and is created by women of colour. My hypothesis is that the wording echoes the hype around the empathy-machine, and represents the intentions of the makers of the VR tools rather than the artists’, and Baccus-Clark prefers her work ‘to be contextualized in the frame of mindfulness: of being mindful of a person as an experience and not trying to commodify it’ (in Mercer, 2018: unpaginated).

For researchers Bevan et al. an early promise of Virtual Reality non fiction (VRNF) works as ‘the ultimate empathy machine’ lies in allowing their viewers to ‘stand in the shoes’ of the filmmakers’ subjects, allowing audiences to connect with ‘the real’ in ways that surpass traditional film; rather than passive story observers, ‘they could be embodied and made present within it, potentially taking a much more active, interactive role³⁵’ (Bevan et al., 2019: 10). Out of 150 titles examined in their

³⁵ Bevan et al. were greatly surprised by the lack of VRNF content directly addressing this ambition. Only a fifth

study, just over half included CGI/animated techniques, including digital reconstructions of people and places, volumetric scanning using photogrammetry, and digitally replicating live actors as holograms. The latter is strikingly applied in *After Solitary* (Herrman and Mucciolo, 2017), with the digital hologram of a former prison inmate placed within a digital reconstruction of his previous cell, where he talks about his experience of solitary confinement ‘in-situ’ (Bevan et al., 2019: 7).

I experienced the room-scale VR version of *After Solitary* in 2017, during the *HELEXPO* exhibition in Thessaloniki. According to its co-director Lauren Mucciolo, it is based on the story of Kenny Moore, a former inmate of Main State Prison, and the project captures his experience of solitary confinement, including sensory deprivation, hallucinations, and the gradual loss of sanity (Mucciolo, 2017: unpaginated). Dressed in bright red athletic wear, Moore contrasts the sparse prison setting, but the greatest difference between him and his surroundings – highlighting the compositing process – is that the rooms are perfectly still whereas the contours of his body, and the texture of his flesh and clothes shift spasmodically. The effect is like that of an ‘animated boil’, where the outlines of an otherwise still character or object are made to frenetically wiggle or ‘boil’ by making multiple tracings of a single original drawing. The slight variations between the drawings when they are played back in a sequence, creates an animated ‘boiling’ effect (Torre, 2015: 142). Boil also appears in many stop-motion films, and furry characters often exhibit what is otherwise known as ‘crawl’ or ‘chatter’ as a result of the hair moving between frames, and the animator moving the puppet (Failes, 2019: unpaginated).

There is something *frantic* in the way that Moore is *boiling*, and when he speaks of self-harm as an effect of solitary, his words are augmented by ripples over his clothes and skin, and the jagged edges of his contour echo the infliction of his wounds. While, for its makers, the deeply distressing ‘cell extraction’ video marks the climactic moment of the work (Mucciolo, 2017: unpaginated) it is Moore’s appearance inside his own bedroom that moved me most deeply. The room is drab, with a bed taking most of the space and a large television screen with multiple cases in front of it, one of which reads ‘Call of Duty’. While the solitary cell within the project may be generic rather than one where Moore spent years of his life, the everydayness of his own bedroom carries an intimacy and a kind of unique banality marked by the contours of his body. There is a fan with a lit lamp on the ceiling, and a window covered with a blue curtain in front of which Moore fades in, looking out towards a blocked view. His lips are not moving, but his voice recounts how, after 20 years in prison, his integration back to society has not been easy.

of the titles they reviewed were entirely in the first-person perspective, which they consider essential for creating a sustained illusion of presence in a virtual world; their findings show that the passive viewer role is still significantly larger than the active viewer role, and the observer role is larger than the participant role (2019: 10).

As I am experiencing the work in *HELEXPO* in 2017, my position is slightly 'off' and Moore is facing even further away from me; with his exaggerated turn-away I am captivated by the boiling bright curve of his neck, realising that I cannot get closer to him and see his face. In a sense, I am also crowding Moore as he is trapped inside his home; when the bedroom setting is repeated towards the end of the experience, he is sitting on the bed and – still looking away – explains that while he is now free, this room has become his own personal prison. While my positional shift was some kind of tracking mistake, rather than diminish the experience it augmented its emotional impact by exaggerating Moore's retreat from my gaze. This recalls what VR researcher Vicki Williams calls an 'unruly encounter', a moment where immersive technology causes a disruption that invites us to explore realms where the ontological rules of reality go 'out of the window'; rather than break immersion, such glitches and errors create new opportunities for immersive experiences in worlds created not solely with user empowerment in mind (Williams, 2023: 129-30). In this particular case, my own sense of helplessness and entrapment within the VR setting coincided with the confinement that Moore was describing – that I could *not* face him somehow maintained a necessary distance between us, towards compassion (or even sympathy) rather than empathy. While I can never truly comprehend what Moore has experienced, his turned-away back-of-the-neck somehow spoke to me; Bollmer also reminds me that for Levinas, the face is not a literal face, and 'the whole body – a hand or a curve of the shoulder – can express as the face' (Levinas, in Bollmer, 2017: 70).

Storyteller and researcher Sarah Jones and media researcher Steve Dawkins underline the need for more research over how, and how much, cinematic virtual reality (CRV) works evoking 'walking in someone else's shoes' generate empathy (2018: 299). Their methodology involves textual analysis of such media, and interviews with directors. Within *Clouds Over Sidra* (Milk, 2014), they note the introductory text on the screen, saying '[m]eet Sidra. This sweet 12-year-old girl will lead you through the Zaatari Refugee Camp, home to 130,000 Syrians fleeing conflict'. They explain that the text spatially locates the experiencer in preparation for what is to follow, with the experiencer invited to walk with Sidra rather than switch perspectives, and 'we are now beside her in her world and a level of emotional immersion has begun to be established' (Jones and Dawkins, 2018: 303). However, when, during a long establishing shot in the desert where Sidra says 'we trekked for days across the desert into Jordan', looking down, there is no body³⁶; accordingly, Milk's experiencer lacks agency and the ability to interact, as '[t]here is spatial immersion in the viewing of the desert and the environment but there is no presence or acknowledgment of being there' (Jones and Dawkins, 2018: 303).

³⁶ Jones and Dawkins refer to this as the 'Swayze-effect' (Burdette, 2015, in Jones and Dawkins) which derives from Swayze's role in the film *Ghost*, wherein his character is present but without agency and without tangible interaction with the environment (2018: 303).

Among Jones and Dawkins' interviewees is Jane Gauntlett, creator of immersive experiences with a theatre background, whose VR work stems from personal experience: after a brain injury in 2007 which caused her epilepsy and left her in a three-week coma, Gauntlett lost the ability to communicate and started exploring alternative methods to do so. Within an interview with Marisa Bate, she explains that her experience as a mentor for people with brain injuries made her discover that interpersonal relationships were a problem for everyone, and particularly so with medical teams (Gauntlett and Bate, 2017 unpaginated). In another interview she explains that:

'I had people telling me it was too dangerous for me to leave the house, or that I looked like The Exorcist when I had a seizure, and other awful things [...] so the initial concept was born because I wanted to communicate with family, friends and the medical team who were assisting me. I wanted to show them what it felt like to walk in my shoes' (in Watts, 2016: unpaginated).

I note that Gauntlett wants to show people what it felt like *so that* she can actually *walk out*. To maintain her agency, she performatively invites people into her shoes, to keep walking in them herself. She began working collaboratively with other people with their own stories to tell, always from a first-person perspective (Gauntlett and Bate, 2017: unpaginated), and *In My Shoes* is 'an ever expanding library of over 100 interactive audio and audiovisual experiences that utilize story, technology, touch, taste, and smell to create documentary experiences' (Gauntlett, in Fairley, 2020). Discovering video-goggles in 2009, Gauntlett wanted to recreate her own experience of epilepsy to show people what it was like from her perspective – not only frightening but also absurd, and adventure-like. Interested in the impact that such an experience might have on people, she used Oculus Rift for *In My Shoes Dancing with myself* (2015), about an epileptic seizure that she had (Gauntlett and Bate, 2017: unpaginated). Within the interview video, there is a segment where Bate is about to experience the work. The dialogue has been replaced by music, but we can see how Gauntlett is *looking after* Bate, talking to her while plugging-in her headset and moving the cables out of her way; afterwards, and with their dialogue audible again, she hugs and comforts Bate who has begun to cry – but also smiles through her tears – telling Gauntlett that the work is an articulation of an experience that she cannot even begin to imagine (Gauntlett and Bate, 2017: unpaginated).

The *tacit care* that Gauntlett affords her interviewer/player reflects, in her own words, that '[i]f you are challenging someone to see something from someone else's perspective then you have to take really good care for participants' (in Jones and Dawkins, 2018: 308). Balfour et al. find that, within group settings, also, Gauntlett first talks through her personal experiences and provides context before asking her immersants to put the VR headset on; afterwards, she facilitates group discussion, which highlights 'how important it [is] not to be driven by the fetishisation of a new and evolving medium, but to consider how to integrate relationality and technology' (Balfour et al., 2022: 462).

Jones and Dawkins conclude that while CRV has been described as an empathy machine for its immersive quality, its potential should not be restricted, and unsubstantiated claims should be questioned; limitations including the intersectionality of 'ours' versus 'theirs' experiences should be acknowledged, so that, rather than an empathy machine, CRV should be seen 'as a way to encounter new ideas and environments, developing a unique perspective from that experience' (2018: 310).

Gal Raz argues that VR's unique experiential affordances become overlooked when criticisms rely on empathy notions from traditional media. He distinguishes between two major VR empathic paradigms, *enhanced intimacy*, and *multisensory simulation*. The former strategy's effects are elicited towards fictional and non-fictional targets with biographies that are usually distinct from the user's. It includes works around refugees and immigrants, victims of ethnic and racist conflict, as well as environmental harm, whereby the targets of empathy appear visually and/or via voice-over as characters separated from the user. Enhanced intimacy can also be pursued through allowing the user to control an avatar with a distinct biography, and it is assumed that VR amplifies processes of affective and cognitive sharing with the target through increased sensual totality and spatial proximity; two types of empathic effect are encompassed: affective resonance of the character's somatovisceral state, and perspective taking, meaning 'establishing a cognitive representation of the character's mind, and increasing the user's tendency to judge reality in relation to their alleged concerns' (Raz, 2022: 1458-9).

Raz's second major empathic paradigm, *multisensory simulation*, is often complementary with the former. It includes proprioceptive and haptic cueing, and users are invited for a first-person simulation of uncommon experiences enabled by CGI-VR which, in relation to 360-VR, enhances interactivity by allowing navigation through the VR environment in 6DoF. Raz emphasises that the distinction between enhanced intimacy and multisensory simulation is not a binary between somatic and social empathy, as both modes are social, but the difference is that the former relies on top-down representations of biographically defined characters or avatars, whereas the latter relies on simulative bottom-up processes (2022: 1459-60). A project that Raz highlights in the multisensory simulation category is *Notes on Blindness: Into Darkness* (La Burthe *et al.*, 2016), which together with the associated documentary film (Middleton and Spinney, 2016) tell the story of theologian John M. Hull's loss of vision. Raz explains that, while the film's plot focuses on Hull's concerns for sovereignty, safety, and meaningful support to his relatives, the VR project emphasises sensorimotor simulation instead of providing narrative information about Hull's social concerns; its users interact with a dark, three-dimensional virtual world, following sounds and ghostly images of a bird, and manually summoning virtual wind blows to reveal the scene's contours; he clarifies that:

‘the prime empathic engine of this VR work is sensorimotor rather than cognitive perspective taking. While both empathic factors play a role in this VR piece, their magnitude defers. The scant biographical details about Hull supports enhanced intimacy via perspective-taking, but the richness of multisensory cues focuses the user on the simulation’ (2022: 1460).

Drawing from my own VR experience of the project in 2017, as well by interviews given by one of its makers, Arnaud Colinart, and Hull’s *Touching the Rock* ([1990] 2013), I will discuss that it is Hull’s voice-over that primarily drives this project; without it, any of the interactions that the player is called upon to perform in the simulation would be, quite literally, unheard of.

Co-director and producer Arnaud Colinart explains that both the film and the VR project are based on Hull’s audio diary spanning sixteen hours of tapes³⁷, and the VR film seeks to fully immerse the user in Hull’s interior vision of the world beyond sight and his increasing perception of acoustic space (2016: unpaginated). The project, co-directed with the feature’s makers, was initially going to be a sound experience alone, but they feared that a complete lack of visuals would alienate a non-blind audience; he says that:

‘what really makes this an empathic experience isn’t really the VR medium, but the narrative process and John Hull’s story. I feel like in *Notes on Blindness*, we really used the VR medium to strengthen that story, which remains the heart of the experience’ (in Siuffi, 2016: unpaginated).

It is important to remember that the work is designed with CGI Animation but experienced as an interactive 360-VR project³⁸. Colinart explains that, using 360°, binaural audio and real time 3D animations, Hull’s voice ‘guides the user through his sensory musings on his surroundings [...] [and] [t]he user responds to audio and visual cues and with the Samsung Gear VR’s touchpad interacts with and explores this sonic space’ (Colinart, 2016: unpaginated). For Raz, the simulation of walking with severe vision loss in *Notes on Blindness* is an example of empathy-facilitation whereby ‘[c]areful movement in a dark environment dotted with glowing spots, which involves enhanced attention to proximal obstacles, may leave traces in the user’s memory that can be retrieved in future communication about vision loss (2022: 1467). However, the project does not offer walking as such, as it is experienced in 3DoF³⁹, and the player interacts through hand gestures and the tapping of the

³⁷ The feature film reenacts the audio using actors pretending to speak in a kind of ‘visual dubbing’, whereas the VR piece ‘recreated in real time 3D - following gaming standards - what John Hull called ‘a world beyond vision’’ (Colinart, in Siouffi, 2016).

³⁸ While presently available on the Oculus store for devices that support room-scale, 6DoF experiences, it first came out in 2016 for the *Samsung Gear VR*, a headset without positional tracking and only allowing three degrees of freedom (3DoF). The project’s entry on the MIT docubase describes the technologies used as ‘360 Video, Gear VR, Mobile’ and the techniques as ‘360 Video, 3d modeling, 3D scanning, Animation, Audio, Binaural Audio, Immersive, Sound design, Virtual reality’ (in Colinart, 2016).

³⁹ In 2022, Colinart explains that when there was opportunity to change this, the piece ‘was part of this time, it

touchpad. In addition, the ‘glowing spots’ can be illuminated in the context of Hull’s voice of personal experience as translated by the project’s artistic direction, rather than about vision loss in general. Colinart says that, by ‘[m]imicking the experience described in the narration, the user must focus his or her eyes on a blurry image to decipher the object represented. The result is a visual landscape of ghostly outlines that read like fading memories’ (Colinart, 2016: unpaginated). Within Hull’s *Touching the Rock*⁴⁰ ([1990] 2012), the word ‘glow’ appears twice: one when Hull speaks of a mental image glowing brightly, and one as he recounts a dream. In the dream, Hull ‘became aware of the fact that [he] was seeing light. The light increased, turned into a sort of glowing mist, into blurred and then into sharper outlines. Colours gradually emerged (Hull, [1990] 2013: 185). Thus, Hull’s ‘dream sight’ is artistically translated into the visual and sonic elements of the VR experience⁴¹, but this is not how Hull actually (or consciously) sees, neither is it how he experiences blindness. To understand the project as a simulation of blindness per se, is missing the metaphorical truth for a literal one⁴².

Based on the above, in terms of the glowing visuals, a way to think of the function of the simulation is not as one of blindness, but of dreaming, and of remembering, but also as a means to attract the attention of the viewer – and the project allows an understanding of VR immersion beyond vision, as well. One of the most memorable episodes within the VR experience is when we hear Hull working out the essential nature of the acoustic world. Sitting in the park with the children, he hears the footsteps of people walking or running, children toddling, the sound of a newspaper from someone sitting on the next bench, the murmur of conversation. Behind him is the car park with cars starting and stopping, and the roaring traffic in the distance. There are ducks squabbling, the sound of paddle boats, and further off the different sound of rowing boats on the larger lake. There are shouts of children and the breeze blowing in the trees behind him:

“the myriad voices and sounds coming from all these directions create a panorama of music and information, which is absorbing and fascinating [...] The strange thing about it is that it’s a world which consists only of activity. Every sound is a point of activity, where there is no activity, there’s

was part of the early days of VR, targeting Samsung Gear, and I didn’t want to do [...] to change the interaction and be able to move around in free-roaming’ (in Bye, 2022: unpaginated).

⁴⁰ *Touching the Rock* (Hull, [1990] 2013) stemmed from Hull’s audio recordings (Baron, 2017), that were also employed in the VR project and the feature film. The book was published again in 2017, following the feature film, with the new name *Notes on Blindness: A Journey through the Dark* (Hull, 2017).

⁴¹ Colinart explains that that they coded the project ‘based on this baseline from John Earl, which is when there is no activity, there is no sound and the world dies. So everything in the project is coded to appear or be lighted if there is an activity’ (in Bye, 2022: unpaginated).

⁴² One of the VR project’s reviewers on the Oculus site so unequivocally declares ‘I learned that being blind is not that bad [...] I now sometimes walk around the house FEELING how good I would be if I went blind one day’ (Riveter, 2023: unpaginated) that it is hard to tell if this is sincere earnestness or deep irony.

no sound. And then that part of the world dies” (Hull, in La Burthe et al., 2016).

Hull uses the word ‘panorama’, a 19th century neologism from *pan* meaning ‘all’ and *orama* meaning ‘(a) vision’. Cultural historian Stephan Oettermann explains that three meanings of the word already co-exist in the 19th century: it is firstly coined to denote a new type of round painting patented by Barker in 1787, but it comes to be applied generally as a circular vista, or an elevated overview of a real landscape or cityscape; this is soon followed by the metaphorical use to mean ‘survey’ or ‘overview’ of a particular field of knowledge. As time passes and the circular painting disappears from view, the sense of the word as an overview of a natural landscape came to be seen as the original meaning, and even that the circular painting took its name from the natural phenomenon (Oettermann, 1997: 7). Hull’s use of ‘panorama’ has multiple senses as well: through the array of sounds that he surveys – as centered within the all-encompassing sonic landscape – a *revelation* of the world takes place – not only the specific park but a philosophical, phenomenological understanding of activity and movement, as life-giving and meaning-inducing. In the VR project, the player also finds themselves within a multi-panorama: a visual one afforded by the rotational 3DoF of the 360°; a sonic one, via the surrounding binaural audio through the headphones; a panorama of knowledge, through immersion in Hull’s voice. Rather than in response to another’s questions, Hull’s musings are trying to make sense of the profound changes, anxieties *and* knowledges that sight loss has brought forward. Hull does not claim to speak for others, but only for himself, as ‘[b]lind people differ from each other as much as sighted people do’ (Hull, [1990] 2013: Xvi). At the same time, he is aware of how difficult it is for sighted people to realise that, for a blind person, the body itself has become the organ of sense, within a state he describes as being ‘a Whole-Body-Seer’, and, he ‘has tried to describe the experience of someone who has crossed over the border, but who wants to retain communion’ (Hull, [1990] 2013: 191).

Colinart explains that the decision to have the player create wind was part of a desire to infuse the experience with more poetry, rather than rely solely on the audio account; at the same time, they felt that Hull’s thoughts on the world, on perception, and love, led them ‘to create an experience with probably much more poetry than [they] expected at the beginning for a documentary project’ (in Bye, 2022: unpaginated). As I understand it, this project’s empathic potential depends firstly on how it *poetically* makes the player *pay attention* to the in-sights of Hull’s voice, which already carries its own poetry. From a technological standpoint, the binaural audio creates a sense of space that greatly expands the rotational confines of an interactive 360-VR project designed for 3DoF headsets. The well-designed CGI animation sparsely conjures a spectacularly non-photoreal world - the ‘photo’ here not limited to the photograph but to the *phos* of light itself, the loss of which Hull is deeply preoccupied with. Therefore, the careful movement of the player may relate to Hull’s real movement in the world,

but the 3DoF VR experiencer is not navigating the VR environment through walking, and it is a testament to the artwork that such an impression is produced.

While my response centres on *Notes on Blindness: Into the Darkness*, my understanding is that a division between enhanced intimacy and multisensory simulation neglects that *both* usually entail sound and vision in their workings, as well as touch, proprioception and kinesthesia, and VR needs not just a seeing but a conscious, moving and sensing human body for the system itself to work. In other words, both categories are multisensory and it is the human body in the centre of the experience that makes possible the affectations of VR, the very same tactile-kinesthetic body in the centre of the tactile-kinesthetic world (Sheets-Johnstone, 1994: 16). Certainly, 6DoF systems afford a greater range of vision-and-sound-affirmed movements than 3DoF ones, but even in the rotations of the latter, there is never a limited amount of senses involved as ‘the senses are integrated with each other’ (Smith, 2014: 4). Historian of Science Roger Smith also clarifies that ‘[t]he senses are not only integrated with each other but integrated with activity – with the sensation of movement at the centre’ (2014: 5), and within *Notes on Blindness: Into Darkness* (La Burthe et al., 2016) Hull’s own voice attests to that.

Chapter 4: VR's ever-new frontiers

Introduction

While VR as empathy-machine, post 2014, has been criticised as a strategy by Big Tech to alleviate itself from its role in promoting inequality (Nakamura, 2020) within *Virtuous VR* (pp.85-9) I also look at some of the hopes for VR as human connector in its 90s first wave, and consider the role of simulation within its function. In *Fathers and Spirits* (pp.90-9) I examine how VR colonised discourses and perpetuated Indigenous appropriation practices, drawing from first-wave criticisms that have lost none of their relevance. I pay attention to the methodology of innovative artist Lawrence Paul Yuxweluptun, for how his VR work re-appropriates and transforms the colonialist grid upon where cyberspace was founded. Within *Ghosts and Bodies* (pp.100-6), I note how the embodiment/disembodiment claims of contemporary VR continue to carry old 'frontier' baggage.

Virtuous VR

For Lisa Nakamura, 'virtuous' VR is inextricably linked with Big Tech, and she explains that:

'VR post-2014 – the year that Oculus VR was acquired by Facebook – comes to the user packaged as above all a 'good' technology, one that promotes compassion, connection, and intimacy. One paradigmatic genre, the refugee VR documentary, is premised on the idea that racial and gendered otherness can be bridged by 'virtuous' VR that puts you in the shoes of marginalized and threatened bodies (2020: 47-48).

For Nakamura, VR as an empathy machine connecting people across difference is part of Big Tech's attempt to rebrand VR as a curative for the digital industries' contributions to exacerbating class inequality, violating users' privacy, and amplifying far-right fascist racism and sexism (2020: 48). Indeed, the timing of Facebook announcing its rebranding as Metaverse in October 2021, emphasising VR connectivity, was criticised as an attempt to drown the noisy revelations from thousands of leaked documents demonstrating how Facebook disregarded multiple gross abuses⁴³ of its own system. For whistleblower Frances Haugen, it is Mark Zuckerberg's own presence that is the problem, and there is hope for the company if he steps aside (Duffy, 2021: unpaginated).

However, VR's techno-empathy greatly predates Facebook and Oculus; in 1989, VR was already hoped for as an increaser of human communication, and within an interview, Lanier had expressed that:

'I might hope that Virtual Reality will provide an experience of comfort with multiple realities for a lot of people in western civilization, an experience which is otherwise rejected. Most societies on earth have some method by which people experience life through radically different realities at different times, through ritual, through different things. [...] [Virtual Reality] will bring back a sense of the shared mystical altered sense of reality that is so important in basically every other civilization and culture prior to big patriarchal power. [...] I do hope that Virtual Reality will provide more meeting between people. It has a tendency to bring up empathy and reduce violence, although there's certainly no panacea ultimately' (Lanier and Heilbrun, 1989: 115).

If VR tends to bring up empathy, what does that word mean for Lanier? In 2010 he refers to the imaginary circle of empathy that each person draws, circumscribing them at a distance and corresponding to the things in the world that deserve empathy and whose lives would be protected; Lanier explains that:

⁴³ These system abuses include the practice of slavery through the selling of domestic workers in Kuwait via Instagram (Pinnell and Kelly, 2019), and Instagram's exacerbation of body-image issues for one in three teenage girls, as acknowledged in a 2019 internal company slide (Wakefield, 2021). The leaked documents reveal the amplification of hate speech and misinformation, that groups use the company's apps to cause real-world violence and harm, and the lack of non-English language capabilities endangering users in politically unstable parts of the world (Duffy, 2021).

'I like the term "empathy" because it has spiritual overtones. A term like "sympathy" or "allegiance" might be more precise, but I want the chosen term to be slightly mystical, to suggest that we might not be able to fully understand what goes on between us and others, that we should leave open the possibility that the relationship can't be represented in a digital database' (2010: 36).

Lanier's empathy is mystical sympathy whose connections may be difficult to understand, keeping them out of a metrics of a digital database. According to its etymology, the mystical⁴⁴ initiates and hides from view, and VR's digital empathy hopes to (collectively) revive the mystical while defying the digital as camouflaged sympathy. How would VR bring us back to a non-western, patriarchy-free, mystical reality? Lanier remembers an early experiment of 'trading eyes', where each person's point of view tracked the other's, creating a sensorimotor loop. Coordination is difficult at first, the feeling can be close, sexual. (2017: 200-1). Lanier has admitted that his early ideas of entwined avatars leading to spiritual or erotic altitudes could be expected from a twenty-year-old, and that an exercise in coordination leading to empathy and sympathy could also increase narcissism (2017: 201). However, his sensorimotor loop better resembles *Einfühlung's* kinesthetics and mirrorings rather than empathy's identifications and imaginings. While the 'trading eyes' may be due to Western occulocentric ideals, the language between participants is one of movement, a shared physical experience of gestural coordination.

In-between VR as a mystical human connector in 1988 and VR as 'empathy-machine' in 2015, a future VR empathy course for high school students was envisioned in 1995, by the Committee on Virtual Reality Research and Development⁴⁵. Students would be assigned a virtual actor to control in different physical, social or anthropological settings, as a member of an ancient culture or discriminated minority, as 'a person with severe physical disabilities [...] or even as a member of a different animal species' (Durlach and Mavor, 1995: 31). The above scenarios place VR-empathy in the realm of cross-species and cross-history fantasy, where disabled people, minorities and animals are novelties that a student must learn to control. Of interest is *The Virtual Reality Gorilla Exhibit*, developed in 1997 by Georgia Institute of Technology for middle school students 'to assume a gorilla identity and interact

⁴⁴ According to the Online Etymology Dictionary, the 'mystic' part of the word comes from 'Latin *mysticus* "mystical, mystic, of secret rites" (source also of Italian *mistico*, Spanish *místico*), from Greek *mystikos* "secret, mystic, connected with the mysteries," from *mystes* "one who has been initiated" (Online Etymology Dictionary, no date).

⁴⁵ The committee was established in 1992 by the National Research Council at the request of several federal agencies, including the Advanced Research Projects Agency, the Air Force Office of Scientific Research, the Army Research Laboratory Human Research and Engineering Directorate, the Armstrong Laboratory Crew Systems Directorate, the Army Natick RD&E Centre, the National Aeronautics and Space Administration and the National Security Agency. Together, these agencies sought input on government virtual reality research and development ((Durlach and Mavor, 1995: 31).

with other gorillas as a peer, thus gaining a different perspective on gorillas by experiencing gorilla life from a first person point of view. By interacting with other virtual gorillas, students learn through first-hand experience a gorilla group's social structure and accepted social interactions' (Allison et al., 1997: 30). Based on the idea that captive gorillas behave similarly to wild gorillas, source video was shot at Zoo Atlanta; zoo researchers were also shot acting out some difficult-to-visualize motions. Together with other scientific measurements, the sources served towards constructing polygonal digital gorilla models, whose motions were generated by hand, as a series of poses. Motion capture was considered impractical, '[p]lus, most gorillas wouldn't stand for having things attached to their body' (Allison et al., 1997: 31-3). I surmise that the virtual gorilla is firstly an *animation* embedded in a VR application. While Allison et al. suggest it offers its user peer-learning from a first-person point of view - *who* are the peers? If they are students, the virtual gorilla is a study on human movement while play-acting - the hybrid persona of a humanised gorilla, or a gorillised human. If the peers are animations, the student's first-hand experience is afforded by the hands of those (humans) who created the VR experience. To aid them, gorillas were observed and filmed – *their* hands were not touched nor motion-captured – though perhaps a caged animal is motion-captured by default, via the curtailment of its freedom to roam. A VR experience mimicking a caged animal's behaviour while keeping the student away from the cage, problematises the idea of a peer because the animal itself – whether caged or free – becomes superfluous.

Allison et al. note that VR systems allow middle-school students to personalize their experiences and internalise the content presented through first-person interactions while experiencing the real world from viewpoints other than their own, in environments too dangerous or impossible to experience in the real world (1997: 37). *Where* is the real world, and *whose* are the viewpoints if the project simulates a physical simulation (the Zoo) made by humans observing and play-acting to generate gorilla models? I am not questioning the reality of the simulation's effects: a dollhouse can be used to re-enact and study real and imagined human relationships, but it is not a human house; a zoo is a simulation of the natural environment of animals and houses animals, it is a real place but not a jungle; and a virtual gorilla is a real program running according to the stats fed into its calculations, but not a gorilla. This project allows students to experience a virtual world through the headset and their own movements within a human-designed virtual space. To present this as 'experiencing the real world' is to reduce gorillas to mathematical models and those participating into inanimate viewpoints, identifying no difference between an image and the world it supposedly represents. It also conflates a human playing the gorilla (donning a costume or avatar) with an actual gorilla.

There is another potential loss: treating the VR environment as 'just' real misses the creative value of

the simulation, its animations, and the individuals that build, play, act, and perform (in) it. According to sociologist Sherry Turkle, '[s]imulation demands immersion and immersion makes it hard to doubt simulation' (2009: 8) and 'even as new tools enable new ways of knowing, they also lead to new ways of forgetting' (2009: 19). As traditional physical models give way to 'an animated world that can be manipulated at a touch, rotated, and flipped [...] the move from physical to virtual manipulation opens up new possibilities for research, learning and design' (2009: 7-8). However, '[f]amiliarity with the behavior of virtual objects can grow into something akin to trusting them, a new kind of witnessing' (2009: 63). My understanding is that *The Virtual Reality Gorilla Exhibit* scientists replace a real animal with an animated model and claim that the human interacting with the simulation has a first-hand experience in the actual world. So invested are they in the virtual gorilla performing *as* real that they may forget that this is a program, not an animal. What they witness is interactions between animations, simulations, and humans, which is exciting, albeit lacking in actual Gorillas. In this sense, the *virtual gorilla* embodies the *absent gorilla*, a ghostly figure confined within a simulation (VR) of a simulation (Zoo).

Allison et al. lay no claims to empathy; however, for Bolter and Grusin, the *Virtual Gorilla* user assuming the point of view of a gorilla and mimicking the animal's behaviour, is learning what it is like to be a gorilla through empathy ([1999] 2000: 246). For Nakamura, this kind of empathy is about learning about the non-human through visual re-embodiment; she asserts that 'both early VR's empathic learning and VR 2.0's empathic feeling are founded on the concept of toxic re-embodiment: occupying the body of an other who might not even own their own body (2020: 51). In a paper around a newer version of the virtual reality gorilla system as a tool for teaching research methods, the students build the motions and behavior controllers based on their observations of gorillas at the Zoo; afterwards, they see how the system reacts. Rather than be immersed in a simulation from the start, the students learn through real-life observation, and then partake the design of the experience. The scientists note that the results after a week of testing left a lot to be desired: rather than resting motions and foraging motions, the students had produced gorillas that breakdanced, and did synchronized bobsledding; however, their overall experiences were positive, and pointed out areas for improvement (Allison and Hodges, 2000). I draw from the scientists' observations an appreciation of the simulation *not* as a replacement of the real but, remembering Turkle, as an animated world opening up new possibilities for learning (2009). Here, the student is a researcher inputting their data, testing their hypotheses, and even entertained by a simulation that breakdances rather than forages.

Deborah Levitt wonders whether the moving-in-and-out of worlds and bodies in VR may enable plastic forms of subjectivity grounded in differences and metamorphosis rather than identity, and asserts

that ‘what engenders its creative possibilities, is the forces of its particular mediations - its essential difference from ‘real’ reality and the means through which this difference is produced (2018a: unpaginated). Through Levitt, I can point at the difference of approach between the earlier version wanting its student user to assume a gorilla identity (Allison *et al.*, 1997) versus the later version where the student is taught to be researcher (Allison and Hodges, 2000). Rather than a ‘toxic reembodiment’ occupying the body of someone in absentia (Nakamura, 2020: 51), the student observes the real animal, perhaps even developing their critical thinking on the ethics of zoo captivity. Because this experience is truly first-hand, care for the real animal may be afforded - while an education into the design of simulation is practiced, so the bodies of the makers and the players in the centre are brought forth; mistakes *should* be welcome within the project, because ‘[r]eal encounters with people and with machines are always problematic, unlike the simulated universes displayed by the technological arts when they set themselves as a tightly closed circle and invite the viewer to just accept being submerged in them’ (Hébert, 2005: 187).

The snags and frictions in VR’s actualities, in its virtual futures and future virtues, in its past imperfects and its future pasts – what it is *not yet* being what *it is* – persist. VR’s existence-as-promised, through speculations, prophesies and aphorisms seems to perpetually elude its realised applications. What was ‘a technology very nearly achieved’ (Benedikt, 1991: 131) is still *almost* here; in 2020, VR had been ‘five minutes away from some kind of breakthrough for about eight years’ (Kuchera, 2020: unpaginated). Following the October 2021 *Metaverse* launch, we were still ‘at least five to ten years out from a fully fleshed out Meta product or service’ (Derdenger, in Isaac, 2021: unpaginated). And yet, ‘godfather of VR’ Lanier considers the headsets of 2023 as not too dissimilar to those of 30 years earlier (in Hattenstone, 2023: unpaginated). Lanier insists that VR was ‘birthed’ by a long parade of scientists and entrepreneurs⁴⁶ (2017: 70-1), and I have already addressed some of the shared roots of VR, AR, Games and CGI Animation as *soberly* located within the US Defence Department funding the major breakthroughs of the 1960s and 1970s (Sito, 2013: 41). However, Lanier’s writings offer a glimpse into the drama enveloping VR’s developments as already *spirited* by predating concepts that turn VR into the virtual stage of their enactments, which I examine next.

⁴⁶ Lanier considers Sutherland’s *Sword of Damocles* - proposed in 1965 and built in 1969 - to be the first headset counting as a VR device, but also notes that when Sutherland spoke of the ‘virtual world’ as the place you saw through the headset, he used art theorist’s Suzanne Langer’s term (2017: 70-1). Sutherland’s *Sword of Damocles* is also an early AR device (Oluwaranti *et al.*, 2015: 1972), and Sutherland’s *Sketchpad* is also ‘the first true computer animation program’ (Sito, 2013: 41).

Fathers and Spirits

In this writing I explore some of VR's spiritual lineage and extravagant claims from its first wave, paying attention at how it colonised a variety of discourses while perpetuating practices of Indigenous appropriation. My position is that the metaphorical, spiritual, and material appropriations still present in VR's current expansions cannot be separated from North American settler colonial history. Within earlier writing, I discussed how such settler rhetoric echoes within evocations of the 'walking in the other's shoes' missionary-rooted expression; however, it is not only through the idiom, nor just through the 'empathy-machine' that VR continues to colonise.

VR in the 1980s was seen as an ecstasy or epiphany, and a transcendent perspective brought about by technology (Lanier, 2017: 329). Lanier speaks of the 1990s' 'hell-bent' positivity around VR within tech journalism as contrasted with its dark portrayal in fiction ever since cyberpunk⁴⁷ (2017: 336). Cyberspace was William Gibson's name for a 'consensual hallucination experienced daily by billions of legitimate operators' in his 1984 novel *Neuromancer* (Gibson, [1984] 2016: 59), and, despite the novel's dystopianism, VR as cyberspace was much more than a technology of immersion. In 1991, architect Michael Benedikt says that:

'[t]he design of cyberspace is, after all, the design of another life-world, a parallel universe, offering the intoxicating prospect of actually fulfilling—with a technology very nearly achieved—a dream thousands of years old: the dream of transcending the physical world, fully alive, at will, to dwell in some Beyond—to be empowered or enlightened there, alone or with others, and to return' (1991: 131).

Benedikt describes cyberspace as a parallel universe created and sustained by the world's computers and communication lines; it is a place – one place – that is limitless, and can be entered equally from a basement in Vancouver, a boat in Port-au-Prince, and a laboratory on the Moon; it is glittering, humming, coursing, a Borgesian library, a city; it is intimate, immense, firm, liquid, recognizable and unrecognizable at once; in the same breath, he clarifies that cyberspace as just described does not exist (1991: 1-3). For philosopher Michael Heim, cyberspace can be a metaphysical laboratory (1993: 83-4), and a thoroughly modern Platonism as a working product (1993: 88-9). Nicole Stenger, one of the early artists working with animation and VR, offers her post-apocalyptic vision of cyberspace as a place of shelter, and a Land of Oz, saying that:

'[w]e had long ago lost all trace of earth on our shoes. Our houses were whistling with drafts and our families had slowly thinned away. Cyberspace, both open and closed, would be our last

⁴⁷ Lanier describes cyberpunk as a 1980s 'fresh literary scene related to VR' (2017: 335-6).

shelter. The hut of the global village: a few plastic bamboos held by a membrane, a pill in a box. We would celebrate in cyberspace, rocking and humming in televirtuality, inhabitants of a country that is nowhere, above the busy networks of money laundering. Over the rainbow' (1991: 54).

Contemporary culture scholar Anthony Enns criticises Stenger's jubilant cry from the same essay, '[w]e will all become angels⁴⁸, and for eternity!' (1991: 52), as endorsing transhumanist Hans Moravec's theories on the transference of human consciousness directly onto a computer hard drive, where all the past inhabitants of the earth would be resurrected as computer simulations (Enns, 2019: 41). Benedikt's own tracing of the dream of cyberspace back to the new Jerusalem of the book of Revelation, explains Enns, points at cyberspace as the ultimate merging of technology and spiritualism (2019: 42).

In 2017, Lanier speaks with embarrassment and anger about VR's party scene attracting charlatans during events that, due to the rarity and expensiveness of the equipment, involved primarily 'guru candidates' and VR-themed bands, *evoking* what VR might be someday; this scene evolved into today's Burning Man festival as '[a] simulation of what it might be like to be able to improvise reality fully; a simulation of a simulation' (Lanier, 2017: 330). For anthropology and digitisation scholar Dorian Zandbergen, Silicon Valley's mythologized contours include 'forms of spirituality based on the imagined 'Oriental' and 'the native American' (2012: 33), and events such as *Burning Man* provide magical and intimate contrast to the area's 'otherwise rational, alienating, money and status dominated larger environment' (Hockett, in Zandbergen, 2012: 41). Where does Silicon Valley's mythos feed from? Its physical ground is situated in North America where the forceful subjugation of Indigenous people by Christian missionaries I discussed earlier as the root of the 'walk in the other's shoes/moccasins' variations. However, there are other means through which Silicon Valley's forms of spirituality continue to appropriate knowledge and materials. I note how Lanier's words that 'VR still feels a little like a new gigantic uncharted territory, summoning one's inner conquistador' (2017: 70), carries similar baggage⁴⁹ with Zuckerberg calling the metaverse 'the next frontier in connecting people' (2021: unpaginated). And yet, in 2022, the Metaverse was potentially a hostile environment

⁴⁸ In 1992, Jaron Lanier said that virtual reality has 'a remarkable quality in that it gives people an experience that is rather angel-like, floating as the consciousness point in this variable world' (Biocca and Lanier, 1992: 163) but, in the same text he also pointed out that '[t]here is a physicality to virtual reality which I think is very refreshing, since the use of computers is so highly abstract' (Biocca and Lanier, 1992: 165-166).

⁴⁹ I encountered that lingo during a programme of talks in immersive storytelling in 2017, where an expert presenter told a UK audience that VR at that moment was 'like the Wild West', where anything goes as there are no rules yet. This analogy had been favoured by a number of second-wave VR creators and developers, although by 2017, the 'wild west' age was already considered to be over (Schmindlin, 2017: unpaginated).

to young or vulnerable users and it was 'shaping up a bit like the Wild West. Essentially, there are no rules' (Reid, in Hughes, 2022: unpaginated).

A return to cyberspace is called for, and author Amanda Fernbach explains that the typical cyberpunk text recycles the cowboy myth of the Wild West (2000: 245), while Wendy Hui Kyong Chun notes that cyberspace as dominated by American outlaw console cowboys was 'Wild West meets speed meets Yellow Peril meets capitalism on steroids' (2021: 8). It was this bodiless exultation and rebellious power that led 'pioneers' to mislabel the internet as cyberspace, where the 1970s routing technology of Transmission Control Protocol/Internet Protocol (TCP/IP) became 1990s new media by 'embodying disembodied 1980s dystopian science fiction' (2021: 7-8:). That a *Neuromancer*-inspired cyberspace made the Internet into an 'electronic frontier' ripe for settler colonialism and exploitation (Chun, 2021: 9) was not driven by inherent technical similarities, but from 'a *desire* to position Gibson's fiction as both an origin of and end to the Internet' (Chun, 2006: 42 emphasis in original). Chun points at Barlow's *Declaration of the Independence of Cyberspace* as the most iconic description of the Internet reborn as cyberspace, asking the governments of the Industrial world to leave alone 'the new home of Mind' (Barlow, 1996), even though the U.S. government in particular had built its infrastructure. Barlow's plea, explains Chun, conceptually transformed a US military-educational network into a bodiless, and therefore privilege-free, space of escape and libertarian self-interest, while anointing Silicon Valley elites as militant rebels (2021: 8-9).

To further explore VR's settler colonialist grounds, I turn to Chris Chesher's essay *Colonizing Virtual Reality: Construction of the Discourse of Virtual Reality, 1984-1992* (1994), offering a view of a still young technology without getting intoxicated by its hype, neither horrified by some of its dystopian narratives. Chesher examines the cultural processes that led to the mainstream acceptance of virtual reality and cyberspace technologies. He analyses texts, including promotional material, conference papers, and scholarly essays, to study VR's discourse⁵⁰ formation through metaphor, word choice, narrative structures, tone, implied audience, and storytelling. VR emerges as an expensive technology in institutional contexts (including NASA, the military, universities, and entertainment industries) becomes associated with simulation, hyperreality, and post-modern society. With Cyberpunk emerging in the mid-1980s at the intersection of alternative culture and technology, the dystopian nightmare of Gibson's *Neuromancer* becomes an inspiration for computer scientists. With the idea of 'jacking in' to a dataspace seen as a precursor to VR, fantastic claims were made from 1984 until 1992, and VR was hailed as a technology that could revolutionise human imagination, communication, and

⁵⁰ Chesher points at 'tropes', that are clusters of meaning and cultural connections associated with a phenomenon, highlighting the term as broader, more ephemeral and more abstract than 'discourse' (1994: 2).

spirituality. Failing to live up to these aspirations earned its advocates criticism from both cyberpunks and mainstream marketers. To gain wider acceptance and investment, VR developers had to move away from the drug-fuelled visions of cyberpunk, and substantiate VR's relevance to the fields of medicine, architecture and design; they also tried to associate VR with a long tradition of technologies that seek to represent or simulate reality, including the *Cinerama* which itself had once been hailed as the culmination of all previous developments (Chesher, 1994: 2-15). Chesher elucidates that:

'[VR] has similarly been located in at the apex of a similar historical narrative [...] which is so common it often evades being read as a construction. Using the authority of so-called historic objectivity, speculation is presented as description' (1994: 15).

Chesher argues that the historical narrative of VR as a liberating and transformative technology is a construction that presents speculation as description, with VR's future projected as a natural extension of the historical process described, 'but it remained crucial that the discourse move into more tangible application, and colonize⁵¹ the mainstream' (1994: 16). I am particularly interested in that first-wave VR not only colonises cultural discourse on an unspoken level, but its marketers appeal to investors through the *literal* employment of terms like 'colonisation', 'frontier', and 'pioneers', dipping-into and rejuvenating settler colonialist tropes. Chesher recounts how, while in 1989 VPL laid claim to the 'new continent of VR', the idea that VR researchers were 'pioneers' involved in 'colonialization' appeared particularly often in 1990, whereby the experience of immersion and navigation create a new kind of space – a new frontier (1994: 16). A striking example is when Barlow corrects Lanier likening VR to landing on the moon; instead, Barlow looks much further back into American past when he says that:

'I'd take it a bit farther, guessing that Columbus was probably the last person to behold so much useable and unclaimed real estate (or unreal estate) as these cybernauts have discovered' (Barlow, 1990, in Chesher, 1994: 16).

Cyberspace as a just-discovered continent empowers VR's development through a notion of America as a land waiting to be claimed by its European settlers. It was not only the newness of VR, and the reference to the colonisation of the United States, but also that the experience of immersion and navigation through the especially-designed headset, 'create another new kind of space to explore-a new frontier' (Chesher, 1992: 16). Chesher explains that the frontier has a situated resonance, with its central element of space being integral to American expansion and prosperity (1992: 16).

⁵¹ Chesher applies Foucault's meaning of colonisation as the coming to dominance of certain ways of viewing the world through which VR can do old things better, including the digital colonization of the analogue dataspace, whereby 'VR could be a new space for liberation and universal understanding, with access to all wisdom and truth anywhere at any instant' (Chesher, 1994: 25).

Importantly, he interjects that the uncritical use of terms like ‘frontier’ and ‘colonization’ are not universally accepted as favourable, as ‘[t]he advance of the western frontier involved the annihilation and disenfranchisement of native American communities’ (1994: 25-26). He foresees that minority perspectives will be similarly alienated through lack of access to the technology as ‘[f]rom under a head-mounted display it is easy to ignore the people outside the cyberspace: excluded by economics, language and subculture’ (1994: 26). I note here that, 21 years after Chesher’s essay, Milk claims in his TED-talk that VR connects and change people’s perception of each other, and thus has the potential to actually change the world (2015). Chesher, however, foresaw that, even as a concept, VR promised to be a controllable and sellable commodity, an extension of western capitalist societies to commodify human experience; neither a panacea nor a calamity, it had a tendency to reinforce existing inequalities, and to propagate dominant ideologies (1994: 26-7).

Chesher’s acknowledgment that ‘working [VR] systems are still rare’ (Chesher, 1994: 1), highlights the loop between the hyperbole of VR-inspired speculative fictions feeding the industries growing to satisfy them. He explains that, while it is common for new ideas to be introduced with old language where metaphor is used for its semiotic power, a further stretch took place with VR whereby metaphorical claims became literal truth, and rather than saying VR ‘was like a new reality, developers started claiming it was actually another reality’; once authenticity for metaphor is claimed, ‘VR proponents tried to reposition the tropes (reality, space) from a relationship of metaphor to synonymity’ (Chesher, 1994: 18). While Chesher’s writing predates VR as ‘empathy-machine’, what he describes as the problem of VR discourse stretching metaphor into literal truth is particularly pertinent for my research, because once VR *is* empathy-machine, the metaphor becomes a working loop: the machine transforms nebulous empathy into something concrete and technologically feasible, while at the same time further enshrining empathy as a ‘good thing’— why else would there be a machine to manufacture it? Returning to Lanier’s account of the contrast between positive techno-journalism and dystopian cyberpunk-inspired fiction, Chesher’s analysis allows an understanding of that contrast as the clash between the cleaned-up marketing of VR to investors, versus the left-behind dystopian drama of cyberpunk. This also grants a consideration of Barlow’s *Declaration of Independence* as the final vapours of a dispersing dream, although, as I will touch upon in *Ghosts and Bodies* (pp.105-6), the transcendent promises of VR are all but forgotten.

Lanier’s high-spirited contrast may also relate to how Enns connects Spiritualism and modern computing technologies, whereby both techno-enthusiasts and techno-critics employ a shared language of spiritualist concepts ‘to promote or critique modern computing technologies as either the instruments of our salvation or the agents of our destruction’ (Enns, 2019: 51-2). Spiritualism is

therefore of particular interest, and cultural historian of media and film Jeffrey Sconce notes that soon after Morse's electromagnetic telegraph in 1844, America was swept with a popular social and religious movement that would be known as 'Modern Spiritualism', whose followers believed that the dead were in contact with the living (2000: 12). For scholar of American literature and culture Werner Sollors, the phenomenon of American Spiritualism stemmed from the simultaneous fearful fascination and sacralisation of the period's innovations, including gaslight, daguerreotypes, batteries, locomotives, and the telegraph⁵²(1983: 470), bringing along the fear that modern man himself might be transformed into a machine (1983: 461-2).

While, as recounted earlier, Native Americans were being 'saved' under the merciful gaze of missionaries – under the visions of Spiritualists, their ghosts were anointed as saviours. Sollors points out that Native Americans from the spirit realm were frequently present in séances and visions, blessing the country's progress and providing healing: in 1870, prominent spiritualist Emma Harding rejoices on the return of the murdered Native American not as avenger, as expected, but as benefactor; nearly every Spiritualist medium is guided by them, using their knowledge of herbs and plants to suggest medicaments for the cure of disease (Harding, in Sollors, 1983: 479-80). Death gloriously transfigures the Native American into an alleviator of the settler's physical ailments and his worries of wrongdoing, while also allowing 'white Americans to reflect on the shadowy underside of industrial 'progress'' (Caterine, 2014: 391). Building on Sollors, historian of religions Daryll Caterine suggests an extended lineage, whereby the juxtaposition of machines and Indian spirits reflects an alchemical worldview; Caterine's 'Nature-electricity-Indian' motif is based on the alchemical principles espoused in the hermetic traditions brought by Europeans into America in the 17th and 18th century; these principles blended with the more mainstream cultural narrative of industrialization of 19th century Spiritualists, who saw the transformation of wilderness into modernity as a 'cosmic process of alchemical refinement' (2014: 371-3). The tripartite motif reappears in UFO sightings, Earth Mystery narratives, and in New Age variations on antediluvian or 'ancient' civilizations where refined Nature is now just beneath the earth, to be uncovered by the archaeologists' spade (Caterine, 2014: 393).

Some of the shamanic potential of cyberspace was founded on a techno-enhanced New Age: transcending the latter's aversion to technology, *New Edge* understands the computer as a vehicle for a spiritual experience, towards permanently available out-of-body states of awareness. (Zandbergen, 2010: 174-175). In 1990, VR was hyped as 'electronic LSD' within cyberculture magazine *Mondo 2000* (in Zandbergen, 2010: 178), and on the following year, Brenda Laurel considered the possibility of VR

⁵² The telegraph is particularly important, and Sollors recounts that the system of communicating with the spirits of the dead was called 'celestial telegraph' or - like the title of an 1852-founded Spiritualist journal - The Spiritual Telegraph (1983: 473).

as a tool for 'consciousness expansion, personal liberation and a transformation of one's relationship with the world'⁵³ (in Zandbergen, 2010: 178-9). Marie Laure Ryan likens the VR user with shamanistic rituals described by Eliade, where 'the body stands at the center of the world, and the world irradiates from it' (Ryan, [2001] 2015: 55). The Shaman, says Eliade⁵⁴, 'is the great master of ecstasy. A first definition of this complex phenomenon [...] will be: shamanism = *technique of ecstasy*' (Eliade, [1964] 2004: 4 emphasis in original). Historian of American religion Amanda Porterfield criticises Eliade's assumption that ecstatic encounters with the sacred can be understood in universal terms (1987: 723). Shamanism as interior states of ecstasy neglects the social aspect of shamanism, as the shaman does not perform alone but embodies symbols identifying his community, and address its problems; the meaning of his performance relies on the audience's interpretation (1987: 730). She emphasises the primacy of the performer's body within the shamanic ritual, both 'as the locus of symbols and by the trance-like states that shamanic performances typically require' (1987: 728). A key figure in-between shamanism and VR was philosopher and ethnobotanist Terrence McKenna, who devoted many years of research around ayahuasca among shamans, and whose psychedelic shamanism foresaw in VR a technology that will dissolve the boundaries between humans, allowing them to see the contents of each other's mind towards 'states of near telepathy among participating human beings' (1991: 231). McKenna is strongly rebuked by Loretta Todd, filmmaker and artist of Cree/Métis and European ancestry, as she writes about how:

'in a world with a legacy of colonialism, the hunger of Western culture is threatening and frightening. We have had to feed that hunger, with the furs of animals and flesh of fish and the gold and silver of our lands and ourselves as fearsome mysteries in the West's drama of itself. In cyberspace, that appetite could well consume "the native," and it has already begun. Terrence McKenna and the advocates of the cybershamanism would take the imagined mind, the supposed dreams of the native, and discard the body - the reality of our lives and the meaning of our shamans' (Todd, 1996: 184).

Todd points out that 'cyberspace started as a virtual war zone, as constructed by the western military' (1996: 180) but it has been under construction for at least two thousand years in Western cultures; its need has been created by a fear of the body, an aversion to nature, and a desire for transcendence of the earthy plane after its wealth has been plundered. Todd stresses that parallelising aboriginal concepts of transformation without a philosophical shift is simplistic because shape-shifting is often

⁵³ This part is missing in the book's 2014 second edition; Laurel explains that when she was finishing the first one, the VR phenomenon was about to become meaningless through overuse, the hype-fuelled meme flaming out (Laurel, 2014: 184). While 'the more hopeful among us declared that it would transform the very nature of imagination [...] it quickly became apparent that it was going to be difficult to "monetize"' (Laurel, 2014: 185).

⁵⁴ Stenger refers to Eliade for the potential of cyberspace to create a break in the plane of reality, generating the ideal conditions for a 'hierophany: an irruption of the Sacred that results in detaching a territory from the surrounding cosmic milieu and making it qualitatively different' (Eliade, in Stenger, 1991: 54-5).

for healing, not the thrill of a new body; while shamans are humanitarians protecting the people and the land, the messianic undercurrents of cybershamanism reflect its advocates desires (1996: 181-184). Todd offers an antidote through the work *Inherent Rights, Vision Rights* (Yuxweluptun, 1992). Its first iteration, exhibited between 1991-3 at the Banff Centre for New Media in Banff, Alberta, consisted of 'a VR helmet and a joystick that immersed a single participant and enabled his/her navigation in a 3D recreation of a Coast Salish Longhouse' (2Bears, 2010: unpaginated). Todd likens the device with a stereoscope, and explains that Yuxweluptun invites visitors into the mystery of the everyday (Todd, 1996: 191-192). Todd explains that:

'Yuxweluptun does not want you to forget your body. Your identity is as intact here as it might be in the material world. [...] Even as you glimpse how Yuxweluptun prays, in the longhouse with the spirit world present, you do not become Yuxweluptun nor a persona he has created through narrative. You are yourself, and must own your feelings and your experience' (1996: 191).

Yuxweluptun describes the VR helmet as the 'white man's mask', destined to be in a museum like other masks (1996a: 317). Within his essay *A Conversation with Spirits Inside the Simulation of a Coast Salish Longhouse* (2010) artist and cultural theorist Jackson 2Bears points at the myriad of functions of masks in Indigenous cultures. In 2Bears' own Haudenosaunee or Iroquois culture, False Masks were thought to be alive, sacred artifacts, ancient technologies through which the spiritual realm may be drawn upon for healing or guidance. For Yuxweluptun's Coast Salish people, the Sxwaixwe ceremonial mask was dichotomous, able to both cure and cause illness. Strikingly, Jackson 2Bears explains that Yuxweluptun's name means 'Man of Masks' or 'Man of Many Masks', in honour of his decades of experience as a 'Blackface' dancer within the Salish secret society. For 2Bears, the artwork's VR helmet, reconceptualised in the context of Indigenous masking traditions, eludes the technology's transcendent function, and performs a 'return to the flesh as both an embodied and virtual experience, in what might be the first experiment with the concept of an *Indigenous Theory of Virtuality* [...] seeing technology now through a binding of opposites' (2010: unpaginated, emphasis in original).

In what 2Bears considers the technology 'becoming-spectral and virtual-phantomality [...] in the Derridian sense' (2Bears, 2010: unpaginated), the duality of the Derridian *pharmakon* links with the duality of the Sxwaixwe ceremonial mask, both illness-inducing and healing. With the VR headset as a 'symbolic object repurposing technology through the inversion of Western VR dominant codes' (2Bears, 2010: unpaginated), it can also be said that the colonised turns the mask around towards the coloniser – the VR mask as an inverted *masque blanc*⁵⁵. Thus, the 'white man's mask' is returned to

⁵⁵ For Boulbina, by talking about the black skin, Fanon is referring to the colonized subject (2019: 241).

him, not according to his own image, but for him to partake into 'a total virtual Native perspective' (Yuxweluptun, 1996b: unpaginated). Yuxweluptun reflects on working with VR as a challenge, because computers are on a grid and designed in a Western concept, and he had to combat a systemic cultural bias; he explains that the work is 'designed to make people share a spiritual world where a salmon or a tree are some of the things that you pray to. I pray to a bear, for example, because I like his spirit, how he walks and carries himself' (1996b, unpaginated). Aware of the fear others have of Native people, he physically brings them within a Native worshipping aspect of life as 'a way to bring others close to my heart so they can understand my belief system' (1996a: 316). To convey his own culture to non-Native people who are not brought into long houses, he took out the barrier of language and sampled sounds of animal noises, fire, drums and tambourines, because:

'I wanted people to have an understanding that they were going into something really heavy. That's what I mean about bringing it back to the very basic, natural experiences in life. It gives you something that you wouldn't have an idea of if you weren't Native. *I can give you an instantaneous feeling of what it's like to walk with spirits* (1996b: unpaginated, emphasis added).

I am deeply struck by the antithesis between 'hypothetically, [...] [VR] can give you a concrete feeling for what it is like to walk in someone else's shoes' (Lanier, in Eggers, 2017: unpaginated) versus the *first person* statement 'I can give you an instantaneous feeling of what it's like to walk with spirits' (Yuxweluptun, 1996b: unpaginated). Lanier *hypothesises*, whereas Yuxweluptun *can*, and over twenty years earlier as well. Lanier speaks of VR in general whereas Yuxweluptun speaks of what *he* can do rather than the technology. His is an *authored* certainty, and these are his and his community's spirits. His participants do not walk in the shoes of anyone, neither do they identify as, or become spirits; rather, they are invited to walk as themselves *with* spirits, as guests within a sacred place normally out of bounds. Yuxweluptun explains some of the creative choices he made, including avoiding exploring the world through flying, as when he first tried it he considered it 'cool, but I don't normally fly in a long house' (1996b: unpaginated); he ensured that one cannot walk through walls and he 'put in gravity so you stayed on the ground' because:

[t]he ground is all Indian, is all Native, and that's basically how we look at life: everything is Native, everything is sacred. [...] You may put these cities on it but it's still Indian land. You can call it whatever you want, you can call it Vancouver, it's still Salish land, it's still my Motherland. So you do get a total virtual Native perspective. You cannot think in a Western concept because you are visually experiencing a Native perspective and yet the whole phenomena of VR is in a Western context. Simultaneously the unilateral structures of different cultures meet and it gives you a sense of sharing (Yuxweluptun, 1996b: unpaginated).

The possibility to experience a sense of sharing through the meeting of different cultures in VR is therefore drawn from the ground, despite the phenomenon of VR being contextually Western. In a conversation with VR researcher Kent Bye, Yuxweluptun explains that "virtually, 'Inherent Rights,

Vision Rights' was the concept of *what* is inherent rights, *what* is sovereignty, *what* is aboriginal title, *what* is aboriginal world, what is, you know, all of these questions at the same time in the fear of others' (in Bye, 2019: unpaginated, emphasis added). For Yuxweluptun, land is power and an inherent right (Townsend-Gault, 1995: 1), and he 'can touch the earth with [his] bare feet and understand that it's still [his] native land' (in Townsend-Gault, 1995: 1). While Yuxweluptun's radically different use of a colonial technology reclaims his Motherland, his mentions of the ground, earth, and bare feet, also brings me back to how 'it is surely through our feet, in contact with the ground (albeit mediated by footwear), that we are most fundamentally and continually 'in touch' with our surroundings' (Ingold, 2004: 330). Although Yuxweluptun's VR walkings are performed through the haptics of a joystick, this 'handmade' walk performs a walking *metaphor*—in the palpable sense of the word as a transportation. This VR walking is not limited by the 6DoF potential of the headset, but draws its power from the ground. Even in a sitting position and while immersed in the virtual world, Yuxweluptun's viewer is always in touch with their physical environment by being a living body which is 'first and foremost the center of a tactile-kinesthetic world that, unlike the visual world, rubs up directly against things outside it and reverberates directly with their sense' (Sheets-Johnstone, 1994: 16). My thinking here also returns to the body's primacy in shamanic ritual (Porterfield, 1987; Todd, 1996). I am interested in how the transcendental potential of VR as a means to leave the body behind continues to propagate settler colonialist claims within current VR discourse, and I explore some of these repetitions in the next section.

Ghosts and Bodies

This thesis now looks towards Mandy Rose's juxtaposition between video immersion versus multi-sensory immersion, and I question certain aspects of the embodiment/disembodiment binary within VR while pointing at the colonialist tropes that VR keeps rehearsing. Rose addresses two texts about VR from 1990 as expressing deeply contradictory visions of VR: the first one is by John Perry Barlow recounting his own VR experience, writing that:

'[s]uddenly, I don't have a body anymore. All that remains of the aging shambles which usually constitutes my corporeal self is a glowing, golden hand floating before me like Macbeth's dagger [...] In this pulsating new landscape, I've been reduced to a point of view [...] At least I know where I left my body. It's in a room called Cyberia in a building called Autodesk in a town called Sausalito, California. Planet Earth. Milky Way. So on and so forth. My body is cradled in its usual cozy node of space-time vectors. But I...or "I"...am in cyberspace, a universe churned up from computer code'(in Rose, 2018a: 1).

Rose notes that Barlow is feeling detached from his physical form, with his senses contracted to the act of looking only, and she contrasts his text with one that Randal Walser, a member from the team that built the *Cyberia* VR platform, published on the same year. Walser explains that:

'[w]hereas film is used to show a reality to an audience, cyberspace is used to give a virtual body, and a role, to everyone in the audience. Print and radio tell, stage and film show, cyberspace embodies' (in Rose, 2018a: 1).

Rose suggests that Barlow's VR as escape from materiality versus Walser's promise of corporeal engagement is an opposition between disembodiment and embodiment which manifests within contemporary nonfiction VR, through the divergent currents of 'technologies of seeing' versus 'technologies of corporeality' (2018a: 2). Noting that the use of the single term VR obscures the divergence of platforms with distinct affordances, Rose distinguishes between 'spherical video - visual immersion' versus 'multi-sensory immersion'. Drawing from Uricchio, Rose recognises spherical video within the same lineage as Barker's *Panorama*, with the participant having a fixed position within a scene; the experience is also fixed because the videos will play the same every time (Uricchio, in Rose, 2018a: 4-5). Spherical video belongs, along with photography, cinema and television, within 'technologies of seeing', characterized by a basic illusionism disguising their artifice (Winston, in Rose 2018a: 6). Rose notes the illusionistic agenda of much of cinematic VR: fostering an impression of documentary material as unmediated reality, the viewer's critical response is impeded (Rose 2018a: 6). Rose refers to Ann Balsamo's feminist critique, whereby '[i]n efforts to colonize the electronic frontier [...] the material body is repressed and divorced from the locus of knowledge' (1996: 14) and 'the body, as a sense apparatus, is nothing more than excess baggage for the cyberspace traveler'

(1996: 125). Rose makes a connection with Barlow's account of 'sloughing off' the 'aging shambles' of his body with today's cinematic VR experiences where, despite the discourse of being there, the disembodied eye is the locus of knowledge while the body is redundant (2018a: 9). Addressing the 360-VR film *Waves of Grace* (Milk 2015), Rose notes that 'while critics mention about being there, at the scene of the filming, the body of the participant wearing the headset is ignored' (2018a: 9). Although Barlow wore a DataGlove picking his movements into a CGI world, and 'kinaesthetic experience was central to VR development' (Rose, 2018a: 8) both Barlow and the *Waves of Grace* experiencers were reduced to a point of view, present at the scene through vision and hearing only, and Rose considers that:

'[i]t is symptomatic of the primacy of seeing in Western culture that an experience involving the disembodied eye in which an inert body plays no role can be discussed so readily as an experience of the self' (2018a: 9).

Rose juxtaposes this approach with 'multi-sensory immersion', including projects that 'engage beyond the audio-visual' (2018a: 7) such as *Notes on Blindness* (La Burthe et al., 2016) and *In The Eyes of The Animal* (Marshmallow Laser Feast, 2015). For Rose, such VR technologies of corporeality have potential as routes to engage embodied knowledge; she underscores the role of movement as a fundamental means through which we inhabit and explore the world around us, and explains that positional tracking now allows for virtual environments to be mapped onto physical space, so that a participant can move around while in VR (2018a: 9). Rose describes volumetric capture as 'digital samples of real world that have an indexical relationship to the physical world but are not fixed at the point of recording like photography and 360-video [...] [and] can be rendered in response to the actions of participants within media experiences' (Rose, 2018a: 10). She concludes that:

'VR today encompasses divergent platforms and experiences, extending visual practices – technologies of seeing – within a lineage going back to the Renaissance, and incubating multi-sensory practices – technologies of corporeality - which might be expected to become central cultural modes of the future. In the latter, we can begin to see forms of technologically mediated embodiment that can open up alternatives to a Cartesian model of knowledge, and which can allow new dimensions of engagement with social reality' (2018a: 11).

While I strongly agree with Rose that Barlow and Walser express deeply contradictory visions of VR, the distinction between Barlow's disembodiment as aligning with 360-VR and a Cartesian view, versus Walser's embodiment as veering towards multi-sensory VR immersion and technologies of corporeality, requires more attention. First, I revisit Rose's assertion that what is common in Barlow's own VR experience and 360-VR is a presence at the scene though vision and hearing only, as part of a lineage of 'technologies of seeing', whereby the spherical video participant is in a fixed position like in the panorama. A different view is offered by Nanna Verhoef, who says that, unlike the perspective

painting's viewer fixated to her place within the canvas' perspective lines, and between the borders of the painting marked by its frame, the panorama is born '[w]hen the viewer is allowed or forced to move around in order to be able to behold, to capture the scene that is presented' (2007: 8). Despite Barker's patent naming a *Nature at a Glance*, 'the circular format by definition precluded any all-encompassing glance, requiring instead a series of glances and a mobilized spectator' (Uricchio, 1999: 126, in Verhoef, 2007: 14) and the 360° field of vision created by its high circular screen 'can only be viewed entirely by means of the spectator rotating' (Verhoeff, 2007: 14).

Accordingly, the 360-video participant's body is fixed only in terms of closeness to the scene, because she *has* to rotate her head or entire body in order to behold the scene. Rose notes that the camera lens approximates the human field of vision, whereas spherical video's unbroken panorama is that of a machine (2018a: 5), but, as Flusser explains, '[a]ll apparatuses (not just computers) are calculating machines' (2000: 31), so the camera lens is still machine vision; on the other hand, if we disconnect the lens from the machine, we may also remember that spherical video is also shot through one or more lenses. My position is that there is more than 'just' seeing that the VR participant performs, even in 360-VR. This is not 'an experience of a disembodied eye in which an inert body plays no role' (Rose, 2018a: 4) because not only is the body needed for beholding 360-VR through head-turning or full-body-spinning rather than inertia, but the very idea of a disembodied eye bears questioning. James J. Gibson denounces the false analogy between photography and visual perception through which the eye is compared with a camera and the retina with a photographic film (Gibson [1979] 2015: 210), when in fact:

'[o]ne sees the environment not just with the eyes but with the eyes in the head on the shoulders of a body that gets about. We look at details with the eyes, but we also look around with the mobile head, and we go-and-look with the mobile body' (Gibson [1979] 2015: 211).

What Gibson allows me to articulate is that, looking at a painting, reading a book, watching a film in the cinema or on a home device, we use our full mobile body in order to get there, to reach a chair, to sit and shuffle in it if the person at the front is blocking our view. Our bodies do not suddenly materialise or dematerialise when we are in an audience, neither are vision and hearing independent from our other senses, and from our body. Even more so, as we prepare to experience VR, we hold the headset and place it around our head, adjust its fit, unpick any cables in the way of the headphones. To become immersed in VR, our entanglement with its peripherals requires a body that is anything but inert, and the body-moving is not a set of separate appendages doing their own thing, (dis)embodying themselves limb-by-limb. As Sheets-Johnstone explains, '[r]eaching is not simply an arm movement any more than walking is simply a leg movement. Whatever the movement, the whole body is involved in its realization, not only by way of holding or stabilizing, but by way of the

movement's very unfolding' (2011b: 8).

I suggest that, for VR, we must address not only a general Western primacy of seeing, but the more geo-historically specific North American Western culture, including the ghostly visions of settler colonialism and Spiritualism, and the appropriated indigenous spiritualities that, together with elements of counterculture and cyberpunk, fuel Silicon Valley's visions, as explored in *Fathers and Spirits* (pp.90-9). I propose that – by nesting Barlow's and Walser's two texts together – Rose offers us a striking view of Barlow's disembodied vision, embodied as a golden hand inside the spacemaker's vision of Walser's Cyberia. It is key that the space where the visions materialise (and that the texts articulate) is in both cases the Cyberia VR lab, because we are offered two very different approaches in the very same setting. What I will discuss is how these two views are showing cracks, signifying that a distancing between them is already taking place, as the black box of VR is illuminated by an animated CGI golden hand. What (or whose) hand is this, and who (or what) is animating it? And *where* is Barlow textually when he suddenly does not have a body anymore? As the text is at the article's beginning, we can locate him where he is 'setting the scene' for his audience of readers, recounting that:

'[s]uddenly, I don't have a body anymore. All that remains of the aging shambles which usually constitutes my corporeal self is a glowing, golden hand floating before me like Macbeth's dagger. I point my finger and drift down its length to the bookshelf on the office wall. I try to grab a book but my hand passes through it. "Make a fist inside the book and you'll have it," says my invisible guide' (Barlow, 1990: unpaginated).

With a flourish worthy of a Shakespearean monologue, Barlow not only sees the golden hand, but uses his finger to move near a bookshelf, whose book escapes his grip. Barlow appears to be in a Kubrickian landscape, under the invisible guidance of an unseen-all-seeing-voice, and it is only after giving his reader a taste of science fiction that he can reveal the complex conversion of kinesthetics into electronics between his body movement and the VR system, including a detailed account of the equipment that ' churns out the code'⁵⁶. He articulates that:

'[t]he relationship between my hand and the eyephones is precisely measured by the two trackers so that my hand appears where I would expect it to. When I point or make a fist, the fiber optics sewn into the DataGlove convert kinesthetics into electronics. For a decisecond or so, my hand disappears and then reappears, glowing and toon-like, in the appropriate shape' (Barlow, 1990: unpaginated)

⁵⁶ Barlow writes that 'I...or "I"...am in cyberspace, a universe churned up from computer code by a Compaq 386 and a pair of Matrox graphics boards, then fed into my rods and cones by VPL Eyephones, a set of goggles through whose twin, parallax-corrected video screens I see this new world. When I move my head, the motion is tracked by a Polhemus magnetic sensor and the imaging engine of cyberspace is instructed to alter what I see accordingly. [...] The configuration and position of my right hand is fed into the system by a VPL DataGlove, also with an Polhemus attached to it' (1990: unpaginated).

Rose describes Barlow's experience as a glitch-prone and limited virtual embodiment, whereas 'subsequent developments in optics, haptics and positional tracking now allow for systems which are subtly responsive to the movements of hands, eyes, and bodies' (2018a: 8). Is the glitchiness of the experience the reason of Barlow's imperfect embodiment? My understanding is that this is not only a matter of technology, but that Barlow is *anticipating* a cyberspace-to-be that will grant him freedom from his aging body, and his disembodied point of view is not due to technological imperfections, but in adherence with cyberpunk narratives. Later in the text, Barlow admits that:

'[d]espite the current confines of my little office-island, I know that I have become a traveller in a realm which will be ultimately bounded only by human imagination, a world without any of the usual limits of geography, growth, carrying capacity, density or ownership. In this magic theater, there's no gravity, no Second Law of Thermodynamics, indeed, no laws at all beyond those imposed by computer processing speed...and given the accelerating capacity of that constraint, this universe will probably expand faster than the one I'm used to' (1990: unpaginated)

Barlow *knows* that the limited realm that he is travelling within will ultimately be boundless – just *not yet*; what he first named cyberspace, he now calls 'magic theater', which turns my attention to Walser's paper, *Elements of a Cyberspace Playhouse* (Walser, 1991⁵⁷). Walser's premise is that cyberspace is fundamentally a theatrical medium enabling people to invent, communicate, and comprehend realities by 'acting them out'⁵⁸, whereby acting is not just a form of expression but a fundamental way of knowing (1991: 51-2). What is new about cyberspace is not its technology, but that it is emerging out of a new way of thinking about computers and their relationship to human experience' (1991 : 53). He emphasises that a virtual reality is not just a computer simulation, but that it is played out by a group of people on a particular occasion (1991: 57). Walser distinguishes 'a special kind of virtual space, a cyberspace, which promotes experiences involving the whole body'⁵⁹ (1991 : 55) and clarifies that:

'[a] *virtual reality* is a consensual reality that emerges from an interactive simulation such as SIMNET or Maze Wars+ in contrast to a consensual reality that emerges from the ordinary physical world). By *consensual reality* I mean the world, or a simulation of a world, as viewed and comprehended by a society' (1991: 55 emphasis in original).

⁵⁷ Walser's text is published in 1991 and was based on a paper by the same name that he had presented in the *National Computer Graphics Association* in March 1990. Rheingold includes a segment from the 1990 paper in his book *Virtual Reality* (1992: 192) and Walser also includes such a note at the end of the text (1991: 63).

⁵⁸ Walser refers, within a footnote, to Brenda Laurel's *On Dramatic Interaction* (in Walser, 1991: 63).

⁵⁹ Walser considers both theatre and sport to be 'refined forms of play', and sport is a 'ritualized pretext for being and acting. It gives people a reason to experience their bodies' (1991:52). He foresees that playhouses will be used for drama, design, education, business, fitness, and fun, but in this article he emphasises sport and physical conditioning (1991:52).

Walser explains that a virtual reality is consensual in that the players agree to ‘play fair’, but the reality is constructed organically, though their give and take (1991: 55). However, VR as a ‘consensual reality’ also seems to draw a clear boundary against the sci-fi dystopia of cyberspace as a ‘consensual hallucination’ (Gibson, [1984] 2016: 59). As seen earlier, cyberpunk’s oppositional and peripheral nature and the tropes of mind-expansion and drug mythology that had been central within VR narratives within the 1980s, lost their dominance within VR discourse in the early 1990s (Chesher, 1994). While Barlow wants a release into cyberspace as a realm of boundless imagination and away from the aging shambles of his body, Walser imagines that ‘a cyberspace playhouse [...] could soon be the infrastructure that makes us whole again, by bringing us back to our bodies’ (1991: 63).

Returning to Balsamo’s attention to the material body repressed and divorced from the locus of knowledge as a result of the colonisation of the electronic frontier (1996), it is of interest how Barnaby Steel from *Marshmallow Laser Feast* (MLF) explains storytelling in VR in the context of *In the Eyes of the Animal* (Marshmallow Laser Feast, 2015), saying that:

‘[w]e view the world from between 5-6ft high, we touch, sniff, see and hear, we skateboard, skydive⁶⁰ and eat tuna. We tickle our senses in all manner of ways but ultimately we are locked in our bodies looking out. VR frees us from our bodies and offers the potential of experiences outside our normal reality. This isn’t the 1st time the doors of perception have been swung open. Humans have been exploring hallucinogenics, ayahuasca, mushrooms etc, since the dawn of time and it interesting to consider how this altered states translate into VR. VR offers escapism (Steel, in Fabbula, no date, unpaginated)

The idea that we are ‘locked in our bodies looking out’ likens everyday existence with *locked in syndrome*, a rare neurological disorder characterized by complete paralysis except for the muscles controlling the eyes, so that ‘the patient is fully aware of his surroundings, alert but tetraplegic, aphonic, anarthric, [...] [and] can communicate only through blinking or other ocular movements’ (Ohry, 1990: 73). Aside from the heavy-handedness of such a metaphor, VR as ‘freeing us from our bodies’ is contested by the practical application of *In the Eyes of the Animal*: the experience requires the player to wear a heavy ‘pod’ over their head concealing the headset, that the player has to continuously support with their hands. When I experienced the project in 2017, I was very aware of my body’s efforts, and of the attendants helping me to wear all the peripherals, including a vibrating suit. Because I did not have real freedom to move in this seated experience, the heavy ‘pod’ around my head was in effect shackling me in a manner that was intriguing, but certainly not ‘freeing’. MLF likening everyday life as a ‘locked-in’ condition that awaits VR to escape seems to ignore the reality of paralysed people; equally, their associating VR to mushroom and ayahuasca experiences is mindlessly

⁶⁰ Experiencing the world though skateboarding and skydiving has a closeness to the heroics of the *GoPro*, which I explore within *Towards the ‘camera-walk’* (pp.115-7).

regurgitating what Métis artist Loretta Todd had described decades before as ‘the endless wants of Western culture’ (1996: 184), as discussed within my previous *Fathers and Spirits* section. Of relevance is also how visual artist and researcher Juan Pablo Pacheco Bejarano criticises telematic technologies that appropriate spiritualities through Western artists’ experiences of ayahuasca: he asserts that research methodologies that rely on short immersions while failing to cite their indigenous sources, freeze and conceal indigenous knowers as fetishized Other; this extractive appropriation of knowledge fails to engage with the radically different phenomenologies and ontologies of regenerative amerindian practices (2020: 1-4). As Bejarano emphasises, the extractive spiritual appropriations of VR technologies are afforded by the extraction of conflict materials such as gold, cobalt, silver, quartz, and silicon, deriving from exploitative mining practices rooted on the systematic violation of human and nature rights; as such, VR technologies present a new reality for their users while also concealing the extraction of these materials from distant territories (2020: 3-4).

In conclusion, while I agree with Rose that Barlow and Walser’s texts express deeply contradictory visions, the dichotomy between spherical video as Cartesian, and multisensory immersion as phenomenological and corporeal, is not entirely correct. *Both* are multisensory, phenomenological, and corporeal: even in 360-VR works the participant has to turn around and unfix herself from the single vantage point that framed paintings impose through perspective; admittedly, even that single vantage point is not reached without the viewer somehow moving near the painting. Equally, both may be carrying Cartesian mind/body splitting. The disembodied dream of VR, in Barlow’s case, is an echo of Gibsonian cyberspace and cybershamanism that perpetuate colonial tropes through appropriating indigenous spiritualities – stealing traditions, lands, and the ‘supposed dreams of the native’ while discarding the realities of their lives (Todd, 1996: 184). The colonising of the body in VR does not differentiate between 3DoF and 6DoF, as Barlow himself was immersed in the kind of early kinesthetic VR that developed into multi-sensory immersions. Importantly, MLF’s idea of VR as escapism from being locked in our bodies rehearses the same 1990s cyberspace refutation of the material body as excess baggage, that Todd and Balsamo were already warning against, decades earlier.

Chapter 5: Solo Practice

Introduction

What can an experimental animator using CGI Animation *do* with(in) VR, while entering it ‘feet-first’ and informed by performance? This chapter traces my solo experiments that try to avoid techno-spiritual appropriations and instead favour the body-moving, and everyday life. Within ***Another Kind of Empathy*** (pp.108-11), I learn from Harun Farocki’s practice, spurring me also towards another kind of VR, away from the empathy-machine. ***Towards the camera-walk*** (pp.112-7) looks into space and place through the philosophy of geography, and prepares the ground of my practice using photogrammetry and 360-video. Within ***Ghosts in the Church*** (pp.118-34), I take my first steps in the ‘camera-walk’ and afterwards confront ghosts within the images, that rehearse the much older, holy ghosts of religious painting and photography. ***Polykatoikia: the beginning*** (pp.135-45) commences a journey around an eight-floor staircase in the centre of Athens, which continues to revolve until the completion of my thesis.

Another kind of Empathy

I found *Another kind of Empathy* by chance. In the bookshop of Whitechapel gallery, I was browsing the shelves - another kind of *peripatos* - and the title on the book's spine grabbed me. If empathy is elusive, the promise of *another kind* suggests an alternative that may be easier to grasp. I pull the book out from its shelf and the cover picture (Fig.7) makes me flinch: a close-up of two hands; the right hand is pushing a lit cigarette into the skin of the left one, with a faint plume of smoke. The image makes me flinch for its unflinchingness, and gives me *another kind of empathy* manifesting as a metallic surge of electricity under my skin. I cannot stop looking while the hands cannot stop burning, because the stillness of the image locks them forever in that gesture. In the back cover, the title is explained as the title of a short essay by Harun Farocki published in 2008 entitled *Einführung* (contained within the book), whereas the front image is the author's self-marking gesture in his film *The Inextinguishable Fire* (Farocki, 1969). Whatever feeling the image raises in me precedes the essay, but it is also given a name by the essay. *This* empathy was written in gesture and burnt on skin before it was ever printed in film, or in words. The film begins with a young Farocki appearing like a television journalist dressed in a suit and tie, arms resting over a desk, palms down, fingers drawn in; between his resting hands lies a paper containing a first-person account, a statement given at the war crimes tribunal in Stockholm (Fig.8). After looking straight at the camera, Farocki reads out: "My name is Thai Bin Dahn I am Vietnamese" and the voice reports how he became engulfed in a napalm bomb explosion that burnt his body until he lost consciousness, waking up in a hospital with terrible injuries. Farocki looks at the camera again, becoming the presenter once more, and asks:

"[h]ow can we show you napalm in action? And how can we show you the injuries caused by napalm? If we show you pictures of napalm burns, you'll close your eyes. First you'll close your eyes to the pictures. Then you'll close your eyes to the memory. Then you'll close your eyes to the facts. Then you'll close your eyes to the entire context. If we show you a person with napalm burns, we'll hurt your feelings. If we hurt your feelings, you'll feel as if we've tried napalm out on you, at your expense. We can give you only a hint of an idea of how napalm works" (Farocki, 1969).

Farocki picks up something as yet unseen outside of the film frame, with his right hand, while the camera zooms into his arms and his face becomes hidden from our view. The right hand returns, holding a cigarette which it stubs out onto the left one, while Farocki's faceless voice says that 'a cigarette burns at 400 degrees. Napalm burns at 3,000 degrees'. There is a change in the sound, an audible *cut* after which his voice becomes a faceless voice-over as the camera closes in on the hands; its sound quality betrays that it was recorded at a time other than when the cigarette burns the skin. Like we cannot see Farocki's face expressing any grimace of pain, equally we cannot hear his voice

expressing any anguish, and the film thus maintains a distance during his real-time of pathos/suffering.

Curator and artist Antje Ehmann points out how Farocki returns, emphatically, to this scene within his later work, *Interface*⁶¹ (Farocki, 1995), sitting 'in front of his editing table [...] repeating the words he is saying within the scene he is watching while watching it [...] a kind of live recorded palimpsest' (2016: 24). She recounts how, to get closer and immerse himself in a text, Farocki patiently copies it again and again on paper, typewriter, or computer (Ehmann, 2016: 24). She says that, for Farocki, images and words belonged together in a way comparable with how one cannot separate empathy and distancing; that Roland Barthes' operational language of the woodcutter who speaks the tree, rather than about the tree, was an empathic concept of language that Farocki would return to for decades, since quoting it first on the radio in 1965 (Ehmann, 2016: 24). I note that, within *The Inextinguishable Fire*, Farocki is both woodcutter and tree, tree-burner and tree-burned, destroyer and victim. Is *Einfühlung*-empathy a spark, a kind of fire-lighter? Farocki marking himself dressed in the suit and tie of a television journalist brings to my mind Sheets-Johnstone describing how, when walking the ground of knowledge in bare feet rather than with a suit and tie, not only do we leave our footprints, but our feet become marked by the contact with the terrain, and nothing professional separates us from it (2011a: 295). This is a personal act from-and-into the hands of Farocki, with his body in the centre, rather than through the hands-free operations of any machine, and any empathy-machine, as possible. Speaking of empathy, in his short essay *Einfühlung* (Farocki, [2008] 2016) explains that:

'[t]his is a word that belonged to the enemy. I had learned from Brecht⁶² to not gaze so starry eyed/to not perpetuate Romanticism. [...] *Einfühlung* is too good a word to leave it to any enemy. *Einfühlung* is a much better term than identification since it has the flavour of transgression, or a vaguely violent form of compassion or alignment. It must be possible to partake in *Einfühlung* in such a way that the effect is one of estrangement (Farocki, [2008] 2016: 104-5).

For Ehmann, the introduction of another notion of empathy in Farocki's work requires an understanding of his entire attitude towards the world: humorous and polemical, serious, open and attentive; endlessly patient with the strangeness, beauty, stupidity and even the unbearable cruelty in this world. Ehman explains that the above correlate with certain production methods that Farocki developed over the years, patiently, insistently and repeatedly returning to the same subjects; organising his material into looping structures; combining repetition and variation turning the

⁶¹ See Figure 9 (p.111). Still from *Interface* (Farocki, 1995).

⁶² Farocki had learned from Brecht that, in theatre, a distanced position of appraisal should be taken, and the performers should also maintain a distance from their roles, to show that people are informed by circumstances, and circumstances by people; circumstances can therefore be imagined differently, as well (Farocki, 2016: 104).

seemingly sober, distantiated observational mode into something emphatic, which can lead to alienating effects (2016: 20). She expounds that ‘his empathetic watching and listening to words and images is [...] an active practice’ (2016: 23). I am stricken by the repetitive resilience of emphasis as eliciting another kind of empathy that favours alienation over identification. *The Inextinguishable Fire* transmits a burning in my skin. This other kind of empathy is not machine-made, but a *cheiropoieton*, hand-to-hand, film-to-essay, essay-to-film, filmmaker-to-viewer, writer-to-reader, skin-to-skin. While Ehman speaks of Farocki’s practice, she names some of Farocki’s ‘(unspoken) rules’:

- 1) Never make interviews with your protagonists.
- 2) Film your protagonists in their work lives when they are not acting for you (that is, for the camera) but are instead active within a real professional situation in such a way that they will forget about your presence.
- 3) Don’t forget to film exercises, role games, instructional courses [...] [that] are already scripted. They don’t talk to you. How beautiful.
- 4) Machines have taken over most of the work of human bodies. Have empathy with the machines.
- 5) Where reality condenses itself to a test model is where you should place your camera.

(Ehmann, 2016: 23-4).

These unspoken rules become part of my methodology: as my original aims involve working with patients and doctors, the first three motivate me to observe and record my participants within their personal space and their space of work, as they perform their existing everyday scripts without interference. The fourth unspoken rule – have empathy with the machines – is one I will not follow, as it has been practiced by many others within the wider quest for empathy-building through technology, intensified through VR as empathy-machine after Farocki’s death in 2014. Sherry Turkle warns that when we look at technology to replete our dwindling empathy, we are forgetting that ‘[w]e are the empathy app. People, not machines, talking to each other. Technology can make us forget what we know about life. It is not too late to remember, to look up, look at each other, and start the conversation’ (Turkle, 2018: unpaginated). The fifth rule is also a challenge: *where* and *what* is the test model of condensed reality for me to place my camera? This can only be answered through the practice itself. I note that Farocki not only offers me another kind of empathy, but also inspires me towards another kind of VR practice: it commences by walking *away* from VR as empathy-machine, in favour of real encounters with people within their everyday spaces, in the hope also of starting conversations. Accordingly, in the following section, I trace the beginnings of my solo experimentation with technologies of immersion, towards a collaborative and peripatetic documentary practice.

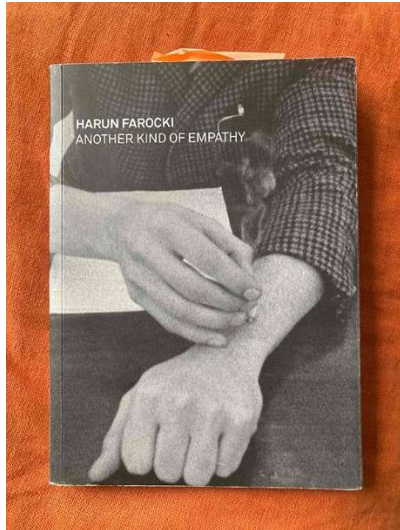


Figure 7. *Another Kind of Empathy*
cover image ©Harun Farocki

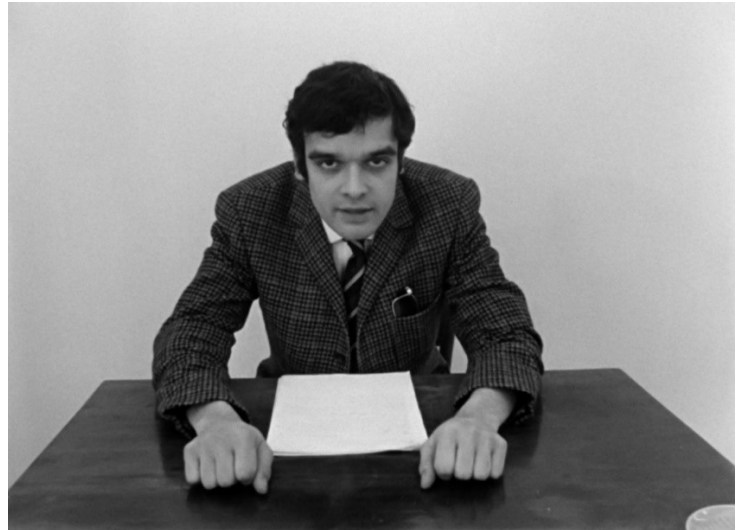


Figure 8. Still from *The Inextinguishable Fire* ©Harun Farocki 1969



Figure 9. Stills from two-channel installation *Interface* ©Harun Farocki 1995

Towards the 'camera-walk'

Taking some creative first steps *in VR*, looking through a tethered *Vive* headset within *Unity3D*, certain things are familiar: the malleable polygonal meshes and the readymade digital sunlight are already part of my 3D CGI animator's toolset; I stand on a floor that is a life-size version of the terrain that I have traversed for years through my animator's monitor. Other aspects are brand new: the wearing of the headset and controllers; the game-like operations; the real-time, full-body public performance of humans and computers. Whereas as maker and viewer of animated films I had the privacy of my studio and the darkness of the screening room, experiencing VR in public, such as within festivals and galleries, has me perform *blindfolded* for those awaiting their turn. Rather than my movements (via mouse and keyboard) affecting digital objects through a computer screen – *here, in VR*, I am standing up, and reaching out; I walk inside the very *studio* of animation. What to do *inside* and *with* all this empty space? Like in my previous film work, I may populate VR's stage with digital objects and begin by 'setting the scene'; however, neither ready-made assets nor models made 'from scratch' seem suitable for a VR practice that wants to evoke a 'sense of place' through a *personal space*. Hand-crafting my participants' rooms as digital models entails the danger of imposing my own aesthetic interpretation too early, flattening the myriad facets of *their* everyday life. In addition, the time-consuming nature of a 'working from scratch' approach could have me perpetually engaged with my computer, rather than within human interactions. Equally, to buy ready-made, generic digital models went against my interest in the particular and the specific, that which cannot be found in a digital library because it has been formed around a person's real life, like a carpet worn and marked by feet, or a pillow carrying the shape of a head.

An expression I have used is 'a sense of place': its meaning is nefarious, exacerbated by the polysemy of *place*, which geographer and poet Tim Cresswell calls a word both easy to grasp and slippery to reflect upon; place is a material thing in the world such as a room, or a landscape, but equally 'a way of understanding the world'; examples include a child's room, an urban garden, a market town, New York City, Kosovo, and the Earth, and Cresswell asks what makes them places rather than a room, a garden, a town, a new nation, and an inhabited planet (2015: 6-12). He contends that:

'[o]ne answer is that they are all spaces which people have made meaningful. They are all spaces people are attached to in one way or another. This is the most straightforward and common definition of place – a meaningful location' (Cresswell, 2015: 12).

For political geographer John Agnew, place as 'meaningful location' has three fundamental aspects: location has objective coordinates that can be found on a map; locale denotes the material setting

for social relations, including public and private spaces; sense of place is the subjective and emotional attachment people have to place (in Cresswell, 2015: 12-14). Cresswell adds that:

‘[n]ovels and films (at least successful ones) often evoke a sense of place – a feeling that we the reader / viewer know what it is like to “be there”’ (Cresswell, 2015: 14).

From the above, I recognise my employment of ‘a sense of place’ as filmic, rather than ethnographic or geographic. While Cresswell seeks to bypass the opposition between bounded, ‘reactionary’ senses of place focusing on rootedness, attachment and singularity versus an open, ‘progressive’ sense of place focusing on flows, connections and networks (2014: 3), his definition frees me from such binaries. That ‘a sense of place’ is something that artists *evoke* rather than *define*, allows a consideration of the book or the film *itself* as a meaningful location - a space for connections between people. Thus, the novelist or the filmmaker evoking a sense of place is offering a new meaningful location in the work itself *for* people to connect through, while experiencing it.

As I envision for my doctoral project, a specific meaningful location may be visited in VR not as an *ideal* room but as an *idion* - an impression of a *real* room that has been given meaning by its dweller. Philosopher of geography Yi-Fu Tuan explains that the ‘feel’ of a place is registered in one's muscles and bones, and made up of mostly fleeting and undramatic experiences repeated day after day and over years (Tuan, 2002 [1977]: 183-4). Could the sense of a place be *felt* through certain signs of everyday life? Cresswell evokes in me a strong sense of place, when he asks me, his reader, to:

‘[c]ast your mind back to the first time you moved into a particular space – a room in college accommodation is a good example. You are confronted with a particular area of floor space and a certain volume of air [...] A close inspection may reveal that a former owner has inscribed her name on the desk in an idle moment between classes . There on the carpet you notice a stain where someone has spilt some coffee . Some of the paint on the wall is missing. Perhaps someone had used putty to put up a poster. These are the hauntings of past inhabitation’ (2015: 7).

What strikes me is that Cresswell's signs of human presence are all *impressions* left by human gestures: a name inscribed, some coffee spilt, paint peeled by putty pressed by hand. These marks allow an imagining of the body, or bodies, that moved inside *that* space, turning it into a place that is still haunted by them. This elucidates the favouring of an *idion* rather than an *ideal* within my methodology: rather than a model satisfying a general sense of what *a* room looks like in an *ideal* fashion, the *idion* of someone's room is crafted by their bodies, their tastes, their movements. A personal space recreated and experienced in VR, through walking, can be a place where a (virtual) visitor may retrace the routine steps of the place's dweller, a way of gaining a ‘sense of place’ through movement. There may also be room for playing, in the way that *peripatos* can be a circular stroll that returns home - and even performed daily as a routine - as well as offering the opportunity to roam

and stray from the path. Yi-Fu Tuan's understanding of the entanglement between space and place as needing each other for definition ([1977] 2002: 6), is of great value within a study in VR; he explains that:

'[w]hat begins as undifferentiated space becomes place as we get to know it better and endow it with value [...] Furthermore, if we think of space as that which allows movement, then place is pause; each pause in movement makes it possible for location to be transformed into place' ([1977] 2002: 6).

Applying Tuan's understanding within the space and place of VR, I consider how VR makes room for a player but also needs her movement in order to work; in this sense, the digital space of VR becomes place through the movement of the player who animates it. Secondly, movement and pause are equally needed in the VR experience; while an extended pause would put the headset to sleep (such as after removing the headset) even the lightest of movements of a body wearing it, would be picked up by the system. On the other hand, some VR experiences depend on the player's attention towards a detail, towards triggering a specific action; in this sense, the pause of the player can be as important as their movement. If a space becomes place when we invest it with meaning through movement and pause – when a visitor enters a place already made meaningful by its inhabitant's movements, what new meanings and meetings do the visitor's steps bring forth? Could a VR space also become place through the individual player's movements, and may a virtual visitor overlay new layers of meaning within a VR room? But first - *how* can I create such a space?

With neither made-from scratch nor ready-made digital models as appropriate for the particular and specific way that *a* body makes its space by moving inside it, digital photogrammetry offers me a potential solution: models calculated through shooting visual material would be less time-consuming than building the digital environment by hand. At the same time, the automaticity of the digital calculations promises me a kind of *ready-made* that is *never-made-before*, unlike the generic models commercially available. The digital photogrammetry mesh is *in-between* model and photograph, in a way that challenges the tensions between animation and photography as well as animation and live-action documentary. In addition, having never worked with immersive video nor digital photogrammetry before, this is an opportunity to stretch my PaR methodology, as 'new sparks are often struck by taking the risk of (re)invention in a leap of de-familiarization' (Nelson, 2013: 28).

Similar to how the distinct affordances of 360-VR and CGI-VR become conflated under the generic VR title - SfM photogrammetry appears to be a *type* of photogrammetry, although this is not strictly true. Professor of Photogrammetry Armin Gruen offers an etymology: from *photo* meaning 'light', *gramme* meaning 'line' and *metry* meaning 'mensuration', photogrammetry can be understood as 'measuring lines with light'; while 19th century photogrammetry depended on big and heavy photographic

cameras and data processing machines, even in the early 1980s digital techniques were valued by only a small minority within the photogrammetric community. Gruen emphasises that photogrammetry and SfM photogrammetry are conflated but stem from distinct methodologies whereby the latter is part of computer vision (2021: 34-41). For researchers Aicardi et al., the convergence of the two in modern software makes their differences faint, but photogrammetry is ‘the art and science of determining the position and shape of objects from photographs’ (Kraus, in Aicardi et al., 2017: 257), whereas computer vision ‘is a mathematical technique for recovering the three-dimensional shape and appearance of objects in imagery’ (Szeliski, in Aicardi et al., 2017: 257). While photogrammetry’s main goal was for mapping purposes, computer vision was related to the automation of the process, for computers to automatically extract information from images. Through algorithms establishing common points between multiple images, computer vision prioritises the production of ‘a dense point cloud supporting a captivating 3D model’ (Aicardi et al., 2017: 258-262).

I begin to use *Agisoft Photoscan* (later renamed *Agisoft Metashape*) in 2018; before engaging practically, I read the software manual which warns that blurry images should be avoided, as should untextured, shiny, highly reflective or transparent objects, and moving objects. While not ideal, spherical panoramas - such as those produced by 360-cameras - can also be used for the calculation of models within the professional version of the software. This allows me to imagine that, rather than enter someone’s personal space and spend considerable time taking multiple photographs from many different angles, I may instead record the entire room through simply walking inside it. This method will also give me a way to bridge the distinct affordances of 360-VR and CGI-VR, not as a hybrid of the two, but rather subtractively, with the panoramic flatness of the 360-image transformed into the voluminous digital models that CGI-VR is built with. Consumer 360-cameras are designed for excursions on foot, with sturdy small plastic bodies made for outdoors, that will take me outside of my studio and further defamiliarise me from my animation habits.

The camera which I use in my doctoral research since 2018 is a *GoPro Fusion*, a consumer 360-video model launched in 2017. Hard-wearing and water-proof, it can be attached to sports equipment or to its wearer’s helmet, or carried with an extendable selfie-stick that doubles as a tripod. Small enough to rest in the palm of my hand, it has two lenses at its front and back, each shooting a 180-degree video that, once ‘stitched’ together, will form the single panorama of the spherical video. Unable to affect its program while shooting, and without a viewfinder or liquid-crystal-display (LCD) screen for me to see what it is doing - the camera frames my walk in terms of purpose, but does not frame my view. Rather, the 360-video frame is omniscient - a technical image that exceeds my human vision. I may preview this spherical frame through an app that connects the camera to my smartphone - but

the rectangular phone screen would only partially frame the panorama, requiring me to spin around with my entire body or to 'twirl' the preview window with my finger. In any case, with the camera in one hand, and the phone in the other, there would be no digits left to manipulate the screen, so I can put the phone-preview aside for good. A preview is not enough also because what is being shot is not yet safe: my camera's manual warns me that if recording stopped abruptly and the video file was not properly saved, the file might become corrupted.

With its mysterious and opaque automatisms, my camera's compact plastic body settles well with Flusser's apparatus, whereby '[a]nyone who is involved with apparatuses is involved with black boxes where one is unable to see what they are up to' (2000: 73) Flusser also reminds me that '[t]he purposes of the tools that surround us are not necessarily our own. They are the purposes of those who made the tools' (2014: 143). Indeed, the GoPro's name reflects precisely what its inventor and his friends wanted to do most: 'Go pro...we all want to be pro surfers' (Woodman, 2015: unpaginated). The idea behind the first product, the HERO camera, 'was that our camera could help you capture photos (and eventually video) that made you look like a HERO. Be a HERO similarly inspires you to do your best at whatever you do' (Woodman, 2015: unpaginated). The mechanical body of the GoPro thus embodies the desire to transcend amateurship and achieve 'pro' status, through and towards a human body performing heroics. Phillip Vannini and Lindsay M Stewart have coined the term the 'GoPro gaze' to speak of a videographic practice by professionals undertaking adventure and nature-based travel '[striving] to maintain the 'wildness' of a site and a sight by actively selecting seemingly untamed places that can be submitted to the fearless exploratory spirit of their conquerors' (2017: 153). This language perpetuates a colonialist point of view, with the fearless GoPro-wielding conqueror taming places, but Favero offers a very different perspective. He suggests that, in the multi-awarded documentary *Leviathan* (Castaing-Taylor, Paravel, 2012), around the journey of a fishing vessel, GoPro cameras helped the filmmakers to generate a similar proximity with human beings as with animals and nature, with fish and men equally at the centre (Favero, 2018: 89). The juxtaposition between conquering a world (via Vannini and Stewart) versus sharing a world (via Favero) allows an understanding of the GoPro as a tool that can frame (and be framed) in strikingly different ways.

Richard Bégin includes the GoPro in a recording practice which he calls mobilography, which can be free of human intentionality; the GoPro mounted on a car, surfboard, or drone, leads towards a true 'mobile cinema' whereby bodies equipped with devices perceiving movement become its reader head (Bégin, 2016: 109). While, for Bégin, the GoPro's autonomy sets it free from human intentionality, it brings to mind Farocki's 'phantom shots' (2004) by cameras mounted on vehicles, within the lineage of operational images. If for Bégin the GoPro is autonomous, Farocki's analysis allows a consideration

of the GoPro as an *automaton*, a robotic eye meant to replace the human one. As encountered earlier, Steyerl's disquiet about the body in VR and 360-video being at the centre of the scene yet missing and nonexistent (2018, unpaginated), is shared by Mandy Rose when she addresses 360° video works where a disembodied eye makes a body redundant (2018a).

I argue that 360-video *can* be disentangled from VR: it can also be played - with highly visible and feeling fingers - through mouse, trackpad, or keyboard on a computer, smartphone or tablet. When the viewer uses their portable device to pan around, they see a cadre of the spherical world that virtually envelops them, and they orient themselves with their (spinning) body in the centre. While experiencing 360-video on a computer screen, the user may 'twirl' that sphere around their body's fixed orientation towards the immobile screen through hand manipulations of the peripherals. Certain omnidirectional cameras, including consumer models like my own, allow for the panoramic video to be exported in a flat cinematic ratio, watched on a conventional screen without viewer interactions. Because I 'hack' the panoramic video into photogrammetry, my practice begins with the explicit desire to disentangle 360-video from its intended use – not towards 360-VR via a headset, but towards constructing SfM photogrammetric models, that can also be 'walked' in 6DoF VR. In the next section I take my first steps into the 'camera-walk', first within an abandoned farmhouse in Greece, and then within a Lisbon church.

Ghosts in the Church

In August 2018, I hold up the stick of the GoPro fusion for the first time while approaching on foot an abandoned farm-house in Astros, Arcadia; as a child, I was friends with the three girls of the family that lived there, opposite my grandparents' home. I pass a church on my left - we played in its courtyard, too. *Et in Arcadia ego*, yet this is not a bucolic paradise, but a place made meaningful by the people who dwell in it. I press the 'on' button and check if the red light is flashing. It is a blistering summer afternoon, and the cicadas are screaming as I walk up some narrow steps and enter through a door left perpetually open (Fig.10). I have not shot with a 360-camera before nor have I tried SfM photogrammetry, but I have read within the camera's manual that blurry pictures are not suitable, so my pace is steady and unhurried. The house is standing still, empty of visible life, empty of furniture, and the wooden floor is grey with slivers of wall plaster and debris.

There is a fig tree branching in with a single green leaf through a window at the back, in what was the girls' bedroom (Fig.11). The youngest had once shown me a picture hanging on the wall, with a child's face lit with an oil lamp and a single pearl-like teardrop on his cheek, but this is gone too. I wonder if the planks crunching dirtily under my feet might give way, and I will not stay for long, but there is a pleasant feeling of gravity in this silent walk. I perform for no-one but myself and the camera, which I carry on its stick so it hovers a little higher than my head, ahead of me; I bring it near the walls and corners, and get close to the surfaces without making contact, like I am moving a scanner-wand over an unknown signal. I trace the periphery of the house from the inside and all this time the camera sees me, alone; this shoot is just between us. Because I cannot see what it shoots, I am free to take in the space, not only through my eyes but through my feet. I turn the camera off exiting the courtyard, where once chickens roamed within a vegetable patch, which is now scorched earth. Walking a few meters back home, I see the church on my right again; the eldest girl was crying on her wedding day there age sixteen, but when we were children we played *Eurovision* in the church yard while my grandmother lit an oil lamp in front of an icon.

A few weeks later, in September 2018, I step inside the Church of São Domingos, in Lisbon. I am with my colleagues from Plymouth University, on a research trip. Although not strictly a tourist, I am rehearsing the steps of tourists, and of the people who came into this place of ritual to prey, and to die. Writing about this church in 1925, Fernando Pessoa says that:

'[i]n this same spot stood once the church of the Convent of São Domingos, destroyed by the 1755 earthquake, where the Inquisition effected many of its *autos da fé*. It was also in this church that, in 1506, after divine service, many Jews were killed by the fanatical populace, the massacre

spreading soon to other parts of the city' (in Sarfati, 2012: 153).

Another inferno, in 1959, killed two firefighters trying to put out a massive fire that gutted the interior of the church, whose marble walls and columns remain singed and marked deeply with cracks; the burning smell persists. I raise my eyes to the dusky coral ceiling and hear my grandmother's voice telling me that I should look down, and keep quiet. I look up, and around; there is no liturgy and no priests this morning, and the congregation consists mostly of tourists performing their peripatetics. Lacking its religious functionaries, this place feels like a set in-between acts, or takes. Recorded hymns are playing, and suddenly a loud voice attracts my attention and makes me turn - there is a man in a bright blue shirt sitting on a side pew who is animatedly explaining something to a companion. His voice continues to reverberate for a good while - what would my grandmother say?

Walking towards the altar, I take the GoPro out of my shoulder bag, extend the stick, and hold it up with my right hand; I begin documenting São Domingos' interior by walking it, purposely and slowly. I wind a continuous path around the interior periphery of the church, under stern statues in alcoves, over marble steps covered in red carpet. As we cross paths, a few tourists look at the camera-on-a-stick and briefly make eye contact with me, but we all keep moving. In this 'camera-walk' and most of the following ones taking place within four years, I walk in silence. Even before seeing palpable SfM photogrammetry results, I was already following a manual: as moving objects are not recommended, I avoid conversation in order to let my surroundings settle; to avoid animating the passers-by any further, I encourage stillness through silence. Within this public place where the only rule I may impose is the rhythm of my own steps, I foresee that my photogrammetry will be of (what) remains: statues, burnt walls, cracks on the floor, effigies. I do not expect any animate bodies, including mine, to persist in my model-to-be, because our movements should make us ghosts. After encircling the space and reaching the altar again, I follow the central passageway towards the exit, where I turn the camera off; it took me just under five minutes to complete my unhurried tour.

A few weeks later, back in London, I place my camera on my desk, by my computer. The spherical video is not yet ready, because the GoPro fusion simultaneously records two separate video files, one from each fisheye lens, stored in two mini cards that I now gingerly pick out from their tight compartments. Slotting them in a usb card-reader, I transfer the 'twin' videos into my computer and have a quick look: each is a flat circle within a black square, like a circular mirror; one of them also carries the recorded sound. The camera's studio application that I install on my computer, fuses the two separate videos in various ways; it can stitch them into a single panoramic video, or, through the 'Over-Capture' function, impose a more conventional, bounded view in a 16:9 ratio. Aiming to produce photogrammetry, the panoramic export function will maximise the visual information

needed, a process which takes a few hours. I import the rendered panoramic video in Adobe Premiere, where I hand-pick individual frames to export as still digital images (Fig.12-13). Because a panoramic image holds a lot of information, less images are needed for SfM photogrammetry than when using a conventional photographic camera, but they must still have enough in common for the software to pick up on regularities. My 'camera-walk' in the Church of São Domingos lasted a little under five minutes, and for my very first experiment I pick the first minute of the video to work with. Shot at 30 frames per second, a minute has 1,800 frames, out of which I hand-pick 51 - a little under one frame per second of my walk. Each panoramic still has an omnidirectional projection which is so unlike a conventional picture that I struggle to make sense of it, as the image loops into itself left and right; under this light, I do not know what to 'make of them' *but* to feed my stills into *Agisoft PhotoScan*.

The application manual defines four stages of production: the first is camera alignment, followed by generating a dense point cloud, followed by generation of a surface, and finally, texturing the surface; all these operations are carried out automatically according to the parameters set by the user. What this means in practice is that, while automatically processed, the parameters available within each distinct stage can lead into multiple, differing results from the exact same set of images. While there are no infinite results within a digital calculation, the potential number of models is beyond my own scope of prediction and, besides, while involved with apparatuses I am involved with black boxes where I am unable to see what they are up to (Flusser, 2000: 73). Unable to see what Agisoft does, I offer it my images and follow its manual, to see what it will offer me back. I import my 51 panoramic images, which Agisoft calls 'cameras', and the software performs their alignment which I have set to 'medium' quality. It takes some time for the software to search for matching feature points in the images and, through them, create a sparse point cloud and a set of camera positions. After the images are aligned, I can see the cameras which, being panoramic/spherical images, appear like little blue spheres signposting the exact path I traced.

The sparse point cloud of the project already suggests the faint shape of the building (Fig.14), but it with the generation of the dense point cloud that I truly recognise the space of my camera-walk (Fig.15). After the calculation of the polygonal mesh, comes the final stage when the texture is projected onto it, with the software using the same images with which it also calculated the model. What appears on my screen now looks like a fragmented, partial cast of the church (Fig.16). Because the images forming the mesh and its texture have been shot from within the church, the outside is in fact its inside, a strange inversion where the ceiling is also a roof, and the interior walls are also the exterior ones. What softens the strangeness and 'lets me in' is that, with the range of my images spanning only the minute it took me to cross a little more than a corner of the interior, the opposite

side of the church is missing; this is because the parameters I had set, made what was furthest away from the camera's views to be excluded from the mesh. For this reason, my SfM model is opening-up to me like a readymade cutaway. The model is in-between 51 separate stills, determined by 51 configurations of my body in the centre. Because my body is in motion, as are the tourists' bodies, we are not still long enough to be enmeshed into the model, but we do not disappear – we cause distortions, including a deep hole dug in the church floor (Fig.17).

Among the creams and corals of the walls and ceiling and the reds of the fabrics and carpet (Fig.18), a vivid blue patch calls my attention, just like a loud voice. To my surprise, the man in the blue shirt is *there*, sitting on his pew, the first human I encounter among statues, and yet also a statue (Fig.19). How did he get here? I go back to Premiere and to the panoramic video, and export more still images, from the entire length of the camera-walk. Rather than a frame per second, I leave larger gaps in-between the stills, giving me all together 120 still panoramic images (together with the initial 51). I repeat my previous steps afresh: the software aligns the cameras, produces the dense cloud, the mesh and its texture. The new model is complete and enclosed rather than gaping open (Fig.20) but, inside, the man has faded away, a blurred brushstroke rather than a defined figure (Fig.21). I check the panoramic stills, and find him absent in those extracted from the later time of my 'camera-walk'. Where did he go? To find an answer, I return to the spherical video itself. While it provides me with stills towards photogrammetry, it also performs like a memory-aid. Whereas during the 'camera-walk' I am free to look around rather than into a lens or LCD preview screen, afterwards the video provides me with an audio-visual documentation of what happens around me, so watching it back brings forth things unnoticed in the first place. I seek the man in the blue shirt, and see him walking away while I was at the other side of the church; what this means is that his absence in the images *after* the first minute has diluted what was his earlier concentrated presence. With the empty pew contesting his body, and his new gestures making him a moving object that cannot be matched between the images, the man in the blue shirt is allowed to partially disappear, like most other humans in the church.

In what is my first 360-video SfM photogrammetry experiment, the man in the blue shirt is also my first, unexpected human body that I encounter within my doctoral research - between a ghost and a statue, but also a relic like the ones found in this church, or a museum artifact. Equally, the image of that man in the blue shirt is reminiscent of the kind of photograph one may find in a museum, an image-relic, of sorts. For Barthes,

'[p]hotography transformed subject into object, and even, one might say, into a museum object: in order to take the first portraits (around 1840) the subject had to assume long poses under a glass roof in bright sunlight; to become an object made one suffer as much as a surgical operation; then a device was invented, a kind of prosthesis invisible to the lens, which supported

and maintained the body in its passage to immobility: this headrest was the pedestal of the statue I would become' (1981: 13).

The man in the blue shirt became a statue, but his pedestal was not a headrest but a church pew nearby saintly pedestals. He laid still long enough for my camera to document him into enough frames for the SfM photogrammetry to ossify him as part of the scene, without his knowledge nor mine. It was *co-incidence* that I picked the first minute to work with, while he was there, and persistently still; it was also co-incidence that I had noticed his voice enough to recognise him in the model. That he became fixed in the model by his stillness reminds me not only of subjects posing into objects – as described by Barthes – but of what is considered to be the first photograph depicting humans, Daguerre's *Boulevard du Temple* (1839). Shot from Daguerre's studio, what remained fixed after the long exposure of the image were the still elements, whereas ephemeral signs of life passing-by were rendered invisible. In *Boulevard du Temple*, only the bodies of the boot cleaner and his customer held their places long enough to be captured, in-between many likely bodies – walkers, vehicles, perhaps animals – that are missing in action. The man in the blue shirt was not my subject - my subject was the church interior - and both his stillness and my movement were necessary factors for his apparition. Had I stayed in one place/position, there would not be enough variety and overlap in-between the images for matching points to be picked up; had he *not* stayed in one place/position, he would have disappeared along with the other moving bodies in the space. Are there more ghosts in the church?

I return to the model, and notice stripe patterns on the church floor, over the cracked tiles. I create more projects, some where I feed more stills into the software, and others where I take stills away. Using more cameras and generating more polygons gives me a denser and more detailed mesh, but with parts of it missing. With a small number of cameras and a low polygon count – once the texture becomes projected, what was stripes on the floor is now a projection of my figure on the church tiles (Fig.22). Thus, while more images may provide greater sculptural detail all round, my body in the centre also hides part of the image and occludes potential matching, so the detail is accompanied with gaps in the mesh. In contrast, less images and less polygons weaken the sculptural in favour of the photographic – the mesh becomes a flat canvas for a portrait. Is there a name for such images 'found' in a church?

The polysemy of the word artifact (also spelled 'artefact') is of interest: the digital artifacts of SfM photogrammetry can be replicas of other artifacts, as 'photogrammetry has been applied to essentially all classes of archaeological remains [...] [to] individual pieces or assemblages' (Magnani et al., 2020: 740). My model contains multiple physical artifacts from the space - sculptures, steps, icons, a man in a blue shirt - all fused together, within a single mesh. However, looking at the various calculated versions, with their rather bulbous and turbulent shapes, holes in the mesh, indentations

and extrusions and strange smears on the texture – a word to describe these unexpected apparitions is also ‘artifact’, in the sense of the word as a feature ‘that does not correlate with the physical properties of the subject being imaged and may confound or obscure interpretation of that image’ (Walz-Flannigan et al., 2018: 833). While photogrammetry is employed for the production of virtual replicas for heritage conservation, my own models are meltingly different with each iteration. Researcher, artist and curator Gabriel Menotti explains that in photogrammetry’s most recent applications to audiovisual production there is less concern with acquiring the exact measures of the real than for the spectacular reproduction of its sensorial effects. He notes that a polygonal mesh with millions of faces can be heavy to manipulate in 3D modeling and game environments, and simulations like Google Earth require smaller polygon counts for their models. Because volumetric reconstructions aim to re-create the real, ‘[t]he simplification of models can be paramount to this kind of operational realism, whose verisimilitude relies not so much on the visual resolution of information but rather on the time the simulation takes to resolve in response to user expectations and behavior’ (Menotti, 2021: 489). Towards this goal, volumetric fidelity is often sacrificed in favour of mimetic fidelity which is more dependant on the virtual replica’s ability to resemble and perform as real in a media environment; this is achieved though reducing the polygonal mesh’s large face count, and giving its shape a cleaner, more regular geometry (Menotti, 2021: 489).

I am interested in how resembling *the* real and performing *as* real are both important factors for the virtual replica, but the two are almost competing with each other. An over-simplified polygonal mesh should perform better but the simplification may be detrimental to its resemblance to the real, and Menotti offers an example through *Google Earth* in VR, whose user’s initial awe slowly gives way by the models’ imperfections (2021: 489). Author Louisa Minkin ascertains that a photogrammetry-acquired mesh will need substantial work including artisanal assembly, retopology and cleaning to produce a workable model (2016: 118). What needs to be cleaned is digital dirt that ‘may manifest as baroque accretions or as residual contaminants. Tiny bits of geometrical grit will risk breaking your printer’ (Minkin, 2016: 118). I recognise these contaminants within my own meshes from the São Domingos church, although their sharpness poses no risk to my own screen experience. Rather, they befit this church - with its Baroque facade, and with the Portuguese word *barrocco* meaning ‘pearl’. When a contaminant makes its way into an oyster, it ‘tears up’, and pearl-like tears are themselves artifacts of pain, effigies to the many tragedies of São Domingos. The grave-like hole (Fig.17) agrees with the tragic history of the church – but may suit any digital model deriving from (SfM) photogrammetry, which for Minkin is ‘in some sense a taphonomy, a transition of remains from biosphere to lithosphere or electronic noosphere, replicating through e-currents into myriad death assemblages’ (2016: 118) Taphonomy, from the greek ‘taphos’ (grave), is the study of processes

affecting an organism after death that result in its fossilization (Brookes et al., 2023: 2021). A fossil is a fitting metaphor for the photogrammetric mesh - a relic, a mould, a remnant, a record; a transition from the live into a shell formed, marked, and broken, by bodies that make space by moving in space.

I am interested in the different performative affordances of the photogrammetric object that Minkin and Menotti express: while both refer to the need to alter the digital mesh for how it will perform within the larger digital ecosystems of a media environment and a lab environment, Menotti speaks of simplifying the mesh for how its excess of polygons affect the simulation performance, while Minkin considers how the imperfections affect the 3D printer performance. Both their operators experience a disruption by the digital artifact's unwanted 'artifacts' – the former stalls, the latter breaks. Still, an oversimplified mesh strips the artifact's value, failing both simulation user and archivist. Both Menotti and Minkin see beyond the operational realism of SfM photogrammetry: Minkin explains that '[a]ccidents and misapplications in the use of imaging software may produce new artefacts and knowledges. Such methodologies, the aleatory and the détourned or hijacked, are familiar operational sequences in art practice' (2016: 122). Returning to my own work, my approach is indeed aleatory in the peripatetic sense that Mandoki calls playing 'what if' (2007: 94), practiced through eliciting multiple imperfect photogrammetric iterations rather than seeking the single perfect replica. Thus, my new artifacts and knowledges are afforded precisely by *not* cleaning and retopologising my meshes, and I acknowledge that digital artifacts as imperfections are layering new knowledge over the digital artifact, itself deriving from one or more physical artifacts.

Menotti proposes a set of artistic projects enabling a critical subversion of photogrammetry's capacities through processing low-resolution image datasets found online, whereby the blatant mismatches between the resulting replicas and their doubly removed referents demonstrate the algorithms' generative interference on the mediation of reality (2021: 489). Among such projects is his own *Souvenirs* (Menotti 2014-2015), a series of figurines deriving from online 'found' videos and stock footage of the famous Brazilian monument *Christ the Redeemer*; the videos were converted into sequences of images that were algorithmically computed and 3D printed. Menotti explains that:

'Souvenirs draws inspiration from the Orthodox Catholic concept of *acheiropoeita*, implying images made not by human action but rather by spiritual intervention. It nevertheless takes the form of glitched models vaguely resembling the Christ's original shape (2021: 489 emphasis in original).

My earlier question around my photogrammetry images – on whether there is a name for such 'found' artifacts within a church – now finds a name, through Menotti, leading me to celestial images. For Christian religious icons considered to be 'unpainted' and thus especially authentic, 'the term *acheiro-poieton* ("not made by hand") came into use' (Belting, 1994: 49). Kitzinger explains that

acheiropoieta are of two kinds: either believed to have been made by non-human hands 'or else they are claimed to be mechanical, though miraculous, impressions⁶³ of the original' (1954: 113). Acheiropoieta not only self-generate, they also self-replicate, and Kitzinger describes how a celestial 'found' picture of Christ, wrapped in a cloth while being transported, produced an identical copy of itself on the cloth; in that moment, the two varieties of miraculous images are thus combined⁶⁴; of particular interest is his comment that mechanical reproduction within acheiropoieta is curiously prophetic of methods used in photography (Kitzinger, 1954: 115).

Fulfilling that prophesy, 'the invention of the photograph indicated the return of the acheiropoieton' (Petri, 2018: 166). Photography's self-generating quality is evident in the words of one of its pioneers, William Henry Fox Talbot - that it is not the artist who makes the picture, but the picture which makes itself, and photography is 'nature's pencil' and 'natural magic' (in Geimer, 2011: 28-9). Art historian Peter Geimer considers some of André Bazin's meditations from 1945 to read like a compressed and revised version of Talbot's thoughts (2011: 29). In Bazin's words:

'[f]or the first time an image of the world is formed automatically, without the creative intervention of man [...] All the arts are based on the presence of man, only photography derives an advantage from his absence' (1967: 13).

For Geimer, it is no coincidence that Bazin invokes the Turin shroud, allegedly containing Christ's only authentic reproduction (2011: 29). When Bazin exclaims that 'the image [...] shares, by virtue of the process of its becoming, the being of the model of which it is the reproduction; it is the model' (1967: 14), the iconicity of the photographic image is striking; as per Marie-Jose Mondzain, '[t]he icon will escape the function of reference; rather, it will itself become what is referred to' (2005: 66).

From the above, I understand that the acheiropoieton is not an artifact, but a *miracle* that requires the disappearance of the hands of the painter, so that the icon can perform its role as divine organ – the same disappearance is required of the photographer's hands. Accordingly, the iconicity of photography can be better appreciated once one regards the proto-photographic quality of religious icons, that ask of their faithful to believe in their inhuman magical origin. In recent years, digital photogrammetry is the new miracle within the acheiropoieton lineage of icon and photograph, and

⁶³ Some of the most well-known acheiropoieta belong in this 'imprint' category, including the image of Edessa (known as Mandylion), and the legend of St. Veronica, who gave her veil to Christ to wipe his forehead while carrying his cross to Golgotha, whereby his features were miraculously impressed on the cloth (Dobschütz, 1899, in Petri, 2018: 154).

⁶⁴ Kitzinger suggests that the vogue of image worship was the beginning of a process whereby the icon replaced the relic as a principal object of devotion in the Greek Orthodox Church, and the idea of mechanical reproduction seems to be more popular than the celestial, making the icon an organ of the deity itself (1954: 114-5).

the 3D digital model recombines the celestial picture miraculously found *and* the imprinted relic, its copies replicated in myriad applications including digital assets for video games and heritage conservation. How can I explain the origin of my own *miraculously* found church images? The italics reflect my genuine surprise when I saw the man in a blue shirt (Fig.19), and afterwards my own smeared imprints on the floor of the church (Fig.22). There are two ‘miracles’ here, in my unexpected finding of such an image, and in the origins of the image itself.

The ‘finding’ element can be explained through the notion of serendipity, a word out of a fairy tale⁶⁵, denoting ‘the faculty of making fortunate discoveries by accident’ (Brookes et al., 2023: 1815). However, I described the concurrence of several factors as co-incidences, to accentuate that this is not ‘just’ luck but events happening together, including the man in the blue shirt talking loud enough for me to notice him; his concentrated stillness and my own movement; the ‘camera-walk’ taking place within a church. Even more than serendipity, a notion of value here is *synchronicity*, whose principle, according to Jung, ‘asserts that the terms of a meaningful coincidence are connected by *simultaneity* and *meaning*’ (in de Laszlo, 1991: 277). Synchronicity befits this occasion, because the SfM mesh is itself performing an enmeshing of the time that the ‘camera-walk’ took, and in the process several minutes are synchronized into a single instant, differing with each iteration. Equally, because my practice comes out of intense and extended experimentation while ‘mis-using’ software in a non-ideal manner, it is also the product of resilience, and time is needed to extract, notice, and reflect upon the meaning of my findings, so that the initial ‘miracle’ may be re-conjured in subsequent practice.

To understand the miraculous origins of such images, I return to Flusser explaining that technical images were invented in the 19th century to make texts comprehensible again, to put them under a magic spell and overcome the crisis of history (2000: 13). Such a magic spell is recast in the kind of contemporary technological art that Hébert describes as obscuring the human body in the centre of the artistic activity so that ‘the whole thing works like magic’ (Hébert, 2005: 186). The magic is also hidden when, in order to maximise its covering of the world, the *GoPro fusion* also erases its own presence from the images it produces, essentially making itself disappear, through the positioning of the lenses and algorithms stitching the two videos together into a panorama. As I hold the camera high, I am forever under the eyes of its two spherical lenses. One covers 180-degrees ahead and excludes me – apart from my feet and arm that sometimes make an entrance in the front lens – while the one at the back fixedly points at the top of my head and the front of my body. Even if I rotate the

⁶⁵ The Collins Dictionary says that the word was coined from Horace Walpole, from the Persian fairytale *The Three Princes of Serendip*, whose heroes possess that gift (Brookes et al., 2023: 1815).

camera by 90 degrees to move my body away from the centre of the back lens (so that the two lenses look left-and-right instead of back-and-front) the eventual stitching of the two half-spheres will sew me back into spherical video-existence. Still, in the efforts of the camera to erase itself along with the selfie stick, a portion of my hand often gets eaten away in the video.

Bitten by the apparatus⁶⁶ that it holds, my hand partially misses in action while persistently carrying the video-image forward. If the GoPro has eaten some of me away, the SfM photogrammetry spits me back out: the reason that I find my own markings, is that I am straying from the recommended method. My moving body has occluded some of the information that the SfM algorithms need for its calculations, which causes holes and gaps in the mesh; at the same time, my excessive, *animated* presence within the 360-video marks the texture with its traces. Remembering Minkin, rather than digital dirt affecting physical printing, my body *is* the physical dirt that messes-up the digital process. Because I do not correct my meshes, my SfM imperfect photogrammetry reveals the body that played with it, and with the camera, and lacks the hands-free magic of the *acheiropoieton*; instead, it is precisely a *cheiropoieton* (a hand-made thing) of a contaminated miracle. Leaving the Church of São Domingos, the next writing finds me beginning to ascend a staircase towards the sky.

⁶⁶ Flusser explains that the apparatus derives from Latin *apparare*, 'to make ready', and '[t]he photographic apparatus lies in wait for photography; it sharpens its teeth in readiness. This readiness to spring into action on the part of apparatuses, their similarity to wild animals, is something to grasp hold of in the attempt to define the term etymologically' (2000: 22).



Figure 10. Fisheye front view still from abandoned farmhouse 'camera-walk' in August 2018



Figure 11. Fisheye front view still from abandoned farmhouse 'camera-walk' in August 2018



Figure 12. Panoramic still from 'camera-walk' in São Domingos (02:47:16) September 2018

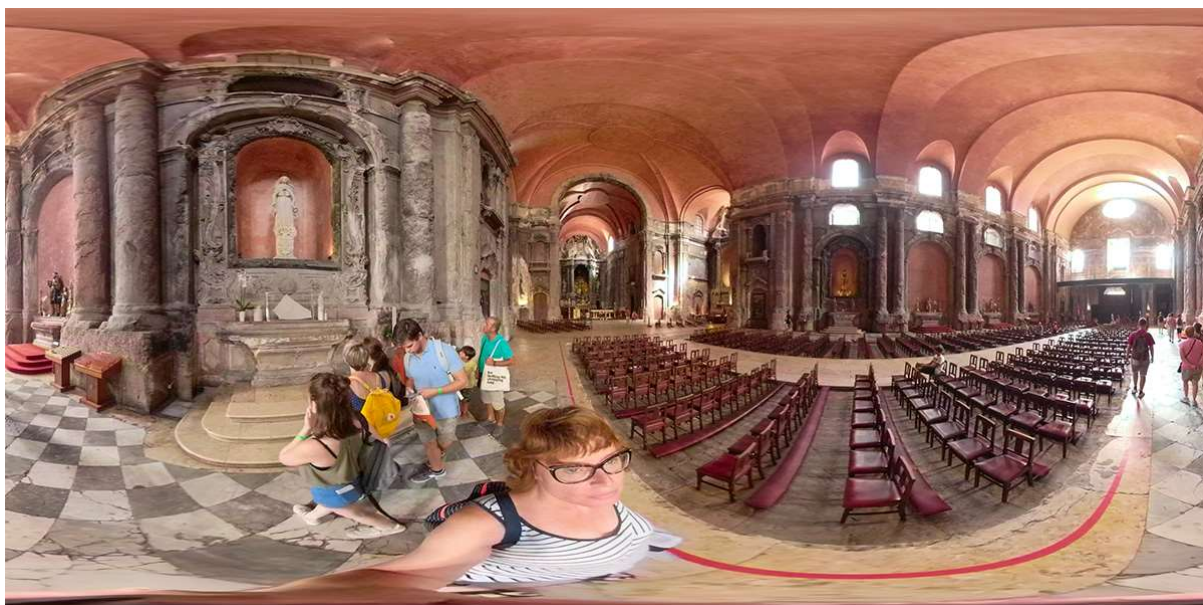


Figure 13. Panoramic still from 'camera-walk' in São Domingos (02:47:16) September 2018

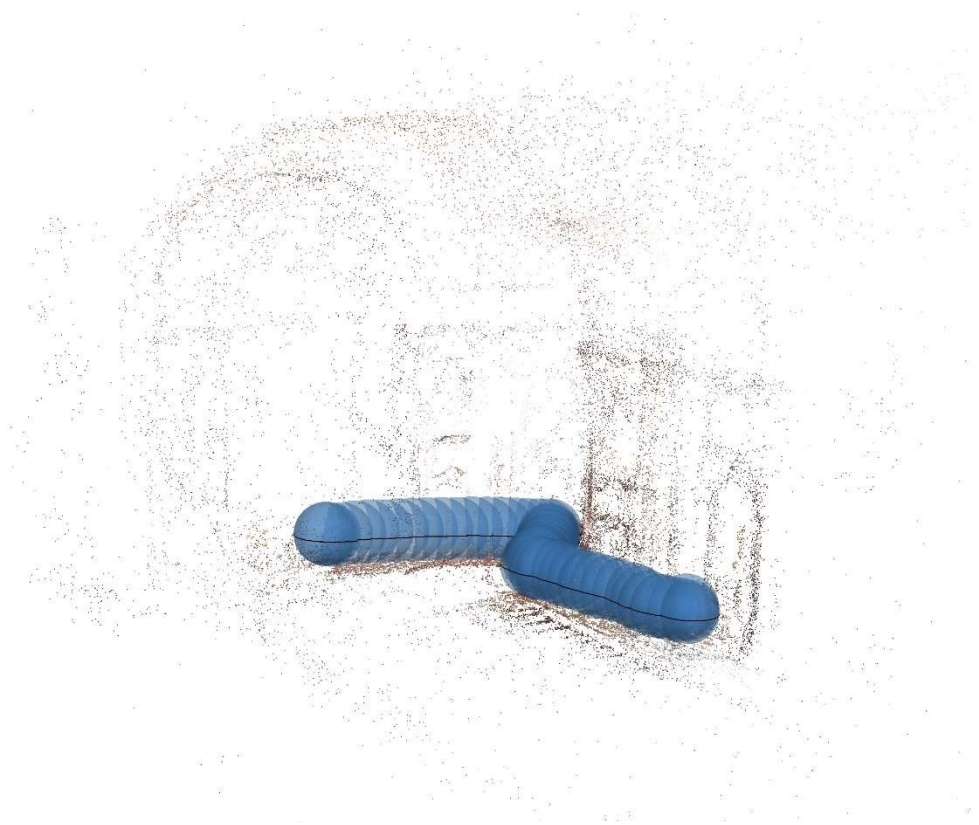


Figure 14. São Domingos fragment: sparse cloud render with spherical cameras

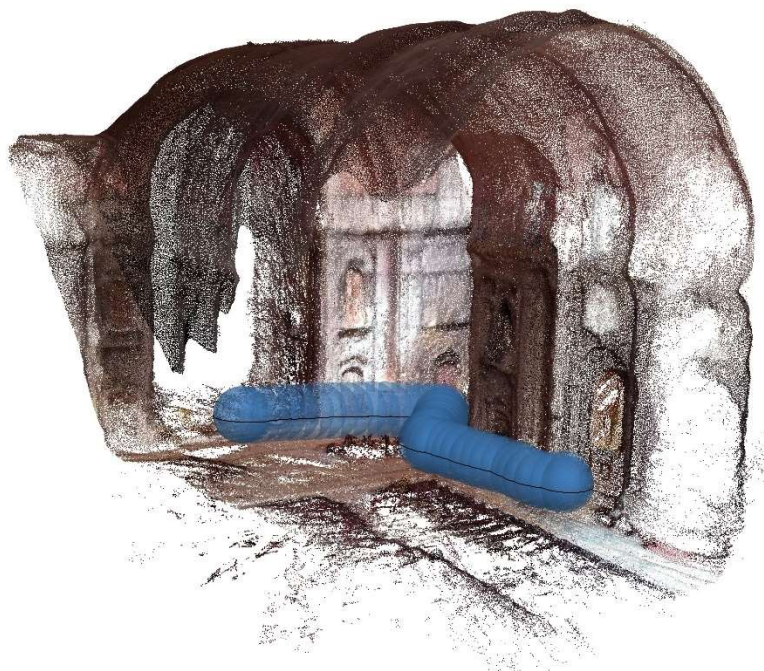


Figure 15. São Domingos fragment: dense cloud render with spherical cameras



Figure 16. São Domingos fragment: model textured with spherical cameras



Figure 17. São Domingos fragment: *Church hole*



Figure 18. São Domingos fragment: side view



Figure 19. *Man in a blue shirt* (Athanasopoulou, 2018)

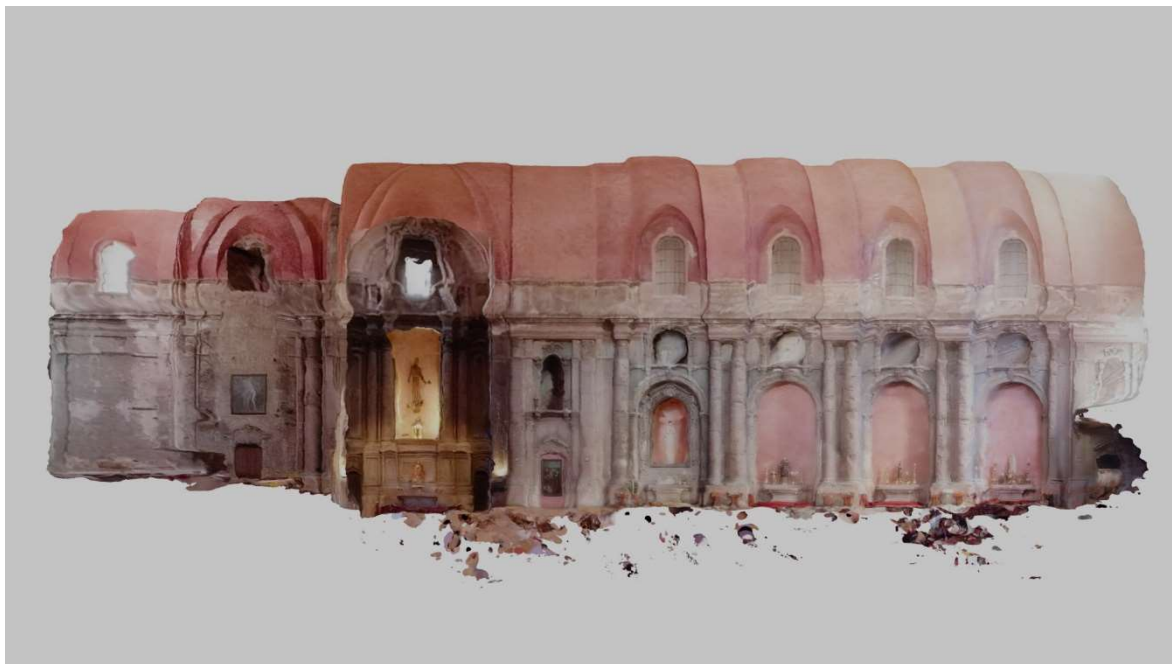


Figure 20. São Domingos full: side view

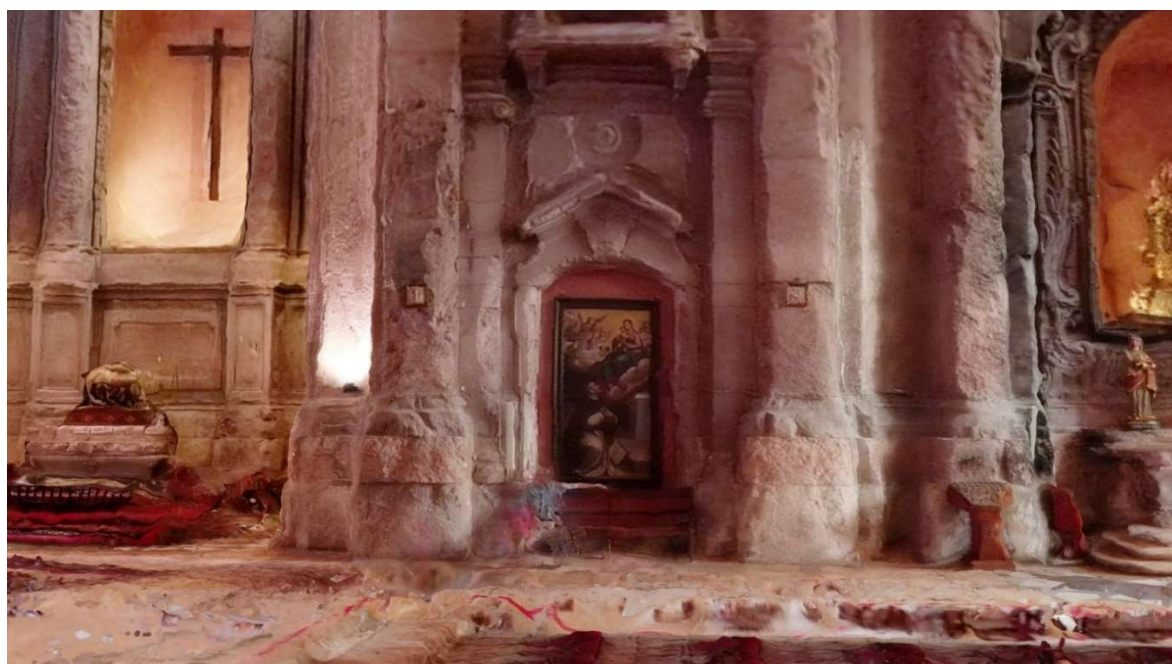


Figure 21. *Man in a blue shirt II* (Athanasopoulou, 2018)

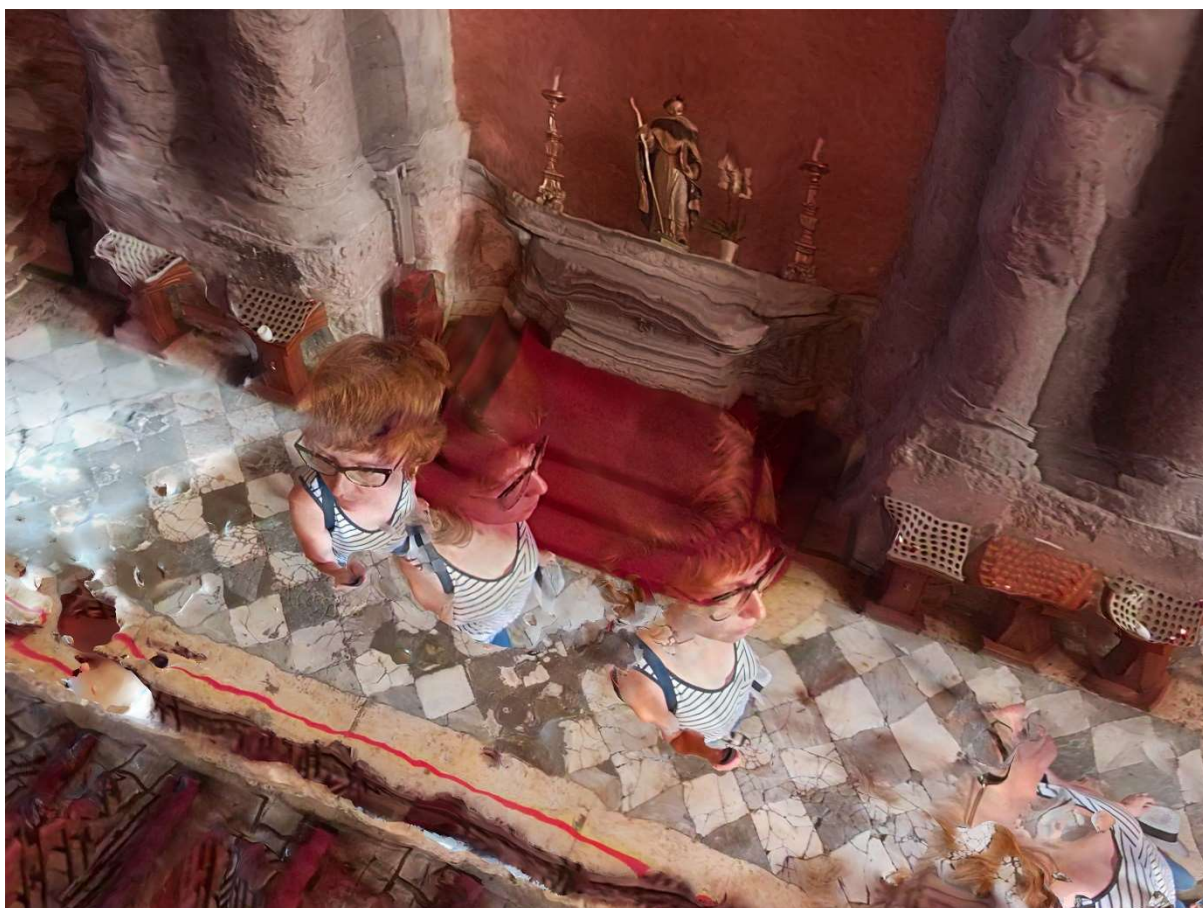


Figure 22. *Cheiropoieton* (Athanasopoulou, 2018)

Polykatoikia: the beginning

This writing begins at the entrance of an eight-floor *Polykatoikia* in Aiolou street, in the historic centre of Athens. From *poly* ('multiple') and *katoikia* ('domicile'), this is the collective name of multi-floor buildings that may simultaneously house flats, businesses and offices; its type dominates the Athenian cityscape. Standing in front of the entrance in October 2018, the melancholy of the street is peeling off the surrounding façades whose boarded-up shopfronts speak of the economic crisis affecting Athens from the mid-2000s. Let us begin at the beginning: 'Polykatoikia, as a generic building typology, is dead at the moment' says architect Panos Dragonas (2014: 96), explaining that the urban space of Athens reflects the financial crisis and austerity measures, with the ravaged small-scale commerce 'deserting the ground floors of the polykatoikias. The porosity of the building blocks has been canceled, as life does not take place anymore through the Athenian arcades' (2014: 95). Inside, I find a lobby clad in dark wood where a wall panel carries the signs of the law practitioners' offices that this building exclusively houses. This dwelling of barristers, lawyers, solicitors and notaries – nomologists and their archives – brings me back to the beginning, to Derrida's *arkhē*:

'Let us not begin at the beginning, nor even at the archive. But rather at the word "archive"—and with the archive of so familiar a word. *Arkhe* we recall, names at once the *commencement* and the *commandment*. This name apparently coordinates two principles in one: the principle according to nature or history, *there* where things *commence*—physical, historical, or ontological principle—but also the principle according to the law, *there* where men and gods *command*, *there* where authority, social order are exercised, *in this place* from which order is given—nomological principle' (1995: 9 emphasis in original).

Derrida's emphasis on the nomological principle of the archive takes me back to the oldest sense of *Nomos*, which was not law but came from 'nemein' meaning both 'to divide' and 'to pasture'; *nomos* 'is the immediate form in which the political and social order of a people becomes spatially visible – the initial measure and division of pasture-land' (Schmitt, [1950] 2006: 70). In the *Polykatoikia* at Aiolou Street, I encounter an opening in-between the initial sense of *nomos* as measuring, and the initial place of the archive in the nomological – as embodied in a physical building in Athens. There is an additional, personal beginning: I have been in this place before, taking the lift to the eighth floor to sign paperwork at an office housing two lawyers and a notary.

Three elevator shafts mark the deep end of the lobby; framing them like brackets, twin staircases curve up to a windowless mezzanine where the central staircase of the building begins to rise. For Georges Perec, stairs form part of 'this neutral place that belongs to all and to none, where people pass by almost without seeing each other, where the life of the building regularly and distantly

resounds' (Perec, [1978] 2008: 3). I extend the stick and lift my 360-camera, press the record button and begin to climb the staircase, meeting mostly silence - there are no apartments here, only law offices where quiet work takes place; a few clients use the lifts and never join me on the stairs. I follow this stair-thread meandering upwards and holding the floors together, remembering that 'stairs have the same significance to the vertical organisation of the house as the spine to the structure of the body'⁶⁷ (Pallasmaa, 2000: 9). My own spine extends upwards as I walk eight flights up, holding the camera high. I feel a light and pleasant dizziness steadily spiralling around the staircase's central well, illuminated by a light-well whose milky window glass brightly denies me a view (Fig.23-24). The blocking of outside cues blurs the separate floors together; the shadows remain soft and the changes are subtle, with lift doors painted in shifting browns, small radiators and fire-extinguishers. One floor truly surprises, with a wall painted a screaming emerald green. 'We don't think enough of staircases' cries Perec: 'Nothing was more beautiful, in old houses, than the staircases. Nothing is uglier, colder, more hostile, meaner in today's apartment buildings. We should learn to live more on staircases. But how?' ([1974] 2008: 38). This mundane 1970s building matches Perec's time. With its layers revealed to me through peeling wall paint, I become upwardly immersed in a body marked by time; as I give it my time measured in steps, it opens up to me. There is no hostility here, only silence, dust, echoes, and a certain tired reflection of Athens; walking in this old body, I am haunted by it as I also haunt it.

The final flight concludes into a narrow perch where a forgotten white board leans against a wall. A blank canvas, it reimagines the sparseness of the space as an accidental gallery, a white cube (Figs. 25-26). I walk the stairs down, back to the beginning, beginning to imagine the model that my steps will produce. Because I hold a camera whose views I cannot control, I am free to look and walk towards any direction and yet can never get too close: I am forever at my own arm's length. This is another way to consider my methodology's de-familiarization: instead of framing certain views and occluding others, shooting with a 360-camera foregoes the intimacy afforded by proximity or magnification, and instead takes in everything in its field of view. Being part of this view will also fix me in the future image, because I carry the camera rather than leave it behind me on a tripod. Thinking of the video-to-be, I know that my body carrying the camera's body will always be present in the archive. Thinking of the model-to-be, I wonder how my movements will affect its body. Up and down the Polykatoikia, my 'camera-walk' took a little over eight minutes. Exiting the building, I am leaving behind the offices and archives of lawyers; what I do not yet know is that there is an artist among the nomologists.

I go back to the archive's *arkhe* with performance scholar Diana Taylor, who says that:

⁶⁷ Pallasmaa credits his thought to theorist and filmmaker Peter Wollen saying that '[t]he staircase is the symbolic spine of the house' (Wollen, in Pallasmaa, 2000: 9).

‘[a]rchive, from the Greek, etymologically refers to “a public building,” “a place where records are kept.” From *arkhe*, it also means a beginning, the first place, the government. [...] [T]he archival, from the beginning, sustains power [...] The repertoire, on the other hand, enacts embodied memory: performances, gestures, orality, movement, dance, singing—in short, all those acts usually thought of as ephemeral, nonreproducible knowledge. Repertoire, etymologically “a treasury, an inventory,” also allows for individual agency, referring also to “the finder, discoverer,” and meaning “to find out.” (2003: 19-20).

It is a myth that the archive is unmediated and resists change, says Taylor, as what makes an object archival is the process whereby it is selected, classified, and presented for analysis; individual things – books, DNA evidence, photo IDs – may also mysteriously appear or disappear from the archive; while the archive cannot capture or transmit the live performance, that does not mean that performance – as ritualized, formalized, or reiterative behavior – disappears (Taylor, 2003: 19-20). The repertoire requires presence as ‘people participate in the production and reproduction of knowledge by “being there,” being a part of the transmission’ (Taylor, 2003: 20). The archive and the repertoire appear as opposites, because the archive seems stable while the repertoire both keeps and transforms choreographies of meaning, however, performances also replicate themselves through their own structures and codes; what this means is that the repertoire, like the archive, is mediated and embodied, and performed acts generate, record, and transmit knowledge. Rather than a binary, the archive and the repertoire usually work in tandem (Taylor, 2003: 19-21).

My ‘camera-walk’ is a repertoire that I perform in order to ‘find out’ (the other sense of repertoire) a space, and to include its archive in the repertoire (as treasury) of my digital inventory. Because it was a camera-on-a-stick that made me lift my arm high, and exit my studio, and slow my movement, and set my gaze free from a lens, the repertoire of the ‘camera-walk’ works in tandem with the recording apparatus that I carry – the black box that plays its program, and which I play along with, and which plays me as well. The camera frames the walk, but not the view. While ‘[a]nyone who is involved with apparatuses is involved with black boxes where one is unable to see what they are up to’ (Flusser, 2000: 73), it is precisely the lack of LCD screen or viewfinder in my GoPro which ‘opens my eyes’ to an appreciation of movement beyond vision. In the beginning of the ‘camera-walk’, the gesture of extending and raising the stick high brings a postural change as my back straightens up and I feel somehow lifted. My gestures slow down because I aim to avoid a camera blur which would complicate the impending photogrammetric processings. The need to walk steadily and lightly brings along a consciousness of my movement, and a change of pace. Trying to stir the space through which I travel as little as possible, I take elastic steps that make contact with the ground with the metatarsal rather than the heel. When other people are present as witnesses, I mostly stay silent so they too may remain less animated. Shooting sight-free and word-free while forecasting what the camera’s lenses can see,

I carry forth an omniscient frame whose centre is at the end of my stick. I feel time and space as measured by my steps, and I cannot rush, which affords me a pleasant mix of languish and intensity, a concentrated unhurriedness and a new awareness of my entire body moving purposely forth: a grounded lightness.

But how to describe this amalgam of sensations, of feeling the world through my feet while simultaneously acknowledging my own body's feeling-in-movement? Deeply interested in the history and science of bodily sensation, Mark Paterson describes how lacking language can be when one attempts to communicate feelings and sensations arising from within the body during movement and action, a problem compounded by the emphasis on visibility and visual metaphors in western culture (2009: 766). Sheets-Johnstone argues that the false Western dichotomy of mind/body 'precludes taking movement seriously and giving the body its due' (2011a: 4), when actually 'verbal language is post-kinetic' (2011a: 438), and 'movement is in fact our mother tongue' (2011a: 195). She explains that kinesthesia, 'the sense we have of our own movement' (2011b: 5) is fundamental to our ability to make our way in the world, which becomes known to us first by moving and touching our way through our tactile-kinesthetic bodies (2011a: 52). Sheets-Johnstone emphasizes that while '*[w]e literally discover ourselves in movement*' (2011a: 117 emphasis in original), our awareness of our own movement is not always at the focal point of our attention; infancy apart, kinesthesia is marginalized in everyday human adult awarenesses' (2011a: 473).

I recognise that, during the 'camera-walk' - precisely because I am engaged in shooting but *not* looking through a lens or a screen - my movement becomes the centre of the experience, switching-on what was taken for granted in (my) everyday life. Aware that the camera records an omniscient frame, I stroll without fear that I may be missing some important detail, and take in the 'big picture', free to turn my head in any direction, and follow my feet. Crucially, by *not* focusing on the camera and the act of shooting, and by staying silent, I listen to my body and 'walk into' my own kinesthesia - not as planned, nor entirely by accident either, but through peripatetic wanderings while lifting high a camera-on-a-stick. The centrality of movement does not end with the shoot, as all my interactions with my computer happen through my hands, my fingers, my shoulders haunching over the keyboard, and my neck straining, my feet touching the floor or hanging from the chair; in short, *with my whole body*. Even 'just' to gaze at something requires the whole body, and Drew Leder explains that:

'[w]hen I gaze at a landscape I dwell most fully in the eyes. Yet this is only possible because my back muscles hold my spine erect, my neck muscles adjust my head into the proper position for viewing [...] My whole body provides the background that supports and enables the point of corporeal focus' (Leder, 1990: 24).

It should also be considered how one gets to gaze at a landscape; whether they arrived on foot, or on

a bicycle, whether they drove there; perhaps they are looking through a window. Questions of access are pertinent: can somebody who uses a wheelchair get to the spot? Can the window be opened with fingers affected by arthritis? James J. Gibson constructed the concept of affordances to imply the complementarity of the animal and its environment – what the environment offers the animal, what it provides or furnishes, for good or ill (Gibson, [1979] 2015: 119). I can expand on Leder and Gibson even while gazing at my SfM photogrammetry model of the *Polykatoikia* (Figs.29-30), rather than within the natural landscape. Firstly, it is with my whole body that I perceive the model on my screen, even before interacting with the computer peripherals. While I cannot physically perambulate or walk towards the digital model through my monitor, I can press number keys on my keyboard to ‘jump’ to predefined views; I can also rotate my view by right-clicking and dragging my mouse; or, I may move, scale, and spin the model along an axis or more.

Digitally traversing my SfM photogrammetry model of the *Polykatoikia*, I see its central staircase transformed into ruins (Fig.27-28). Calculated with a large number of stills and high detail, the mesh is dense and with gaps, while my body is absent (Fig.29). Calculating towards a smaller polygon count and with less images used – the model becomes less detailed and some of the gaps begin to close up (Fig.30). Eventually comes the *reversal* of absence: rather than cutting holes into the body of the 3D model, my body now projects itself, or rubs itself like a friction burn, on the floor and walls (Fig.31). The photographic texture takes precedence over the 3D model and suddenly, rather than missing, I am all presence, haunting the space and covering up the details, embedding myself in the architecture. Through this mix of presence and absence, erasure and over-writing, holes and debris, I return to the space of the ‘camera-walk’ through its models. Once more, I go back to the beginning, through the archive. This is also a return to the day of the ‘camera walk’, and a resurrection of past time; the eight minutes of my camera-walk have been condensed, and become reanimated by my hands manipulating the mouse, or by the movement of my body in VR. Through my screen, I examine my models by making them spin around, as I also often spin around in VR, dizzily, like when I was walking up-and-down the staircase.

Through my solo experimentation, I have understood how I have been applying Farocki’s fifth unspoken rule, ‘[w]here reality condenses itself to a test model is where you should place your camera’ (Ehmann, 2016: 23). The digital model that I produce *is* a test model where reality has been condensed into a virtual reality - not the headset kind, but in Steuer’s expanded understanding of telepresence through a screen (1992). My model is where I place my actual-virtual camera, and the images that I render from it are continuing my documentary practice through the space of photogrammetry as a studio. It is in the model that I also confront ‘hauntings of past inhabitation’

(Cresswell, 1915: 7), and I remember the feeling of moving inside the Polykatoikia as haunting and being haunted, with parts of me – an arm, a foot, clumps of my hair – becoming visible in the texture (Fig 33). Within the ‘camera-walk’ in October 2018, I was already returning, to these stairs, and to Athens. Since then, I keep returning to the archive, encountering my own phantom limbs; like me, they are here *and* there, firmly in-between.

The haunting calls forth the specter, which ‘is always a *revenant*. One cannot control its comings and goings because *it begins by coming back*’ (Derrida, 1993: 11 emphasis in original) The specter animates Derrida ‘hauntology’, a term he coined in *Specters of Marx* ([1993] 2012) as a mix (or an in-between) of ontology and haunting. An Animator’s practice befits hauntology, for bringing to life that which was never alive before. Animation conjures, spectates, and speculates *something* through the gap between two images, it is both subtractive *and* additive. Animation is borne in the constant replaying of the animated sequence, performed first in private by the Animator who persistently – hauntingly – returns to her frames, her rushes, her loops. Hauntology is from the start a returning act, and Derrida had been returning to ghosts, phantoms, and specters before the word hauntology was written. In the film *Ghost Dance* (McMullen, 1983) Derrida speaks of himself as a ventriloquist ghost playing himself, in his place. He explains that cinema is an art of *phantomachia* (a battle of phantoms), an art of allowing ghosts to come back. Cinema plus psychoanalysis equals the Science of Ghosts (*phantomes*). He begins to speak of Freud’s ghosts, and continues to say that, just like in Kafka’s letters, modern developments in technology, cinematography and tele-communication enhance rather than restrain the realm of ghosts. The possibility of tempting the ghosts of Freud, Marx, and Kafka was what tempted Derrida to partake in *Ghost Dance* (Derrida, in McMullen, 1983).

There is a point of crossing here, between Derrida evoking Kafka’s ‘ghosts of letter writing’ together with the ghosts of the telephone and modern tele-communications, and Steuer’s *telepresence* as a sense of presence experienced in a mediated communication, including letters, telephones, televisions, and video games (Steuer, 1992). A specter is simultaneously present *and* absent, so such *telepresence* is equally a *teleabsence*; besides, any live-action film allows ghosts to come back from the beginning, including Derrida’s. Cinema as a battle of phantoms returns me to my phantom limbs appearing sporadically (but not accidentally) in my photogrammetric meshes, as I tempt them out through SfM calculations. These phantom limbs persist even when their movement has been frozen - *still*, they persist - and it is precisely the camera that produces them. Exiting the program, I am leaving behind a 3D model deriving from walking up-and-down a spiral staircase in Athens, meandering through the offices and archives of lawyers; what I *still* do not yet know is that there is an artist among the nomologists.



Figure 23. Fisheye front view still from *Polykatoikia* 'camera-walk' in October 2018



Figure 24. Fisheye back view still from *Polykatoikia* 'camera-walk' in October 2018



Figure 25. Fisheye front view still from *Polykatoikia* 'camera-walk' in October 2018



Figure 26. Fisheye back view still from *Polykatoikia* 'camera-walk' in October 2018



Figure 27. *Polykatoikia I*



Figure 28. *Polykatoikia II*

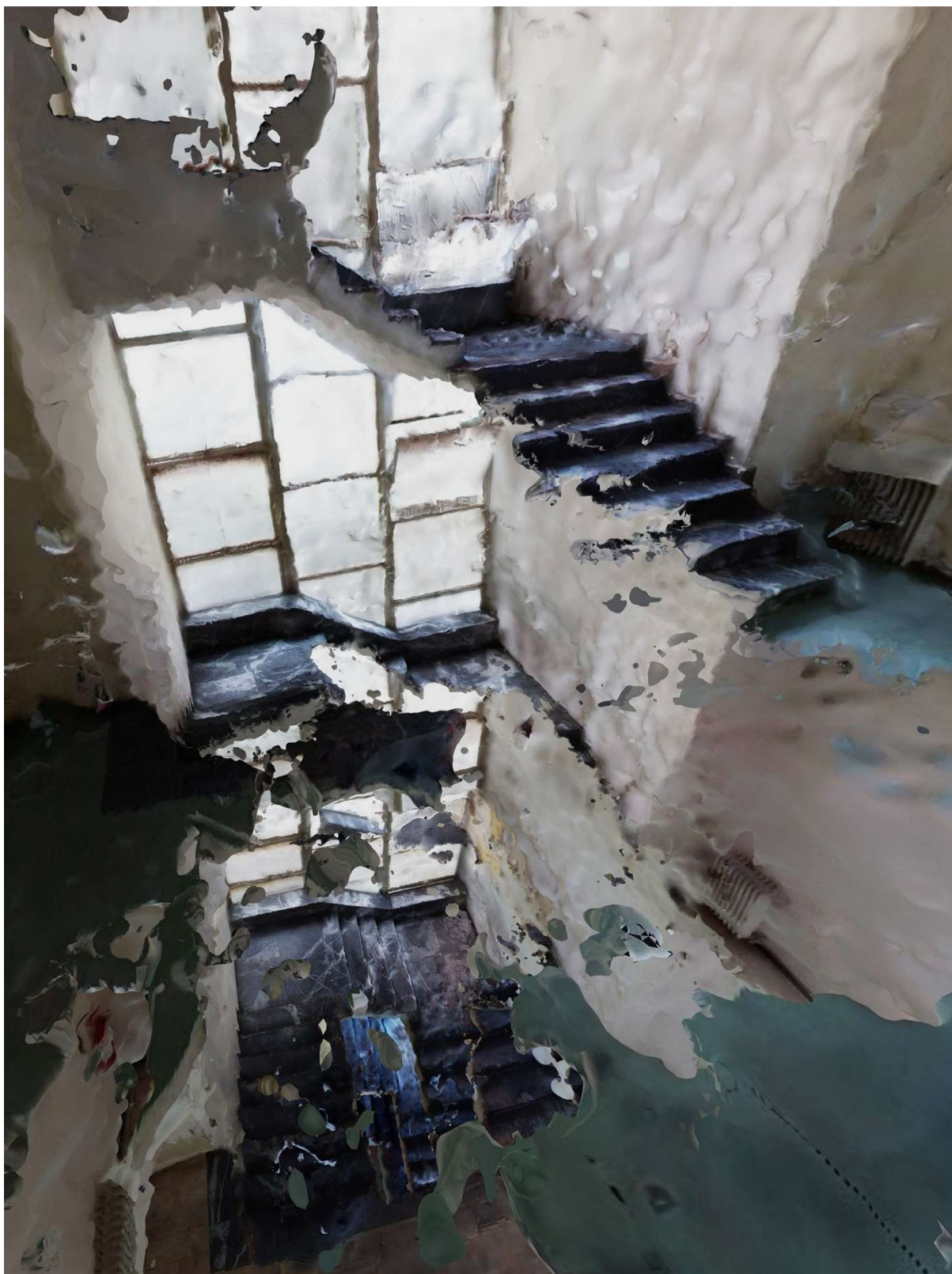


Figure 29. *Polykatoikia III*



Figure 30. Polykatoikia stairs A



Figure 31. Polykatoikia stairs B

Chapter 6: Collaborative Practice

Introduction

My doctoral research originally involved walking with a 360-camera through patients' and doctors' everyday lives, and using the spherical video to build 3D models for VR experiences. Using Farocki's '(unspoken) rules' (Ehmann, 2016: 23-4), my solo peripatetics from São Domingos and the Polykatoikia in Athens can now be applied to home visits. My protagonists will perform their personal work scripts in a doctor's surgery, or even at home, because being a patient can also be hard work. Through solo practise, I learned how stillness and movement affect SfM photogrammetry results. My *silent* presence will encourage my subject to stay still so they could appear in the model like the man in the blue shirt, but they may also move to avoid being *caught*. Because my calculated models are excessive in detail and I avoid correcting them into 'clean', ideal versions, the idiographic imperfections of the mesh may protect the anonymity of any passer-by, or even of my participant should they wish so.

Within ***Tread Softly*** (pp.114-60), I discuss my collaboration with my father-in-law Mick Clark, who is patient enough to become my first virtual patient. While the pandemic disrupted the space of my VR practice, ***Deep Waters*** (pp.161-75) describes a site-specific installation wherein the 'camera-walk' was performed from a distance during lockdown conditions, and ***Polykatoikia:Peripatos (back to the beginning)*** (pp.176-90) finds another way into a peripatetic exchange through AR. The chapter concludes with an account of ***The distance between the staircase and the sky*** (pp.191-210), a 2022 film which puts the knowledges and landscapes I have gleaned into collaborative practice.

Tread Softly

Near the end of his *Species of Spaces*, Georges Perec says 'I would like there to exist places that are stable, unmoving, [...] unchanging, deep-rooted; places that might be points of reference, of departure, of origin' ([1974] 2008: 91). Amongst such places he names the house where he may have been born and the attic of his childhood filled with intact memories. It is because these spaces don't exist that 'space is a doubt' and he has to constantly mark it, designate and conquer it. Perec continues: 'My spaces are fragile: time is going to wear them away, to destroy them. Nothing will any longer resemble what was, my memories will betray me, oblivion will infiltrate my memory' (1974: 91). Facing the ephemerality and fragility of space, Perec's final sentence holds on:

'To write: to try meticulously to retain something, to cause something to survive; to wrest a few precise scraps from the void as it grows, to leave somewhere a furrow, a trace, a mark or a few signs' ([1974] 2008: 92).

By June 2018, before I begin experimenting with the writings of photogrammetry, my father-in-law Mick Clark has been writing diaries since he was a Leeds schoolboy. He writes about his day-to-day, his walks and climbs, his visits to the theatre with Monica, his wife of nearly fifty years. Among his various diaries, Mick keeps one which he calls his "dizzy diary", where in July 2013 he begins to note some strange symptoms: 'fell over a few times in the garden playing football'; 'dizzy while walking in Lyme Park'; 'very dizzy night'; 'overbalanced and fell in the kitchen'. A few weeks later, 'saw Dr X', and 'blood test'. After October 2013, Mick's 'dizzy diary' entries become a little more detailed, including his activities from both good and bad days:

'Birthday – 67, enough to make anybody dizzy. Good night – day in Bakewell. Still slightly dizzy for most of the day' ('dizzy diary').

His symptoms were initially dismissed by doctors attributing them to old age, or the onset of diabetes, or panic attacks, but in January 2015, he writes:

'Overbalanced and fell whilst doing my exercises – bruised legs and feeling an idiot. In the afternoon we drove to [...] [the doctor]. He finally said the dreaded words it's probably motor neurone disease [...] Lots to think about and it came as a bigger shock to Monica than me though we were both very quiet on the way home and for the rest of the day' ('dizzy diary').

Following his MND diagnosis⁶⁸, Mick compiles together the events that took place in the two previous years as 'a neurological journey' which he shares with friends and family in September 2015,

⁶⁸ MND is a disabling and ultimately fatal neurodegenerative disease, characterised by progressive paralysis and muscle atrophy, with eventual death from respiratory failure (Hobson et al., 2016: 553)

explaining that:

‘I wrote this account of the last two years for a number of reasons: mostly for myself to try to clarify my thoughts, partly for Monica and the family to help their understanding and lastly for anybody else on a similar journey’ (‘dizzy diary’).

While the ‘dizzy diary’ was initially a list of unknown disruptions to share with doctors in the hope of a cure, with the passing of time it becomes a way of dealing with MND, a disease which remains incurable. Our collaboration begins in 2018. Mick and I are in the family home in Disley, in his study, which is now also his bedroom: a well-lit and fairly large space which makes it easy for him to move around with his powered wheelchair. There are elements of a hospital room, with a specialist bed and handles in the walk-in shower; there is a desk with a computer, filing cabinets, Monica’s piano. The couple’s love for Shakespeare is framed in *Hamlet* and *Richard III* posters. Among the many family photographs, one has pride of place on a pedestal – it is of Monica. Mick worked with computer programming, and he is interested in VR though he has not tried it yet. As we discuss my doctoral research, I explain that my plan is to recreate the personal spaces of patients and doctors through VR, augmented with their voices. I ask Mick if he would like to be a contributor based on his experiences as a patient, voicing his journey in the wider medical landscape from his own room.

With Mick’s voice becoming more affected by MND, he ‘voice-banks’, by reading words to a microphone towards a synthetic voice that in the future can read out his texts. His interactions with friends, family and medical professionals increasingly take place via email and video calls; in the future, when his laptop and conventional mouse become hard to manipulate, he will learn to use a special tablet with a mouse controllable by a single finger. Susan Kozel speaks of ‘ubiquitous computing’ for the way that ‘calm’ technology (Weiser, in Kozel, 2012: 337) goes quiet or becomes less noticeable when it is on the periphery; at the same, ‘[w]orn over time [ubiquitous] systems bump against us, causing us pleasure or annoyance’ (2012: 338). What I notice, is that rather than remain quiet, ‘Mick’s media’ as Monica calls them, malfunction almost daily, so that much time is spent fixing what was supposed to be a fix. While his repertoire of self-movement is diminishing, his poetry repertoire – including some he used to recite by heart – is augmented in significance. I ask him if he would like to read one of his favourite texts to me, in his natural voice, for me to record. He chooses Yeats’ *He wishes for the Cloths of Heaven*, known also as *Tread Softly*, for its final line:

Had I the heavens’ embroidered cloths,
Enwrought with golden and silver light,
The blue and the dim and the dark cloths
Of night and light and the half-light,

I would spread the cloths under your feet:
But I, being poor, have only my dreams;
I have spread my dreams under your feet;
Tread softly because you tread on my dreams

William Butler Yeats ([1899] 2000)

When Mick reads the poem in June 2018, and when I listen to the recording subsequently, I listen in silence. Being ‘silently present’ allows for the consideration of silence not as ‘the absence of sound but [as] the beginning of listening’ (Voegelin, 2010: 83). By *not* questioning, and by *just* listening, attention is paid not only to the meaning of the words but also to the grain(s) of the voice, of the poem and of the speaker. Asking my collaborator to read another’s poem rather than to create their own monologue elicits a response that is subtly personal, rather than explicitly autobiographical. Through performing the poem, they may speak not only of themselves but also for themselves, by rehearsing a poetic voice that has already made them feel in a certain way. Listening back to the recording allows me to return, again and again, to their voice and also to the poem’s voice – through this ‘double’ listening comes a doubled attention. This is attention-as-waiting (‘attendre’ in French), which over time may bring out unexpected findings and connections. Over the next years, I listen to Mick’s voice reading this poem many times, while his real-life voice becomes fainter with every visit. The poem itself, with its poignant ending plea to ‘tread softly’ will continue informing my research path, but right now, within this text, I am still with Mick in his study.

In our next exchange in late August 2018, our first collaborative 360-video is a static one of Mick going about his morning, shot with my GoPro perched on a table-on-wheels by his bed. I remember Farocki’s (unspoken) rules – never make interviews with your protagonists; film them in their work lives; capture existing role games, courses, negotiations (Ehmann, 2016: 22). Mick is in his place of work; here is the desk and the computer where he writes his ‘dizzy diary’, his own script about being a patient. We have agreed that, after turning the camera on, I will exit the room, and he will decide whether to address the GoPro, or turn his back to it and keep working. Because the 360-video acts like my memory-aid, for the purposes of this text I go back to it, to revisit our exchange. The video begins with my moving away from the camera after pressing the record button (Fig.32), announcing to Mick that “yeah...it’s recording” and then describing briefly how it works, how each one of its lenses covers 180 degrees so it shoots all around – I use my hands to gesture a circle that traces the room’s periphery. I am a little nervous, this is the first time we work with the GoPro and I want to make sure that the recording is not imposing on him. “You don’t mind, Mick?” I ask a little awkwardly just before I exit his study, and he replies, with seriousness and humour, “anything in the cause of science and art”.

On my next visit in late October 2018, I show Mick images from my solo SfM photogrammetry models, including the man in the blue shirt in the Lisbon church (Fig.19). I ask him if he would mind sitting still for a few minutes, while I perform a 'camera-walk' in the room, so that he may also appear within the model. Mick replies, with a little smile, "I'm very good at sitting still these days". I walk around the room and circle him holding the 360 camera, carrying it over his desk, his books, not forgetting under the bed. My pace is measured, and I traverse the room several times; the shoot takes around three minutes. I have my laptop with me, so I upload the material and follow the steps towards converting a selection of 360-video frames into SfM photogrammetry, which takes a couple of days (Figs.33-34). Afterwards, I create a simple VR project in Unity3D, where I import the model of the room with Mick within it. Four days after my 'camera-walk', I set up the HTC Vive in Mick's room. I use his desk to place my laptop and connect the headset, and two light portable stands to setup the two motion trackers in the room. It is important to show Mick the project 'from the inside', and he is keen to try VR. I explain to him that some people get dizzy in VR, and that if he feels any unease, I will immediately terminate the experience, which I document with the GoPro camera on its tripod.

During Mick's VR experience, I share three projects with him: his freshly assembled 'virtual room', the São Domingos church, and the ruins of Tintern Abbey in Wales, that Mick had visited in the past and where I had recently performed a 'camera-walk' and turned into a model. Wearing the headset, Mick uses the powered wheelchair controls on its right armrest, to move around in his real room and in that way explores his virtual room (Fig.35). I stay with him, to make sure that the cable does not get in his way, and I verbally warn him if he moves too close to the furniture. We remain in conversation during the experience, and near the end, while he is still wearing the headset, I ask him what he thinks is the difference between VR and other art forms or mediums. He tells me that "you obviously get the feeling you are there, as opposed to just observing. I think it's like the theatre, much more immersive than in the cinema [...] You might say that you are choosing your point of view rather than the director's point of view which can be a good thing, can be a bad thing. I may not be looking at the important places in the show, where I should be [...] You certainly feel that you are there and it's real, I just feel [...] it's slightly otherworldly, that you don't get in the cinema or the theatre". Afterwards, I propose to Mick that if he has any other thoughts at another time he can always email me as well; a few weeks later, he sends me an email where he has 'jostled down some thoughts':

- 1) This was my first time using VR so I had to adjust to the experience. I'm not sure what my preconceptions were but I initially was quite disorientated by it –confronting a 'world' that was both real and unreal. Once I'd relaxed, the overall experience of all 3 worlds was very pleasurable. It is very relaxing and immersive.
- 2) The most stimulating experience was the first; being in my own room – both actually and

virtually. I could turn my wheelchair and “feel” where I was physically in my room but see a slightly different perspective from where I thought I should be. I also confronted my virtual self, sat in a wheelchair in a “real” space in the virtual room. Once I’d got used to the virtual room I really enjoyed exploring the space and was impressed by the detail that it contained.

3) The other 2 VRs were different. I was used to the technology by then and was able to explore beautiful and stimulating environments, particularly to me as a lover of church architecture.

4) From this limited exposure to the technology I think that possibility uses for it for people like me are very exciting. People who are wheelchair bound and are therefore limited as to where and when they can go can explore familiar and unfamiliar spaces in a very different way to simply viewing them on a TV screen

(Mick Clark, personal communication, December 2018)

What strikes me is how Mick bridges contradictory notions: a ‘world’ real and unreal, an experience that is disorienting and relaxing, himself and his ‘virtual self’, the actual and the virtual, the familiar and the unfamiliar. He uses the words ‘confronting’ and ‘confronted’, that mean both meeting face-to-face but also being challenged, antagonised or even threatened. Mick confronts the VR real/unreal feeling initially disoriented but, after ‘feeling’ his way in the experiences, he relaxes into it. There are different facets to the disorientation, the newness of the VR experience as a baptism into an unknown, and simultaneously a re-entrance into an intimately known space made unfamiliar by my imperfect photogrammetric model which is messy and blobby rather than a perfect, clean replica. Another reason for Mick’s initial disorientation is the lack of sophistication of my VR-setup: the real room and the virtual room were not perfectly aligned so Mick’s orientation is challenged at first – hence seeing ‘a slightly different perspective from where [he] thought [he] should be’.

How does he know where he should be? When Mick says that he could turn his wheelchair and ‘feel’ where he was physically in his room, I note how his wheelchair keeps him in touch with the ground. Whereas I am ‘in touch’ with my surroundings’ firstly through my feet (Ingold, 2004: 330), Mick is equally grounded in the world by being in touch with it also via his wheels. Sheets-Johnstone brings hapticity to the fore reminding me that ‘our tactile-kinesthetic bodies are the bedrock of the dynamic invariants that shape our everyday lives, and this because we are indeed *animate* organisms and are always in touch with something’ (2011a: 516 emphasis in original). Experiencing his room-within-his room, it is Mick’s body in touch with the VR peripherals, his wheelchair, and the floor, that makes the VR experience possible. Being in VR ‘wheels-first’, and within an already familiar space, his movement and haptic feedback (and my verbal warnings if he was approaching furniture) allowed him to navigate the virtual inside the real, and to ‘get used’ to VR. The two other VR spaces that he visits, São Domingos and Tintern Abbey, are less confrontational, perhaps because their orientation and form does not visually compete with the real space that he is in, which he saw just before donning the headset. On

the other hand, anything but free floor space competes haptically with his perceived freedom of movement, as afforded by the VR views. This is why it is important that I look after my experimenter, to ensure he does not collide with the furniture or the walls, in the distressing and dehumanizing manner of the VR 'fail' videos.

That Mick could 'feel' where he was within a VR setup so simple as to not have an avatar, is important. Mick confronts his virtual self as part of the 3D model, statue-like, similar to the man in the blue shirt in the Lisbon church, but looking down, he would see the virtual carpet rather than his own 'virtual lap'. However disorienting such a sight (or lack thereof) may initially be, his experience already resounded with the knowledge of the tactile-kinesthetic world around him - *beyond* the specific room. His 'feel' of where he was reminds me of Popat's assertion that '[m]y body always knows where I am in corporeal space, and I make cognitive sense of that corporeal space in relation to the world that I see around me, folding physical and virtual together rather than experiencing a binary division' (2016: 10). Thinking of the VR experience as an ephemeral performance of a digital archive also invokes the supposed binary between the archive and the repertoire, which Diana Taylor resists by insisting that they 'usually work in tandem' (2003: 21). Despite the stillness of the VR landscape – each scene only contained a model rather than additional motion graphics – Mick was animating VR's archive through his repertoire of self-movement, delicately controlling his powered wheelchair with his fingers, to turn, move forwards and backwards. Experiencing the real and the virtual, the experience was also animating him, giving him impetus to turn, move or stay longer within a spot, without losing his body or feeling transparent, without ever becoming reduced to 'a point of view'.

Mick finds VR exciting for how 'people like him' can experience familiar and unfamiliar places beyond the TV screen, and he is interested in how our collaboration is received within my University and within conference papers. While we do not repeat our VR expedition, over the following years I perform a number of 'camera-walks' within the family home in Disley, as well as recalculate the materials into new meshes and renders. However, to be the one carrying the camera clearly demarcates 'researcher' versus 'subject', and privileges my body in the body of the work. To make room for Mick I also need to pass the baton to him, and make adjustments in consideration to his repertoire of movements. I remember how Ingold and Vergunst explain that people have to continually readjust their patterns of walking to those they walk with (2008: 17) and similar readjustments can be made towards one's alternative ambulation. After discussion, we decide to attach the camera to his wheelchair; because MND affects Mick's grip, this solution also offers an alternative to him holding the stick by hand. On the day of Mick's 'camera-walk', we are in his study drinking a cup of coffee; his mug is lighter than those he used in the past, because heavy objects are harder for him to handle. In 2015 writes that:

‘[t]he nature of the steady progression of MND is there are an increasing number of things I can’t do – it is a very relentless condition. Every month I realise there is something else I’m incapable of doing: I’m unable to complete a familiar, well-loved walk, I can’t carry a cup of coffee in each hand, I feel uncomfortable climbing a particular set of steps, I struggle to change a light bulb, more and more places are no-go areas. If I had a different outlook on life I might be permanently depressed by this but, so far, I’ve managed to maintain a positive frame of mind’ (‘dizzy diary’).

Mick sent me his ‘dizzy diary’ in November 2020, and although its last entry is June 2019, he continued writing other diaries and texts, family histories, tales from his childhood. The ‘dizzy diary’ began as a way to track mysterious symptoms that were initially dismissed, and eventually becomes a kind of manual about living with MND; it includes yearly summaries of the number of visits to the doctor but also to the theatre; day-to-day negotiations with stairs; meetings with friends; pavements, trips, and hospital stays. The ‘very relentless condition’ of MND requires continuous adjustments and, throughout the ‘dizzy diary’, Mick meticulously notes down the things he can do, and those he cannot.

Sheets-Johnstone describes how our sense of agency and our repertoire of ‘I cans’ are founded on kinesthetic regularities and expectations, whose sources are primary qualities of movement, created by movement and experienced by our own movement (2011a: 157). From the time we are born, the ‘kinetic spontaneity that infuses our being and defines our aliveness, is our point of departure for living in the world and making sense of it’ (Sheets-Johnstone, 2011a: 117). Learning to move ourselves with respect to objects is ‘the foundation of a developing repertoire of “I cans” [...] in effect the foundation of our sense of ourselves as agents within a surrounding world [...] [but also] the epistemological foundation of our sense of who and what we are. We literally discover ourselves in movement’ (Sheets-Johnstone, 2011a: 117). From Mick’s diary emphatically listing what he can still do, and what he cannot do anymore, I understand that he is in a way measuring his own agency within the world, amidst the gradual loss of his self-movement, what was spontaneous and mundane now requiring conscious effort, and worthy of reflection. Mick’s diary is also a communication tool with himself and with others; he keeps track of a condition at first unknown, exchanges with medical staff, with his family, and with his community of fellow MND journeyers. He explains that:

‘I was helped, and am still helped, by the fact I’m good at living in the moment, in the now. I’m very nostalgic but I don’t want to change the past, I want to understand it– I don’t have a “what if” function in my brain’s instruction set. So I didn’t feel sorry for myself or rail against my fortune; I never asked “Why me?” I’m a mathematician who spent his working life in IT; in looking into the future I don’t have much imagination. I don’t project time forward and imagine how I’ll be then or how much worse I’ll be. As Nye Bevin said of Harold Wilson “All facts and no bloody vision” (‘dizzy diary’).

And yet, his writing seems to be a way to hold on to what is escaping, not to lament but to affirm what is here *now*, such as when he writes in November 2015 that he ‘[m]anaged to carry the drinks upstairs

in the morning – can still do it’. Interdisciplinary scholar and media-maker Arseli Dokumasi proposes that disability can be defined ecologically as a shrinking of the environment and its available affordances (Dokumaci, 2017; 2019). With Mick’s environment shrinking, some new paths open up; once steps become too difficult, and the top floor cannot be reached, a gently sloping ramp is built and what was his study becomes Mick’s new bedroom. Monica is Mick’s primary carer, but gradually more professionals come in daily to help Mick with his everyday life, including moving from one room to another; paths around the house that used to be unprompted take on a schedule. Movements and words that were once easy, now require great effort from Mick, and, over the years, he continually learns new technologies, including his powered wheelchair, a voice-synthesiser, and a robotic spoon device for eating independently.

After our coffee, it is time for Mick to perform his ‘camera-walk’ to create Monica’s portrait, who is now sitting in a blue chair within the study. I turn on the GoPro which is attached through its extended stick to Mick’s wheelchair, and leave the room, so that my presence does not shadow their exchange (and the space, and thus also the model-to-be). After a few minutes, I knock on the door and come back to sit with them. They tell me about a leaflet they had been given, about end of life, and sorting one’s affairs like ‘placing ducks in a row’; about finding the right time to discuss final wishes, procedures, and other organising matters. Mick and Monica try to ‘keep it light’ and make Shakespearean puns, where ‘ducks in a row’ become ‘crows in the wood’. They tell me that they had originally set a date in the diary for that discussion, and Monica shows me ‘Death’ written in her agenda. Both laughing, they explain that, with a supermarket delivery and a football match happening on that day, there was not enough time in the end – so they decided to put Death off for another year.

Mick performs his ‘camera-walk’ on April 2019; I export frames from the 360-video (Figs.36-37) and calculate different versions of Mick’s portrait of Monica (Figs.38-39). My equipment and gestures serve to extract the 3D renders, but this work is firstly created kinesthetically through Mick’s movement, and Monica’s seating. Mick’s health continues deteriorating, and from the Spring of 2020, the pandemic painfully limits our meetings. When we reunite in Disley, in August 2020, Mick’s voice is a whisper, but he remains in dialogue, by playing his words for us in his synthetic voice. We do not know that this is the last time we will ever meet, because in the following months his health is too fragile to risk making him more ill by visiting, and we are awaiting the lockdown to lift, and a vaccine. Mick passed away, at home, in February 2021, and our project becomes too difficult to continue and at the same time too important to not continue, as I am involved both as a researcher but also as a daughter-in-law. My ‘camera-walk’ allows me to be a guest in my participants’ personal space, but with Mick and Monica, we are much more than that, we are family. Collaborating with Mick was an

opportunity for him to tell his life-story and to continue his diary in forms beyond text. For me, his gift of collaboration also entailed witnessing this generous, gregarious person becoming robbed of his self-movement, of his primal animation. Our project is bound to be incomplete because he will never read this text; equally, to put aside his words and our work would silence his voice, and I saw first-hand how incredibly hard he worked for that voice.

Mike Phillips and Geoff Cox speak of their dear friend and collaborator Donald Rodney's AUTOICON project, that aimed to integrate a body of the artist's own medical data within a system that would continue generating works of art (2000), which 'Rodney had often directed from a hospital bed' (Piper, in Phillips and Cox, 2000: 2). Following Rodney's tragic death from Sickle Cell Anaemia, his collaborators keep this 'art machine' going, because '[t]hose who knew Donald feel certain that he would have wished the project to continue without him' (Phillips, 1998: 10). After 23 years, the work exists as a memory and a celebration. It takes me a long time to be able to present the work of my collaboration with Mick again, and in December 2021 I share it with the PEP working group within Plymouth University, conducted on Zoom. In my presentation, I explain that "I cannot involve myself within conversations around colonialism without considering also what it means for a non-disabled person like me to create art and documentary with someone like Mick, without considering the privilege that I have within this relationship, not just as an artist and instigator but also as the one with the camera. So rather than hold on to its power, I prefer to hand the baton to my collaborator". Within the Q&A a deeply poignant question is typed in the chat: "was there a specific reason you wanted to work with disabled people for your work?" When the question is repeated verbally, there is a second part, "or was it because it was linked to a particular person?". My answer includes moments when I pause a little; when that happens, the panel chair offers me the option to leave my response for another time. I *do* continue, because such questions must be asked, and they should be expected from the start, so that good practice is maintained to the end:

"It was precisely because Mick was my father-in-law, so he was a member of my family and he was graceful and generous and happy to experiment with me, and, interestingly, also, [...] he wrote a lot of diaries, so there was something about us working together that he also really enjoyed because he was continually telling his stories. That's why I'm happy that we worked through this because it also helped me to see that indeed the 'camera-walk' is not [...] [in] the way the 360 cameras are advertised and designed for young heroes, young Hercules, male and athletic and travelling the world and taming nature. And I was using it, and Mick was using it, in a way that was very, very gentle, and in a way that was peripatetic, and in a way that was not even looking through it. It was an accompaniment to our walks. [...] I was lucky to have a father-in-law who wanted to work with me. That's the reason" (Athanasopoulou, 2021b).



Figure 32. Mick and I within our first 360-recording, August 2018



Figure 33. *Mick in his study I*, model extracted from my 'camera-walk' in October 2018



Figure 34. *Mick in his study II*, model extracted from my 'camera-walk' in October 2018



Figure 35. Documentation, Mick in VR, October 2018



Figure 36. Mick's 'camera-walk', April 2019

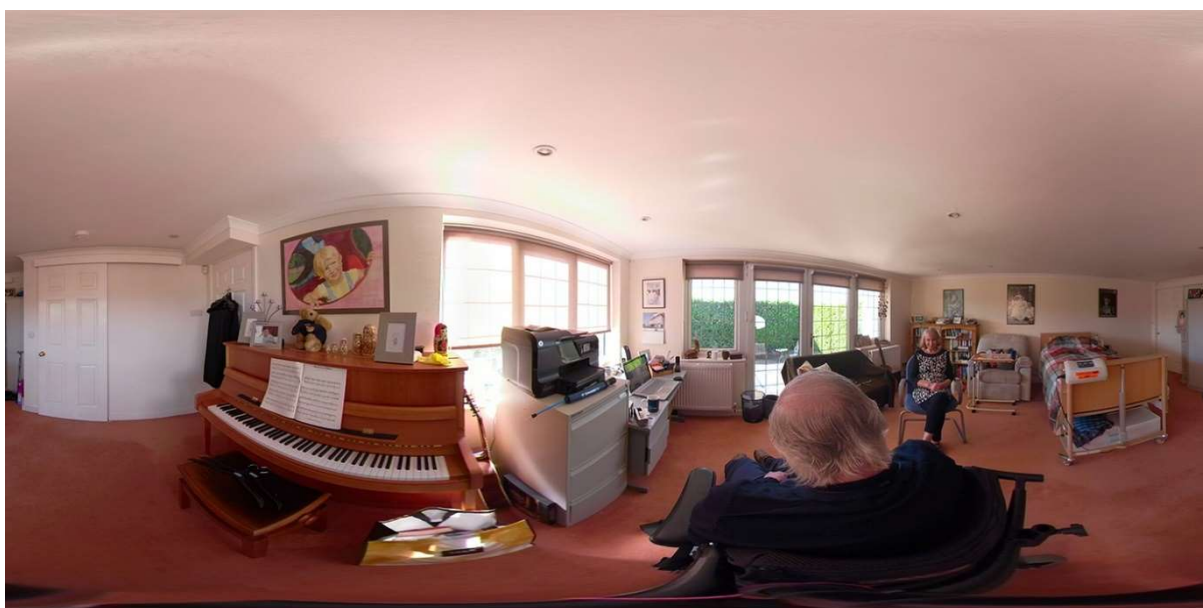


Figure 37. Mick's 'camera-walk', April 2019



Figure 38. *Monica by Mick*, from Mick's 'camera-walk' in April 2019



Figure 39. *Monica by Mick*, from Mick's 'camera-walk' in April 2019

Deep Waters

This chapter is a revised version of the already published peer-reviewed journal article 'Walking from physical to digital within Deep Waters' (Athanasopoulou, 2020b).

The title of this writing shares the name of my 2020 site-specific installation *Deep Waters* (in Greek, *Βαθείά Νερά*), which I discuss by referring to the *mise-en-abyme* motif. The term 'mise-en-abyme' (featuring the crucial 'mise') was coined by Claude-Edmonde Magny in 1950, as she examined a narrative device described by André Gide in his 1893 journal (1950: 277). Reflecting on his own writing, Gide says that '[i]n a work of art, I rather like to find thus transposed, at the level of the characters, the subject of the work itself. Nothing sheds more light on the work or displays the proportions of the whole work more accurately' (1947: 30). Gide's examples include the play within Shakespeare's Hamlet, paintings featuring mirrors reflecting the room inside which the paintings take place, stories read inside stories. He claims that none of his examples are exact, but what he strove for in some of his own works 'is a comparison with the device of heraldry that consists in setting in the escutcheon a smaller one "en abyme", at the heart-point' (Gide: 1947: 30). While the Greek title contains the word 'βαθείά' ('deep'), sharing an etymological root with the abyss, it was the documentation of the installation, with its images-repeated-within-images, that alerted me to the motif's presence. Equally, the potential *wateriness* of the abyss befits not only the project, but also a wider conversation around VR; I have already referred to Favero linking the VR experience with swimming (2017: 68), and here I am aided by philosopher Peter Sloterdijk musing on immersion as a kind of bathing ([2006] 2011).

Before dipping into my own work, I begin in March 2019 with a visit to the Saatchi Gallery, in London, to attend the multi-sensory immersive experience *We Live in an Ocean of Air* (2018, Marshmallow Laser Feast). The title is inspired by physicist and mathematician Evangelista Torricelli writing that '[w]e live submerged at the bottom of an ocean of air' while describing the first mercury barometer, which he invented in 1644. I walk down the steps of the gallery and await my turn while taking in the views. A digital forest lies in-front of me, with large screens at the back of the room showing a LIDAR scan of a large sequoia tree. In front of the screens, the back-lit silhouettes of the VR experiencers appear like visitors from another planet: wearing backpacks doing away with trailing cables, and with their faces covered by headsets, they are gesturing grandly towards the invisible. When my turn comes, attendants help me put on the VR suit, which includes sensors to monitor my breath. Once this group experience begins, I am an *anima* between *animas*: with every exhalation, particle trails are emitted as clusters that the other participants can see through the headset, and even interact with. The large

tree model becomes engulfed in swirling particles but I turn away from it so I can see the other, live animations, made by breaths. Through breath, the work *embodies* animation, a word which, as film scholar David Crafton explains, derives from the French verb *animer*⁶⁹ whose Latin root *animare* means to breathe or to blow; the noun form, animation, comes from *anima*, meaning life or breath. Crafton juxtaposes a theological meaning of animation as giving life, versus a secular one, of simply moving and changing things; he finds their common ground to be performative, both being ‘statements that execute an action, cause something to be done or status to change’ (2011: 98).

While Crafton’s use of the performative as figure of speech evokes Austin’s ‘performative utterances’ (1975), there is another, corporeal sense of animation offered by phenomenology, which enriches this experience of VR. To articulate it, I look at what Sheets-Johnstone describes as our ‘primal animation’, which is the original kinetic liveliness with which we come into the world⁷⁰ (2011a: 211). She explains that with tactility and kinesthesia being neurologically the primary senses to develop while in the womb, our primal animation brings with it the most primitive form of consciousness of one’s own movement, a ‘kinesthetic consciousness’ which is in a broader sense a ‘kinetic consciousness’; this ‘includes a developing consciousness of one’s movement as a three-dimensional happening “in space” and is intimately tied to a basic responsivity to movement in one’s surrounding world’ (2011a: 383). What *moves me* in *We Live in an Ocean of Air*, is precisely how the *anima* of breath – inhaled and exhaled from animate bodies – becomes embodied in animated particles that not only hover but can be interacted with by the participants, who can stir them with their hands like swarms of bubbles that slowly, almost unctuously, disperse. Thus, the experiencers both create and respond to animation’s movement with their animate, that is their living, moving, tactile-kinesthetic bodies. It is in this sense that the work embodies animation, by encapsulating the multiple senses of the word into a ethereally ephemeral experience, an exchange which is reanimated every time that we, the participants, dive together in VR.

Diving together in VR, how long can we hold our breaths for? With VR’s immersion taking place and visual precedence over that of architecture, it affects the latter by ‘washing away’ its boundaries, but the dissolution of boundaries is precisely what immersion is about for philosopher Peter Sloterdijk,

⁶⁹ The French word’s earliest written instances in the 16th century were theological, as the act of endowing with a spirit or soul; with the secularization of culture, ‘to animate’ became an expansive figure of speech, meaning to impart vividness, to sign something into law, to fill with boldness, vivacity, sprightliness, courage, spirit, to inspire, to brighten, to start a chemical reaction (Crafton, 2011: 97-98).

⁷⁰ This is not a human-only quality and Sheets-Johnstone stresses that ‘[e]verything living is animated. Flowers turn toward the sun; pill bugs curl into spheres; [...] [t]he phenomenon of movement testifies to animation as the foundational dimension of the living’ (2009: 375).

explaining that:

‘[a] core aspect of artificial immersion, as a phenomenon, is the potential replacement of whole environments – not only of the images, usually framed, one looks at in galleries. Immersion as a method unframes images and vistas, dissolving the boundaries with their environment’ ([2006] 2011: 106).

Immersion in artificial environments by technical equipment, such as a virtual reality helmet, allows humans to be ‘finally taken seriously as beings for whom it is natural to immerse themselves – and not only in water [...] but in elements and environments generally’ (Sloterdijk, 2006: 106). Sloterdijk speaks of the many bathings, plungings, splashings and dippings happening behind the walls of dwellings, and behind the walls of empires; even ‘history itself is nothing but a diving tank shared with cavorting fellow swimmers’ ([2006] 2011: 106). Together with music, architecture is in fact ‘the original form in which the immersion of humans in artificial environments has been developed into a culturally controlled process [and] [h]ouse building is a sort of basic version of immersion technology’ (Sloterdijk, [2006] 2011: 106). Sloterdijk allows me to consider a VR set up within a building as one artificial immersion within another, older one, a *mise-en-abyme* which also recognises within French abyme and English abyss ‘anything that appears to be endlessly or immeasurably deep [...] via Late Latin from Greek *abyssos* bottomless’ (Brookes et al., 2023: 9).

During the 19th century in the sea-side town of Aigio, Greece, sailing ships called ‘Primarolia’ were carrying prime Corinthian raisin to the ports of Europe, with Greece’s ‘black gold’ stored in purposely built warehouses. The inaugural site of the *Primarolia* festival in Aigio celebrating those ocean journeys, is such a 19th century three-storey warehouse, right next to the sea. In February 2020, curator Nansy Charitonidou invites me to take part in the upcoming edition, to take place in September 2020. The festival’s theme that year is ‘Images of a Floating World’ with a focus on ‘mobilities’. We plan my visit for late Spring, during which I will perform a ‘camera-walk’ in the building, getting to know it first through my feet. COVID-19 changes our plans, and the project becomes re-orientated quite sharply; rather than visit in person, the festival team walks me through the exhibition space via video calls that freeze at times, according to the whims of our internet connections. The warehouse attic on the third and final floor of the building, with its tall metal beams and wood-clad ceiling brings to my mind an upside-down ship hull – determining this floor as the site of the work. With the pandemic lockdowns persisting, we decide that Bill Psarras, the festival’s artistic director and a performance artist and scholar, will perform a ‘camera-walk’ in the attic for me, with a different 360-camera; I will then receive the material via the web and reconstruct this space from afar.

To prepare Psarras, I explain through words only during a video call what I would have modelled for him through actions had we been sharing a ground: the ‘camera-walk’ is a performance that acts a

rehearsal of the photogrammetry it will become; with this transformation in mind, we make digital space through moving in physical space. Psarras poses me a question in the form of a diagram, showing me a small sketch of the attic, a floor plan where he has added a perambulating path. By tracing his future walk, Psarras is speculating upon - and already rehearsing - his steps. I confirm that he is right, adding that the camera performs a kind of 'suction', like a vacuum cleaner silently absorbing the space around it, while the body - with the hand that holds the camera - also makes movements that feel like writing. Wanting to evoke the sensation of the camera as a nib on the top of a stick, rather than an 'eye', I explain that the camera leaves a trace behind it like the silk ribbon of a rhythmic gymnast; like Ariadne's thread trailing in the labyrinth, the bodies of the walker and the camera-on-a-stick write a path between an entrance and an exit, leaving behind a trace. The impossibility of sharing a space together with my distant walker meant that I was overcompensating in my explanation by offering exaggerated metaphors, verbalising gestures that I would have performed in-body rather than speak-out. While I articulate my own sensations about work that is kinesthetically felt rather than formed in words, the silk ribbon of the rhythmic gymnast sticks to my mind and, as I will explain, will become an integral element of the final work. Together with the evocation of Ariadne's thread, these were *clews* for Psarras - but he would only really find out through his own body.

The 360-video travelling online from Aigio to London is already forming a response to the festival's theme – 'Images of a Floating World' with a focus on 'mobilities' - by enacting its digital journey at a time of enforced immobilities. I imagine its frames like myriads of floating papers for an animation-to-be, trailing over the sea. However, my lack of physical presence onsite is disorienting, as performing the 'camera-walk' offers me the opportunity to get to know a site through my own body, and to measure it through my feet. I am simultaneously feeling the space through my feet and anticipate the SfM photogrammetry that it will produce - it is also a rehearsal of the digital space-to-be. The pandemic-imposed lack of rehearsal sends me head-first into the deep, rather than getting to know a place one-step-at-a-time. The collaborative aspect of my methodology is also tested as, on previous exchanges, I was present to hand-over the camera. Letting go of the personal processional gesture and being physically absent while 'passing the baton' signifies a double initial removal of my body from the field of the work; at the same time, it offers me a new 'way in' through a borrowing of my distant walker's feet, in what becomes an unexpected, 'gifted' collaboration.

After receiving the material from Psarras and translating it into photogrammetry, I finally have the attic 'in my hands', a digital model that I can rotate, examine and view from the inside, which is also its outside (Fig.40). The perception of photogrammetry as producer of high-fidelity replicas gets tested when confronted with the 'dirty' mesh that the software spews out. The cleanup of the digital invites

a questioning of what gets excluded in the pursuit of the ideal replica – one that by virtue of its likeness conceals the labour that went into cleaning it up in the first place. Via the ‘camera-walk’, my methodology prioritises the body making space through moving in space, and so the cleanup of the mesh would also conceal the labour of my walker; while consumer 360-cameras are ideal partners for my practice, the relatively low resolution of the camera that Psarras used affects the level of detail even more than my own *GoPro*, and the attic model is augmented with the kind of digital dirt that may break a 3D printer (Minkin, 2016: 118). However, its *sandiness* is also its digital grain, and the traces of the human body that formed them with the specific materials at-hand, rather than in an ideal setting.

What becomes washed away during the waves of the pandemic? I think of what happens to the ‘excluded or destroyed, [...] the (more or less) failures, the aborted ones, the debris, the rubbish’ (Derrida 1987: 209). Rather than correct them, my practice welcomes the nebulous artifacts and smeary imperfections that add unreal details to the Primarolia attic. I treat the model as a memento handed to me *from* and *of* a place I have not been, as another’s walk upon which I tread gently. My ‘dirty’ model has extrusions and spikes that make the real metal beams appear rusty, but these only confirm my initial feel of the space as an overturned ship that has sank in pandemic times. The exhibition theme, ‘Images of a Floating World’ becomes ‘Images of a Sunken World’, reflecting the many halted journeys of the pandemic. In my studio in London, the imperfect photogrammetric model offers me a version of the room as an ocean floor with sand-like curves (Fig.41), which I augment by bringing seaweed that I animate through simulations. The model is also a studio, and to get to know it, I use virtual cameras within *Blender 3D* that render views from different positions within the space, which I light like a theatre set. I document my explorations into still and moving test renders, that I carry on my phone, and so the work follows me around as I try to find another way into it.

One late evening as I stare at my phone screen in the dark, the room around me is occluded and I become momentarily removed from my London surroundings; what I see is a positioned view in the attic in Aigio, like I am facing a screen *there*. I realise that I can install my perspective into the exhibition space, by exchanging three virtual cameras with three real screens. These would be placed in the warehouse attic as the virtual cameras are in the model attic, acting as portals to an underwater version of the room. Working site-specifically but from a distance, the animation affords me a way of affecting the space of the attic by sinking it into deep waters where overgrown seaweed imposes a different chronology - an imagined past, or a possible future. I place three cameras in a triangular configuration so that all face the same animation-time between them: through the slowly moving seaweed a red ribbon begins to move in, and each camera monitors it from a different angle. The

ribbon, with its own dance measuring the space, has been put in place through that earlier discussion about the gymnast with the festival team: it makes a slow entrance, remains hovering in a trembling loop, and exits again, turning the attic into the simplest of theatres (Fig.42). What this space now awaits is the visitors of the installation performing their own in-betweens on foot.

Edwin Carels considers the museum visitor in Animation's terms through the fundamental concept of the keyframe, which is the crucial position of a figure: within an exhibition, the keyframes are determined by the artist or curator, inviting the visitor to fill-in the necessary intermediary steps (the in-betweens) in order to complete the movement (2013: 296); this means that:

'between individual frames, peepholes and objects, between the objects and the surrounding space, between human and technological movement, between the gallery space and the 'real' world, each visitor enters an exhibition as a space of wonder, where the integral mise-en-scène is part of the experience, not 'just' the artworks, but also the space in between and around them. He or she goes there to animate and to be animated, to interpret and to be guided, to see and to complete one's perception [...] Without a motivated 'reader,' any scripted space remains a dead zone. Without an inhabitant, any constructed space remains a purely geometric artifice' (Carels, 2013: 313).

I apply Carels' methodology into the locale of my own work, setting tree monitors as three keyframes, so that *Deep Waters* can become more than a purely geometric artifice. Admittedly, by playing with the space of my 3D animation in my studio I am already enlivening/animating the digital space, but this theatre-for-one awaits a larger audience. There is no certainty that the lockdown will be lifted by the September 2020, so I plan the installation knowing that I may not be able to set it up myself; the photogrammetry model also acts as a maquette of the attic so the festival team would be able to position the screens and the speakers in my absence. I also start working remotely with composer Savvas Metaxas, who is based in Greece, and with whom I have collaborated previously.

Working on *Deep Waters* through July and August 2020, I cannot be in the physical space in Aigio, but I can enter its virtual 'double' - not a replica but a projection - by populating it with multiple cameras through which I witness its phenomena on my computer screen. I also remember the expanded notion of virtual reality and telepresence as afforded by a telephone as well as 'an animated but nonexistent virtual world synthesized by a computer' (Steuer, 1992, p.78-79). Steuer's consideration of a distant space viewed through a video camera was not dissimilar to how I was introduced within the space by Charitonidou and Psarras by a video call, and my impression of the attic at the Primarolia site is created by a series of virtual realities overlapping each other. While the video call views were at times fragmented, there was a build-up of intensity in those broken exchanges, a yearning for the day when we can be together in the same room.

I step inside the Primarolia building's attic for the first time in early September 2020, with a feeling of returning, having experienced this place through telepresence; the attic feels familiar but strangely 'straight' compared to the bulbous photogrammetric version I had known. I spend the next three days with the technicians, the fellow artists, my composer Savvas Metaxas, the curating team and the volunteers, setting up for the opening. Each floor gets marked with a series of arrows, to guide the visitors through the space in accordance with the pandemic regulations. Rather than roam, we have a thread to follow, a cyclical dance to make the labyrinth safe. On the opening, the guests are wearing masks (Fig.45) and sanitise their hands; the pandemic rations our proximities, but we delight in our physical co-presence. From four speakers on the floor, surrounding the three screens, the sound created by Metaxas fills the negative space in-between towards a viscous depth. Created in response and alongside the animation, the sound neither follows nor dictates it, and repeats only after the animation has already completed four cycles. As the screens and the sound system are not linked, there is potential for sound and images to slip out of sync; over time, the subtly changing combinations allow for semi-planned new poignancies.

In contrast, the three screens can only project their virtual in-between through strict synchrony, and each video begins and loops at the exact same time. As 'digital doubles' to the attic's real views, they are windows to a 'virtual reality', while hiding the 'actual reality'. Bolter and Grusin use the term 'transparent immediacy' to describe a 'style of visual representation whose goal is to make the viewer forget the presence of the medium [...] and believe that he is in the presence of the objects of representation' (Bolter and Grusin, 2000: 272-273). Within *Deep Waters*, the canvas to be forgotten is the television screen, professed as transparent because the room it screens is also the room where the screen is in (Figs.44-46); and yet, with every move of her body, the viewer is reminded by the image's unchanging perspective that this is a barrier, not a window. Each screen hides and reveals, remembers and forgets, inviting the viewer to oscillate in-between with their body.

Together, the screens project an alternative version of the attic as flooded, or sunken (Figs.43-44). To gain a full view, the visitor must perambulate this perpetual 'now' enabled by animation's power to evoke life, with the screens as portals to another kind of virtual. The monitors and speakers clew a space between them, and the viewer also spins a ribbon-like web, moving from screen to screen, chasing the red ribbon's trail. The triptych therefore requires a certain activation from the viewer who animates the work by performing as inbetweenner to the screens-as-keyframes (Carels, 2013). At the same time, the viewer is animated by the work, compelled to walk around it to witness its virtual reality. While I speak of 'virtual reality' in Steuer's extended sense (1992), Carel's ideas befit the space of VR as well, because the peripatetic player in-betweens the elements populating the digital space:

she takes some steps towards this or that object; leans with her body to examine a detail; turns towards a sound that grabs her attention. Each digital asset is a keyframe for her to animate via her presence in the space of the work, and the VR is a space of wonder that animates her.

Returning to *Deep Waters*, the installation is a physical simulation of a digital simulation, because the three monitors in the attic take the place of the three virtual cameras in the photogrammetry model. In this project, the virtual (the model and its animations) preceded the actual (the installation) but the virtual was already a projection of the actual room; in other words, a real place became a digital space that is physically installed in its place of origin. This is not unlike how architecture models its actualities in digital and/or physical maquettes first, but because *Deep Waters* began from the inside of the building, there is room made inside a room, and the visitors' splashings are contained within the walls of a 19th century warehouse by the sea. Not all journeys go as planned: the pandemic caused my own immersion within the work to happen screen-first (rather than feet-first), and the visitors arrive with their own screens-at-hand. What I witnessed during the opening was that many visitors were not walking, but using their phones to take pictures-of-pictures, that were not 'just' mementos but expansions of the work; more views-within-views, more frames for the work to figure in. As I approach him, a man wordlessly shows his phone screen to me: a photograph where he has aligned the ceiling within the monitor, with the real ceiling in the room. I read his gesture as a kind of reassurance that the work *works*, or perhaps that he has *made* it work. I respond by taking a picture of his screen using the small camera I was carrying around for documentation, an equally wordless confirmation that I have 'heard' him, but also a continuation of the feedback loop that we seem part of. My picture contains his image of my image, framed by a white letterbox and the thin black border of his phone – his thumb finger-marking his presence (Fig.47). Standing next to each other and opposite a monitor, the place of the work is being traced as a triptych between three bodies – two human and one technological. At the same time, on his phone screen, my camera's LCD screen and the monitor screen, the space of the work projects, reflects, and resounds with the loud echo of the technical image. There is, however, something disquieting about this exchange, because it begins by wordlessly pointing screens at each other.

Back in London, among the opening's documentation material, an image catches my eye: in the partial view of the thumbnail, a hand is holding a small camera in front of a screen, the LCD window in focus and repeating the blurred view right behind it. Opening the whole picture, I recognise myself in the process of documenting, the frame of my glasses adding a further, miniature lens, a mise-en-abyme (Fig.48). Finding traces of oneself within PaR should not be a surprise, but this encounter invites a further question: what may the documentation of a site-specific praxis offer, beyond proof that it

actually happened? Robin Nelson explains that '[d]ocumentation and presentation of process as evidence of PaR research have an importance which is similar to showing the workings, rather than simply the conclusion, of a mathematical calculation' (2013: 63). He highlights '[t]he hermeneutic sense in which the praxis is continually becoming' (2013: 59); under this light, my praxis also continues becoming as I encounter and reflect upon it through new frames offered by its documentation, and its workings keep going rather than conclude.

What I see in the festival photographer's image – a framing being framed – is also present in my own documentation video still (Fig.43): as the view on the screen repeats the real room behind it, and as the rectangular frame of the monitor is echoed in the documentation still, this is a mise-en-abyme by remediation. Admittedly, any screen-based documentation of another screen may contain a frame within a frame, even more so when they share a common aspect ratio. However, a further insight gained through the 'pausing' of the animation in the video still, is that the monitor emplaces the view created by a virtual camera within the physical space of the attic. The 'camera-walk' begins the virtualisation of the actual, and the installation performs the actualisation of the virtual. My original desire, to 'bring my views from London to Greece' and to 'animate the viewer' are about offering agency: to myself as accessing a distant place through my screen, and then by transplanting my screen into the place itself; to the animation as activator of the viewer; to the viewer as in-between. However, witnessing the visitors taking pictures-of-pictures multiplying the frames of the work reminds me that 'apparatus always function increasingly independently from their programmer's intentions' (Flusser, 2013: 25). Was the apparatus repeating itself through the ubiquitous smartphone as black box always-at-hand? Were my ideas of agency an illusion? Reflecting on the interaction with the guest during the opening (Fig.47), I realise that what 'threw me' in our wordless screen exchange was his desire to 'fix' the view so that the on-screen image would align with the real walls in the room. Rather than perambulate, he 'solved' the problem that he thought I had posed by raising his own screen and creating a singular, still image. While initially confusing me, such an unexpected exchange allows me to reflect on the unforeseen phenomena of my practice, and the overlapping documentations of the praxis reveal how the work works beyond my own intentions.

My video documentation of *Deep Waters* (Athanasopoulou, 2020a) is in-between a walkthrough and a performance, where hand-held video shot on-site with my smartphone is edited together with animation segments. The video enacts a model visit on foot, another kind of virtual, as the steps of my imaginary visitor. This hybrid documentation is for those who cannot attend the site-specific installation since, as an ephemeral event, it is also time-specific. The video is thus a re-enactment, a kind of archival archaeology attempting to hold on to the work, but also to release it. With the space

not accessible to me beyond the exhibition time, the work is also in a sense unmovable, so this video deriving from my unseen performance engaged in another kind of camera-walk, is also my opportunity to 'free' the work from its attic origin.

I look back at the travels/travails of *Deep Waters*: from Greece to England, from the 'camera-walk' to an installation, from spherical video to SfM photogrammetry, from live-action to animation, from a VR format to a set of 'flat' screens, from monitor to monitors. My screen immersion – part and parcel of an animation practice – was intensified by the lockdown's enforced isolation, channelling our virtual stepping-outs through screens anointed as default work, family and culture spaces. Through ever-multiplying window-frames of imperfectly live broadcasts, technologies of windowed telepresence were also creating mise-en-abymes of screens-within-screens. Immersed in social networks and video conferencing applications as newly-empowered global monitors, are we getting closer to a 'dialogic, telematic society of image producers and image collectors' or rather, still, a 'centrally programmed, totalitarian society of image receivers and image administrators' (Flusser, 2011: 4)? Noticing the multiplying technical images interspersed between bodily acts of framing, and how with every screen a set of frames expands further – what lies in the deepest level of *Deep Waters*?

Art critic Craig Owens explains that, for Husserl, it is possible to penetrate the levels of the mise-en-abyme until we arrive at a final one: 'the glance penetrates through the noemata of the series of levels, reaching the object of the last level, and there holding it steady, whilst no longer penetrating through and beyond it' (in Owens, 1978: 76). I remember that '[t]he concept of space derives from movement. It is anchored in kinesthetic/kinetic experience' (Sheets-Johnstone, 2010: 114). The digital space within *Deep Waters* has been created by Psarras' 'camera-walk', and by my movements with the computer peripherals, towards animating the visitors in the space. Rather than 'just' another frame, what lies at the last level of the mise-en-abyme is the peripatetic body shooting sight-free and sans-viewfinder, with a Flusserian 'dangerous tool' in an act of freedom and emancipation: a body making space through moving in space.

I have discussed how the images from the documentation of *Deep Waters* allow me to interpret the praxis of my PaR as 'continually becoming' (Nelson, 2013: 59) but the origin of this very text, in its earlier form for a peer-reviewed journal, led me to another kind of knowledge. Before the article was published, while reading back my draft, I notice that I describe the model 'as another's walk upon which I tread gently' (Athanasopoulou, 2020: 171), which rings a bell. I realise that my words imperfectly and unconsciously⁷¹ iterate Yeats, via Mick Clark's reading that I had been repeatedly

⁷¹ It is because 'tread' is not a word that I use commonly in my everyday life that I recognise Mick's own voice

listening to. At the same time, through the way that the titles lexically echo each other, *Tread Softly* reminds me of *Judge Softly*, or *Walk a Mile in His Moccasins* (1905), a poem by Mary T. Lathrap I had already encountered but not yet *attended to*⁷². Both poems refocus my attention to the feet, and it is at this point that I start exploring Lathrap's voice in greater depth. My writing therefore produces its own phenomena, and in this occasion, *reminds* me to examine a particular text, deeper. While my thesis has already recounted the impact of *Judge Softly* and the 'walk in the other's shoes' idiom, the chronology of my gleanings are not as linear as writing; certain insights percolate for extended time. Building further on Nelson, I propose that the phenomena that PaR is concerned with, continue into its dissemination; findings, in text form also, extend the workings of the work, reflectively and reflexively, so that the cycle of practice and theory continues becoming, as the practice-researcher moves forward by returning.

Athanasopoulou, K. (2020a) '*Deep Waters*' documentation [installation documentation]. Available at: <https://vimeo.com/485225228>

echoing in my thoughts, and it is accompanied with 'gently' rather than 'softly', so this was not a laboured transplant of Yeats, but an echo of words spoken softly, because my father-in-law's voice was his own hard work.

⁷² To be precise, I was already aware of *Judge Softly* as the potential source of the idiom, which is why that initial connection was made, but what I was yet to realise, through subsequently paying attention to its author, was that the *voice* of the poem was of a missionary, and the moccasins were of a man entrapped in a reservation camp, which both Yuxweluptun (2016) and Mamdani (2015) assert as the prototypal concentration camp.

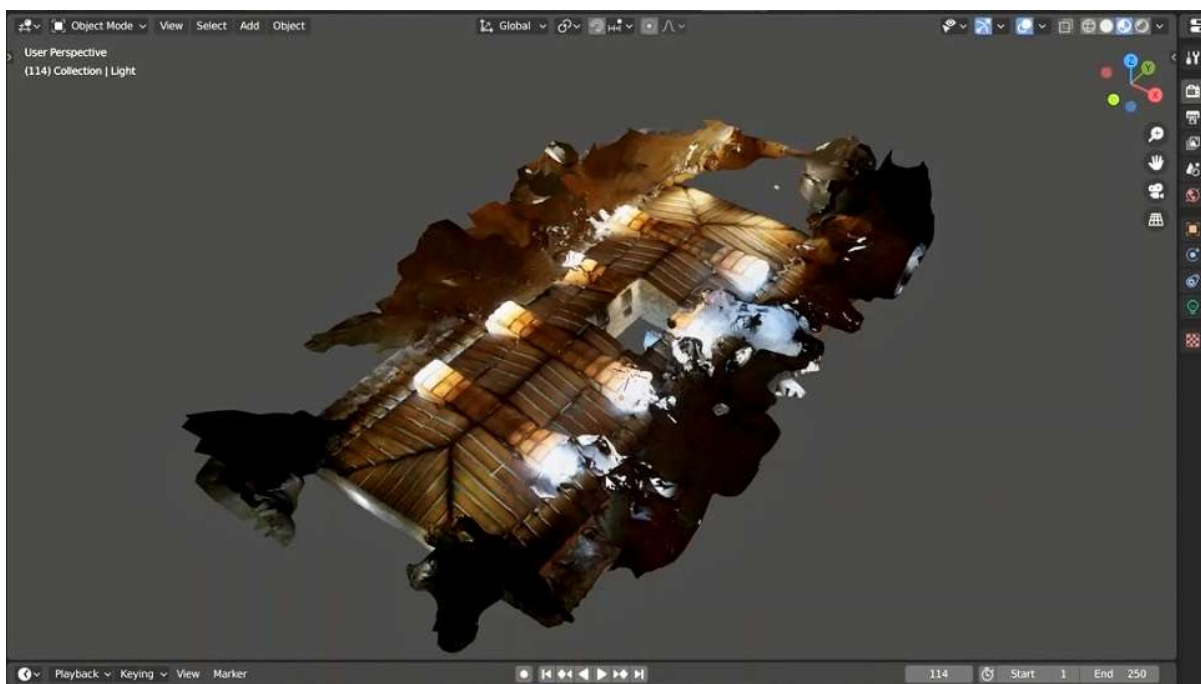


Figure 40. Primarolia Attic model, top view



Figure 41. Primarolia Attic model, interior view

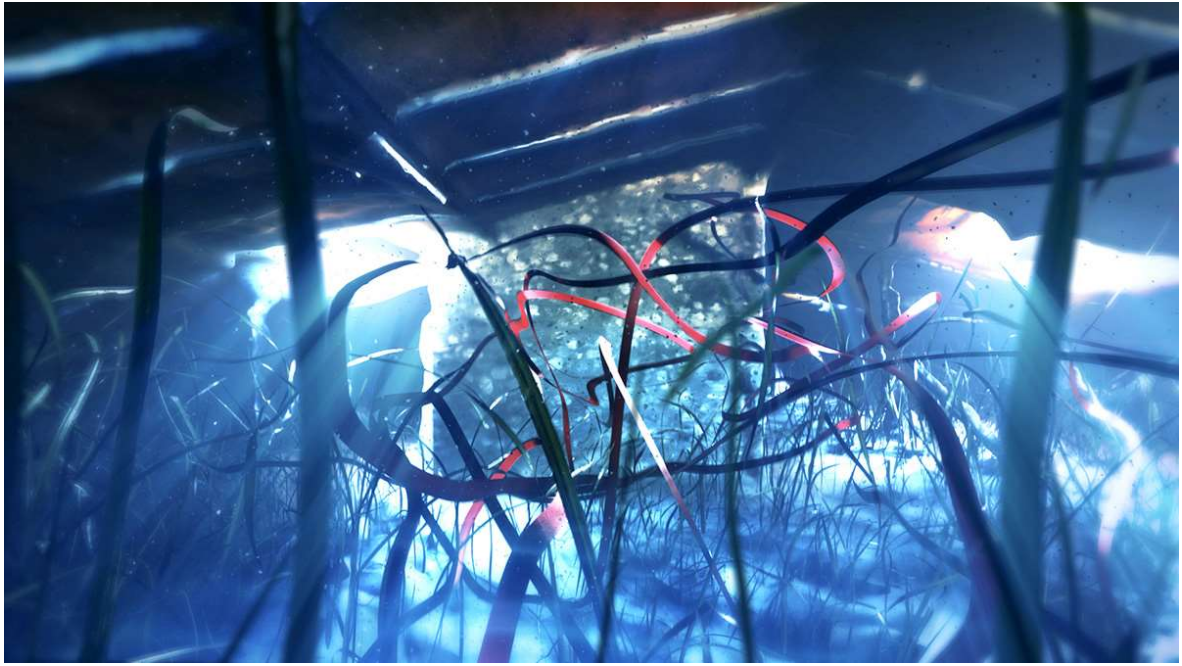


Figure 42. Still from *Deep Waters* (2020)



Figure 43. Still from *Deep Waters* documentation (2020)



Figure 44. Documentation from *Deep Waters* installation (2020)



Figure 45. Documentation @ *Primarolia Festival*

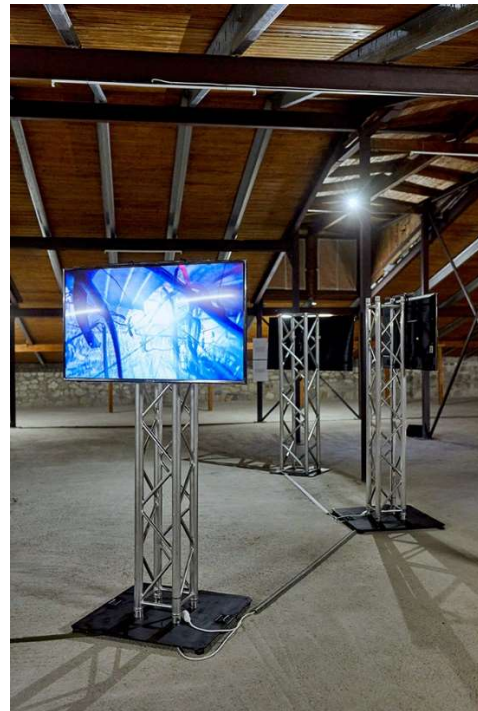


Figure 46. Documentation @ *Primarolia Festival*

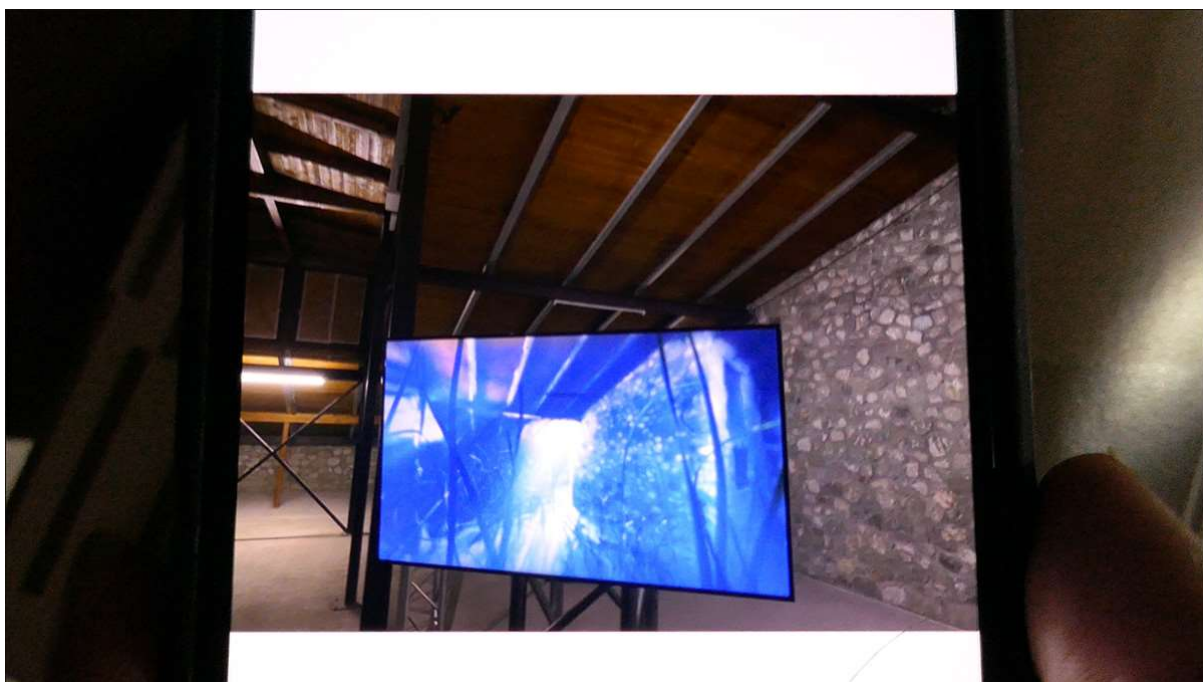


Figure 47. Exchange with guest at *Primarolia* opening (2020)



Figure 48. Documentation from *Primarolia* opening @ *Primarolia Festival*

Polykatoikia: Peripatos (back to the beginning)

I return to VR as *Bubble Vision*, with Steyerl reflecting that, like in the soap and glass bubbles in the *Vanitas* artworks when man is supposed to be at the centre of nature, the human at the centre of their 360 degree spheres may actually be missing (Steyerl, 2018, unpaginated). In this, I am surprised that Steyerl does not include terrestrial spheres and globes among her bubbles, considering their presence in the *Vanitas* genre, their connection with globalisation, and the multiple entanglements – cultural, performative, technological – between VR and other spaces of immersion including the Panorama, the Georama and the Dome. And while 360-video and CGI-VR are often mentioned together, terrestrial spheres can also contribute towards distinguishing the two, through the movements of their *handlers*.

Milk describes shooting VR with a system of 3D cameras looking in every direction, from which is built a sphere of a world that the VR user inhabits, who when inside of the headset, sees full 360 degrees in all directions (Milk, 2015: unpaginated). We may imagine the inside of a world-sphere formed by a flat panoramic video whose edges are made to meet, and where the top and bottom are tightly drawn-in to form two poles. The resulting *inverted* sphere (as the image is on the inside) maintains a fixed orientation while it envelops the user, so that they may physically turn around inside it, but they can never penetrate the image due to the video's flatness. The viewer is thus fixed in the centre – however, this fixedness is not like that of a cinema viewer who watches a screen in front of them, but a *pivoting* state of the human rotating, or spinning, freely. We may therefore compare immersive video to a *terrestrial globe* that the viewer experiences from the inside, and where the flat world map is pasted around them - they may revolve inside it but cannot parse it, nor can they see it from the outside. There is an experiential parallel here with the *Georama*, a nineteenth century popular entertainment device whose visitors were able to 'look at the terrestrial sphere from the inside, from its centre, where its whole surface surrounded the spectator' (Jacob, 2006: 401). While its painted map is closer to a traditional image rather than the 360-video's technical image, the *Georama* interests me as an inverted model whose user revolves around a spiral stairway in its centre.

Going back to immersive video and considering it outside of the VR headset – when experiencing it on a mobile device such as a smartphone or tablet, the screen provides a partial view: a *cadre* of the spherical world that envelops the user, who by turning around and extending their hands can orient their device with their body in the centre. While watching 360-video on a computer screen, through manipulations of their mouse or trackpad with their hands and fingers, the user may 'twirl' that enveloping sphere around their body's fixed orientation towards the immobile screen. CGI-VR's six degrees of freedom (6DoF) include the added affordances of *moving* around the digital space, in all

directions. This is therefore no longer an impenetrable surface to gaze upon while revolving on-the-spot, but a three-dimensional space to move *in-to* and *in-time*, and to explore kinesthetically with one's entire body. The metaphor of the terrestrial sphere is at-hand again, only this time we may twirl it with our fingers, hold it up in our hands and examine it from all sides, as well as walk around it. Like the *Georama*, it can be gigantic; like a desk-globe, it can be a miniature, to be spun with one's hand.

But first – what does it *mean*, to spin a terrestrial globe? Cultural historian Sumathi Ramaswamy explains that this object was invented in (and exported from) workshops across Western Europe 'over a period of time when the planet for which it served as a 'thingly' proxy was also taken over by the very peoples who had thought up the artifact' (2017: Xv). It was a sign of an increasing masculine preoccupation with the spherical world and of a desire to manage and dominate it, signalling an aspiration for an Apollonian gaze that is synoptic, omniscient, and intellectually detached (Ramaswamy, 2017: Xvi-xviii). Ramaswamy traces the terrestrial globe as an instrument of colonialism while it performs its educational purposes within South Asia as 'the school globe—the humblest iteration of this once-wondrous object' (2017: 3); importantly, there were exercises and problems for students to 'solve', because '[m]erely twirling the globe around was not sufficient to make a lasting impression on the student's memory' (Keith, in Ramaswamy, 2017: 18).

For Ingold, the globes of geography classrooms provide a vivid example of a world divorced from life, as a preformed surface waiting to be occupied; the image of the world as a globe is a colonial one, but an idea of a spherical cosmos is not exclusive to the history of European thought (2002: 211-215). Unlike a solid and opaque globe, a sphere is hollow and transparent and conjures a transparent lifeworld perceived by its inhabitants from within, characteristic of the cosmologies of pre-modern societies (Ingold, 2002: 155). Ingold explains that each characterisation of the environment, as globe and as sphere, may appear as opposed and mutually exclusive but in fact each view contains the seeds of the other, and renders its logical inverse conceivable. Both perspectives partake in the dialectical interplay between engagement and detachment, between humans as involved in the world and as separate from it – a feature of Western thought's entire history (2002: 216).

Through Ramaswamy, Ingold and Steyerl, I consider how the bubble of VR can be an opaque black box making the human disappear *and also* a Flusserian 'dangerous tool', with unexplored potentialities and possibilities for deflection, and even for globalisation's *deflation* as well. Opening up that black box, following Pierre Hébert, we may see the human in its centre, rather than marvel at (or be distressed by) some techno-magic. In practice, I found it hard to extricate VR from an industry dominated by *Facebook* (and then *Meta*) persistently surveying its users, such as when in August 2020 it was announced to Oculus users that a Facebook account would become necessary, and that

personal data would be harnessed for personalised content, including advertisements (Lang, 2020: unpaginated). After strong criticism from users and developers, the decision was partially overturned in August 2022, but, newer models such as the Quest Pro, with its inward-facing cameras tracking eye movements and facial expression continue raising privacy concerns, and the personal data harvested by face tracking has been described by Zuckerberg as a necessary part of his vision for virtual reality (in Johnson, 2022: unpaginated). Beyond the hegemony of *Meta*, the pandemic had also disrupted the space of my practice by stopping me from exchanging VR headsets for reasons of contagion; following my collaborations with Mick Clark and Bill Psarras, in what other ways can I can share my work, make room for Others and with Others, *outside* of the VR headset?

The ‘camera-walk’ performs its own cartography via SfM photogrammetry, and as I handle, peruse and spin my on-screen digital objects via trackpad, mouse or keyboard – there is a haptic link with the terrestrial globe’s ‘conjunction of gesture and vision, of progressive discovery and concealment’ (Jacob, 2006: 52). Can these conjunctions afforded by spinning globes and spinning models be released from the intentions of their makers? I listen again to Ramaswamy when she recounts that the students of terrestrial globes as colonial subjects *had* to solve exercises with them, rather than twirl them around (2017: 18). This allows me to consider that a playful treatment of the terrestrial globe as a thing to twirl around (and to twirl around of) allows it to spin *besides* the colonialist calculations of its invention, in tandem with Flusser’s ‘dangerous tools’. Considering ways to propel the haptic spinnings of my models outside of VR, I find an opening via Augmented Reality (AR): the digital object can be not only handled but also *handed-to* a participant through a portable device; it may be *perambulated* like a physical globe within a room, or outdoors; like a globe, it may be a miniature or gigantic. Importantly, working during a time still affected by the pandemic, there is no VR headset needing to be exchanged with its potential hygiene complications.

In late February 2022 I begin experimenting with *Reality Converter*, an application wherein I may quickly translate my photogrammetry 3D models into files accessible as AR in iPhones and iPads. I create two versions of the *Polykatoikia* for AR: one is enclosed and tower-like; the other remains open, like a perambulating cut-away; my models are iterative, sharing an origin in the space they derive from, and the image sets they are calculated by, but my practice resists a singular replica. Through my screen, each model is an object rotatable through the fingers (Figs.49-50); in AR mode, and after waving the phone around for the physical space to be determined by computer vision, the *Polykatoikia* grounds itself on the same ground on which I stand, and I can adjust its size and orientation through my fingers on the screen. I take some tentative steps inside and around the model; holding the phone in my hand and looking through the screen, I explore the work within a new setting, peripatetically,

and I can also document what I see on the screen as video and stills. In the next few days, I hand my phone to testers for them to explore my space of work with their own bodies, but I also share the file through phone messages; accordingly, my *receiver* can experience the model through their own device, within their own personal space. One of them tells me that, while twirling the model on their phone screen, they had a God-like feeling which was augmented when the AR was taking place; hearing those words, I think of the Apollonian gaze signalled by the terrestrial globe (Ramaswamy, 2017: Xvi-xviii) but here, rather than detached, my receiver sounds like an animated inbetweenener (Carels, 2013), speaking the language of a God-like animator (Crafton, 1979).

One exchange affects my understanding wordlessly, when, in reply to my AR model, I get a single, still image: my receiver has taken a picture of her co-walker next to the *Polykatoikia* now standing on a cobbled street in Lisbon. The ground it has landed upon agrees with my model's peripatetic and urban origin, and the picture is like a holiday postcard – sent as proof of presence at/of a memorable place. This exchange gifts me a new sense of place relating to my work: the person standing next to the model augments its reality by sharing the same ground, and by being documented by it. Even if only the viewer at the other end of the phone's camera can actually see both model and human bystander, she validates the truth of the experience through taking a picture and sending it back to me, and this memento concretises the virtual. Seeing the model's fresh travels/travails through a mobile message exchange, spurs me to return to the project's beginning in Athens.

When I performed my 'camera-walk' at the Polykatoikia in October 2018, I did not know that there was an artist among the nomologists. I find out, afterwards, that in that office on the eighth floor housing a notary and two lawyers – one of them is also a writer. Both Athenians with family links from the Peloponnese area in the south of Greece, we have extended geographies in common, but have each walked them separately, and several years apart. After reading his film essays and theatre scripts, I contact Sotiris Koutsoukos and speak with him about the space of my work within *his* space of work. The opportunity for dialogue through meandering on communal stairs fascinates me because our footsteps already co-incide, not in time but in space: while I am immersed in the model *Polykatoikia* which derived through my feet, he is immersed in the physical building by walking it every working day. This is not only the house of lawyers but also the work-home of an artist, challenging from the inside the archive's nomological principle, as learnt from Derrida. What would a nomologist *and* artist make of (and with) my digital peripatetics?

Because Koutsoukos is in Athens and I am in London, we converse through texts, phone and video calls. We talk about Georges Perec's own staircases, and about walking in the centre of Athens; about cinema, theatre and performance; about empathy, *empathia* and *Einfühlung*; about Farocki and his

teacher Brecht. To familiarise him with my ongoing practice, I share with him some process videos, a screen recording (Athanasopoulou 2021a) where I perambulate with mouse and keyboard in the fragmented staircase of the digital model, the white arrow of my cursor signing my presence (Fig. 76). I ask Koutsoukos if I may send him one of the *Polykatoikia* models in AR, so he may also explore it with his body within the building, and send me a documentation image back – a postcard from his time within the work. However, my AR file does not work in his Android device and he does not have access to an iPhone, so, at first, I try to explain to him through words how it feels for me to send the model out into the world: that while my photogrammetric AR model's spinings relate to the colonialist measurings of terrestrial spheres, the model can also be like a beach ball, a thing to play with by bouncing it *in-between us*. Through mentions of holiday postcards and beach balls, a kind of sea breeze is starting to fill the distance between me and Koutsoukos. I am keen for him to experience my model inside its place of origin because the physical building is his place of work as a lawyer, and his response as an artist would also expand the work in an idiographic way, testing and making more elastic the juxtaposition with the nomothetic. His lack of access to an iPhone is only a temporary barrier, because the opportunity for physical co-presence during the AR exchange makes me decide to take my own phone to Koutsoukos.

On March 2022 I return once again to the centre of Athens, and we meet on the eighth floor of the building, by the stairs. I bring out my smartphone, and show him the inside-out staircase while I twirl it with my fingers on the screen. Because this is Koutsoukos' first AR experience, I briefly explain how it works, and he grants me permission to record the phone screen, and thus his personal vision of/in the work. He accepts the phone from my hand and briefly waves it, so that the AR application may detect the floor and emplace the model. While using computer vision for its grounding, the work becomes *animated* by his body in-betweening. With the *Polykatoikia* model now back at its place of origin and the archive at its *arkhē*, he approaches it on foot, with his phone-holding hands extended forward and his gaze darting in-between the on-screen virtual and the all-around real. Similar to a terrestrial globe, the model is rotatable through fingers, and can also be examined in-the-round through the feet. Koutsoukos circles the model as a miniature enboxed in its *life-size* version – another mise-en-abyme. Experiencing the AR peripatetically and through the repertoire of his everyday gestures, he performs in-part a repetition, in-part a pilgrimage to his own life; his slow processional walk as he perceives the environment and the work through his tactile-kinesthetic body, is also another kind of walking with a camera – that of the smartphone in AR mode.

Of interest here is classical archaeologist Christopher Witmore's *peripatetic video*, a type of location-based mediation which prioritises walking over media types like video walks. He uses the work of

media artist Janet Cardiff paradigmatically, for the way that she layers digital media over active bodily experience. Works like *In Real Time* (Cardiff, 1999) and *The Telephone Call* (Cardiff, 2001) aim to ‘confound’ sensory perception and participants are asked to synchronise their movements in the same space as her prerecorded journey, while carrying a small digital video camera whose LCD video screen and headphones play back the video walk. As the digital media are superimposed upon the corporeal background, the body of the participant and the artist occupy the same space and perform the same movements, throughout the walk (Witmore, 2004: 61). What he describes can be interpreted as a proto-AR (or, a ready-made AR) where the real space becomes a background for the video already been shot, which the participants need to match. Engaging as such, the humans become imperfect (and delayed) trackers, their own human vision performing what in contemporary AR would be the work of computer vision. While my 360-video ‘camera-walk’ does not entirely befit Witmore’s notion, because my camera lacks an LCD screen which frees my gaze, and the 360-video is not replayed for audiences but turns into photogrammetry, the AR walk that Koutsoukos is performing contributes to another kind of peripatetic video, as the screen is also recorded, albeit without matching my own movements.

Koutsoukos takes some precarious steps down a flight of stairs trying to reach the model on his screen, and I warn him “you are on the verge”. On his way up he tells me that, for a moment, he was climbing the model stairs as he was also the real ones. He notices some of my traces inside the model – a fragment of me holding the camera-stick – and calls out to me “it’s terrific because you are also in the model...it has *kept* you”. I use a small digital camera to document him as he makes space by moving in space, and we remain in motion and on each other’s screens, and eye-lines. As the phone screen is being recorded, it is documenting his peripatetics in-and-out of a hybrid space that is the physical building of *now*, and the digital one I brought back from the beginning. Next, we pass the smartphone back and forth, describing to each other how our *live* screen-bodies keep flickering as the AR application tries to keep up with our appearances, like careless giants cutting through walls and floors (Figs.51-53). Our exchange is thus cartographic and tactile, with our bodies in simultaneous touch with screens (mobile AR on our fingertips) and architectural elements (the building under our feet). Imbricated with the *dialogical memory* of digital video, we are also Flusserian subjects *and* objects storing and being stored (2014: 144), as Koutsoukos sometimes points the screen towards me, while I continuously point my small digital camera towards him. We are sharing ground on-and-off-screen, but, rather than the silence that characterises the ‘camera-walk’ in accordance with the stillness that SfM photogrammetry favours, *here* we remain in animated dialogue, albeit with our faces semi-hidden through masks – the pandemic is still with us.

Back in London, I bring together the two video archives and create *Polykatoikia:Peripatos*, a split-screen short film which borrows from Farocki by emplacing side-by-side the unseen gestures involved in playing with black boxes. Beginning with a black frame carrying the titles, a vertical video appears on the right of the frame. This video is from the phone which Koutsoukos was using to immerse himself in AR; that it was shot hand-held manifests in the slight tremble of the image, where the *Polykatoikia* model appearing in the very staircase it came from. Perched on the turn of the stairs, the model's protruding, inverted light-well windows face the viewer, while the real ones are right behind. In another few seconds, and with the tell-tale sound of a camera starting to record, the left side of the frame is filled with the video that I captured holding my small digital camera, and my voice announces that "it's recording now".

While Koutsoukos was seeking the model with the phone, my camera was seeking him, and the two videos edited together present our synchronous exchange (Figs.53-55). Farocki edits at his writing desk, and writes at his editing table (in Elsaesser, 2005: 26); during editing, he wants 'to be able to view everything from a different perspective, again and again, in the way one rephrases an idea after talking to different people, hoping that the idea might increase in depth and form' (in Hüser, [1999] 2002: unpaginated). Within *Polykatoikia:Peripatos*, being *there* with Koutsoukos as he is experiencing the work for the first time, I articulate to him the ideas present in the work, rephrasing them also in a different language to that of my research. This translating is unrehearsed and in the moment, and to encapsulate a long process through a few sentences is challenging – but the AR exchange also carries knowledge through movement, and the work speaks for itself. Equally, Koutsoukos knows the building through his everyday life, so he is already an 'insider audience' within the space of the work, as well. To make our dialogue accessible for other viewers I use English subtitles; his words appear in green text, and mine in yellow, the colours of our voices already spoken in the opening titles. The subtitles are another way of practicing translation, another reading, and another writing (Figs.54-56).

'We should learn to live more on staircases. But how?' asked Georges Perec in 1974, around the same time that lawyers started arriving in the *Polykatoikia* in Aiolou Street. Watching the video documentation of my informal, performative exchange with Koutsoukos, I think of how Flusser saw in telematic images a hope for 'dialogically synthesized images [...] [as] media between one human being and another, through which I may see the face of the other' (2011: 156). Here, I remember how, calling for 'radical compassion', Bollmer refers to Levinas for how seeing the face of another allows a recognition of oneself as distinct from them, but also as sharing movements and expressions in common (2017: 69). Koutsoukos tells me that his initial impression is that such a peripatetic experience may augment empathy towards the environment, towards oneself and also towards

others, especially if their own observations can be collected (personal communication, 2022). I am interested in the emphasis that he places on the locale of the experience, with a potential for empathy afforded not by a machine, but through forging connections in dialogue with others, or with one's own thoughts while walking. I find a deep resonance in his reflection with how anthropologist Sarah Pink practices 'walking with video' as a research method enabling embodied communication about people's relationships with their own environments, and simultaneously allowing for empathetic understandings of others' perceptions of their environments (Pink, 2007: 245). The model in AR becomes a *motivation* to move, and to be moved, and room can be made for the experiencer to potentially leave their own trace by articulating their impressions, opening new conversations. Returning to Perec's inquiry, perhaps one way to live more on staircases is by playfully walking them up and down, and by performing (in) them towards 'being genuinely human, that is, to a festive existence for another, to purposeless play with others and for others' (Flusser, 2011: 156-157).

I ask Koutsoukos if he would compose a poem, so that more room can be created for him in the work; so that I too can find a new origin and a new point of entrance into my work - the *Polykatoikia* on my screen. A few weeks later, in April 2022, he sends me that poem (Koutsoukos 2022a), which grounds the structure of the final collaborative work of my thesis, which I describe in the next writing.

Athanasopoulou, K. (2022) *Polykatoikia: Peripatos* [documentation of an AR exchange]. Available at: <https://vimeo.com/703459527/6ecd690f53>

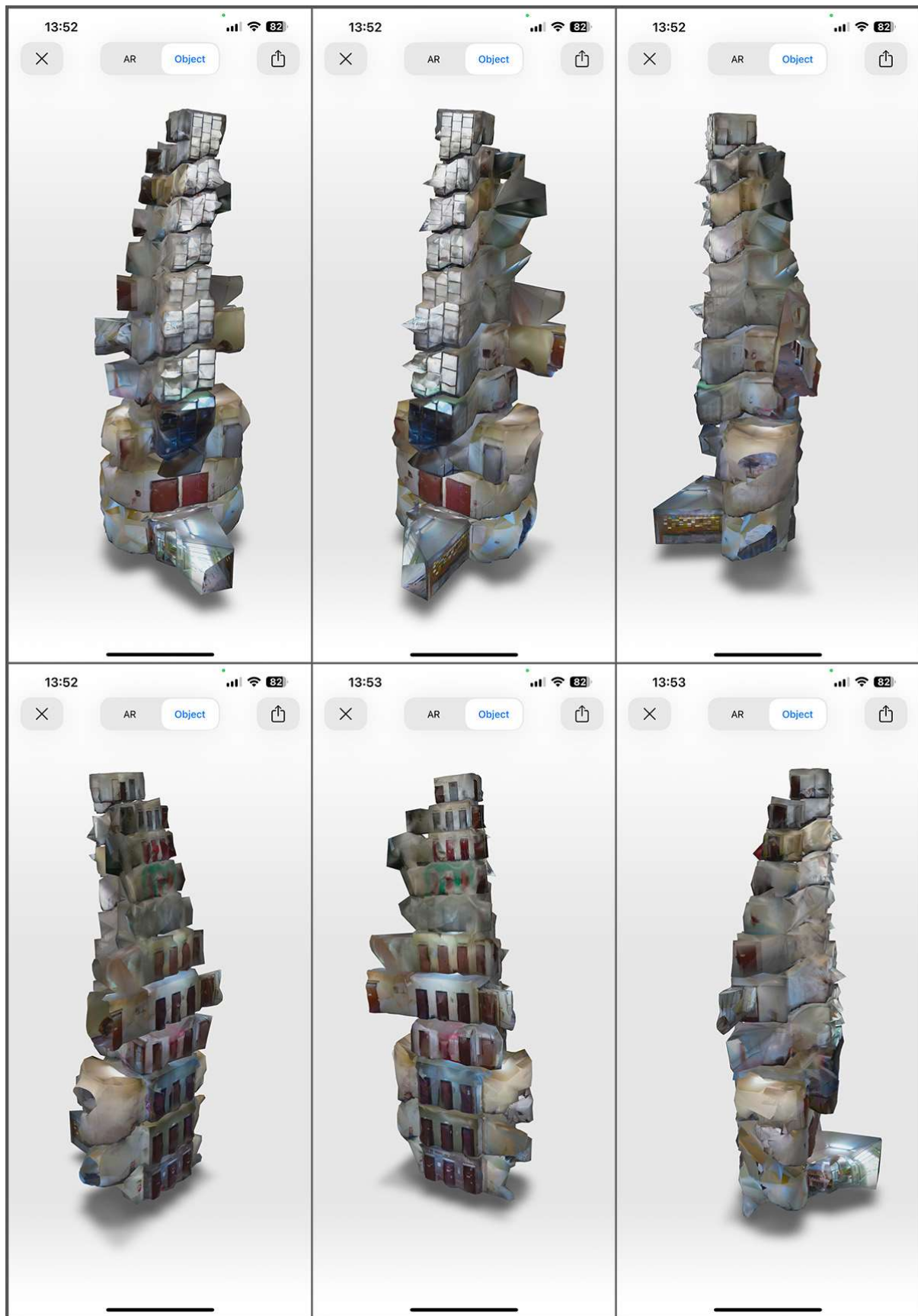


Figure 49. Turnaround AR Object *Polykatoikia* (Closed)

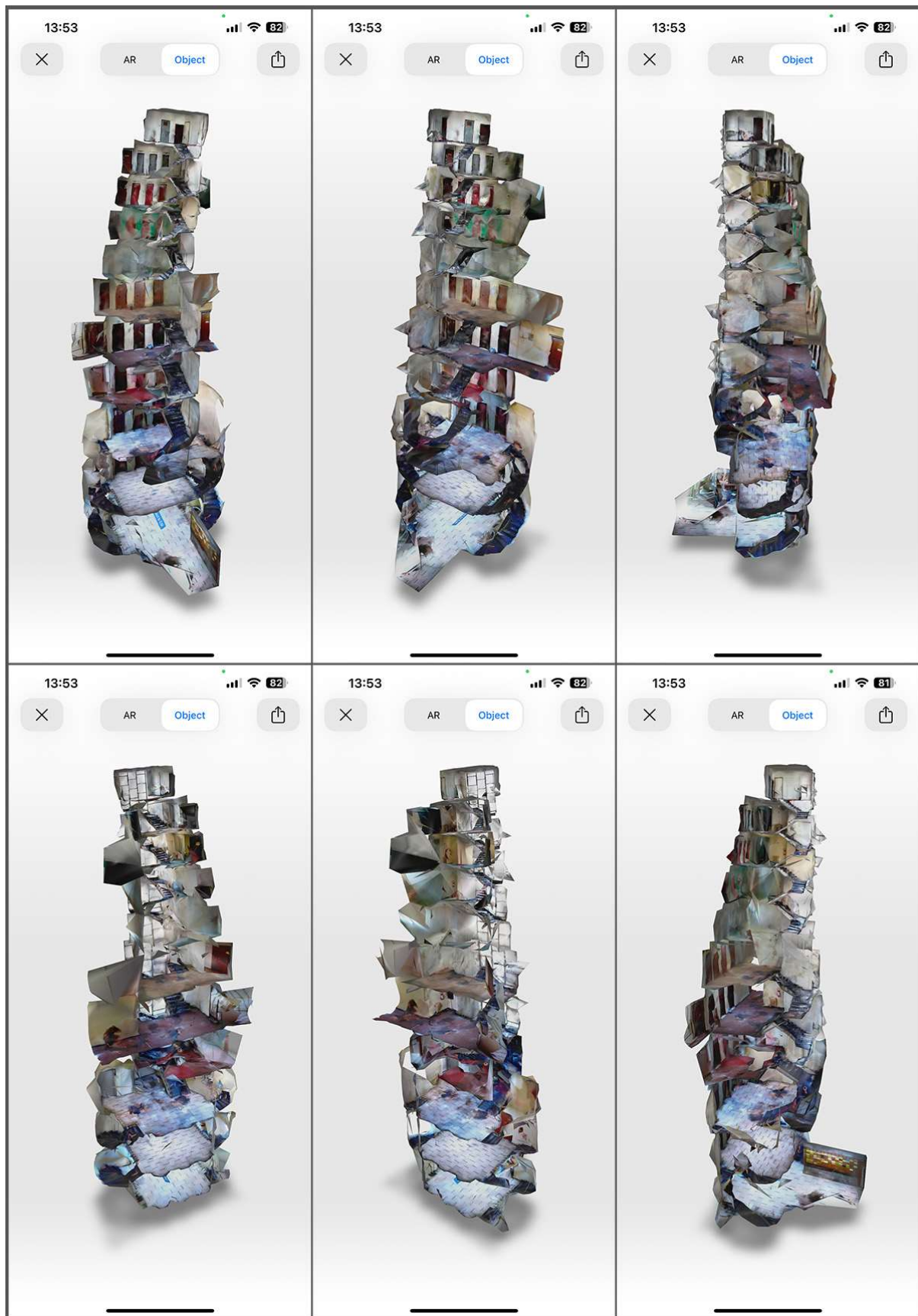


Figure 50. Turnaround AR Object *Polykatoikia* (Open)



Figure 51. Polykatoikia AR exchange I, March 2022, Athens



Figure 52. Polykatoikia AR exchange II, March 2022, Athens



Figure 53. Polykatoikia AR exchange III, March 2022, Athens



Figure 54. still from *Polykatoikia:Peripatos* (2022)



Figure 55. still from *Polykatoikia:Peripatos* (2022)



Figure 56. still from *Polykatoikia:Peripatos* (2022)

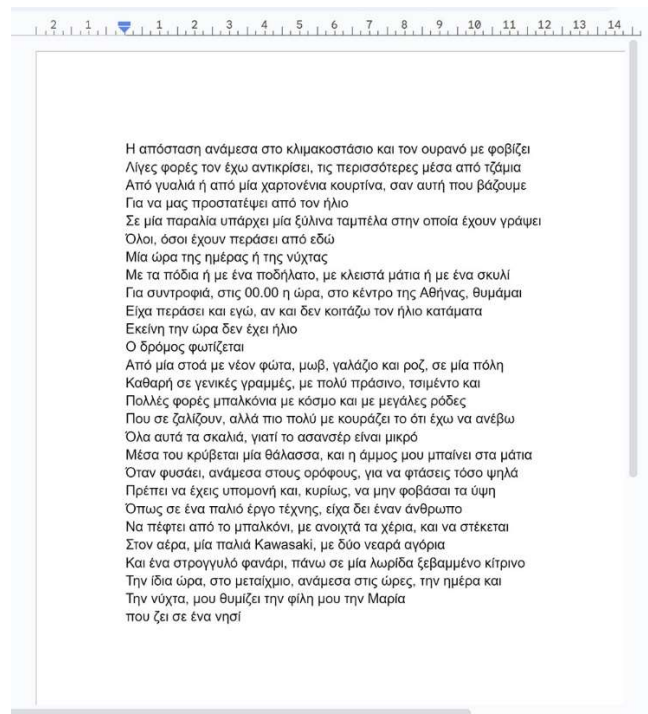


Figure 57. Partial screenshot of Koutsoukos' poem on my screen

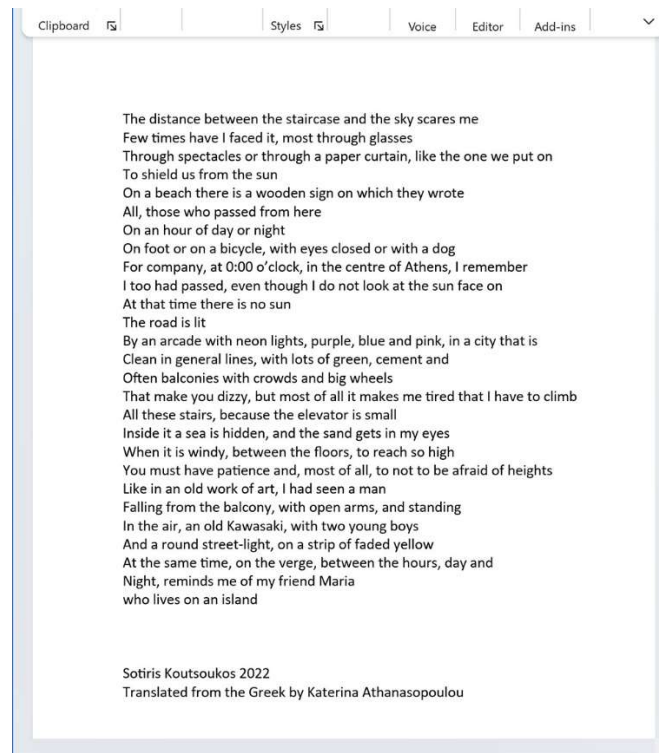


Figure 58. Partial screenshot of my translation of Koutsoukos' poem

The distance between the staircase and the sky

Following our AR exchange, Koutsoukos' poem arrives in April 2022, and becomes a spine for a seven-minute short animated film. Completed in October 2022, with a voice-over by actor Emma Swinn and a soundtrack by artist Savvas Metaxas, it debuts at the *Window Display* at *Künstlerhaus Bethanien* art space, Berlin, in January 2023. Its cinema premiere takes place at *Tampere Film Festival* in Finland, in March 2023. Not long after, it plays at the *Jill Craigie Cinema* at Plymouth University: the documentation photo taken a few minutes before its viewers arrive, is the very first image of my thesis (Fig.1); and so, taking a cinema seat, my thesis goes full-circle. The film begins with an establishing shot of a distant planet, and a female voice reflecting that "the distance between the staircase and the sky scares me". As the camera reaches the planet, spinning *Polykatoikias* form a view for two empty beach chairs. Throughout the film, the voice provides a monologue veering between melancholy, enthusiasm, and exhaustion. She is our unseen tour-guide, while tracking shots traverse landscapes that seem to relate to her reveries, but do not illustrate them literally. Rather, the words retain a distance from the images, like memories half-remembered and half-made-up; the voice seems to be interpreting the views, or imperfectly conjuring them as visions. Among the sights is a smouldering tree, with an luminous earth globe caught in its branches; a neon-lit arcade populated with motorcycles; a staircase channeling sand. As the film ends, we find ourselves right where we started, facing a planet, looping, from a distance.

Describing daily paths between home furniture, Yi-Fu Tuan says that 'most movements complete a more or less circular path, or swing back and forth like a pendulum' (2002 [1977]: 181-182). Within my thesis, I have been swinging back and forth between words and images. My practice research lifts a camera like an umbrella, or a scanner wand, and then moves in-between photogrammetric spaces, that become places through my repeated, virtual visits. Each one with its own light, time, and weather, and my own marks. When the models' distinct geo-chronologies are put together, my on-screen movements in-between form a new planet, a word that comes 'from Greek *planētēs* wanderer from *planaiēn* to wander' (Brookes et al., 2023: 1526). In what follows, I take a peripatetic tour into the grounds of *The distance between the staircase in the sky*, to explain its processes. For this, I put the 'camera-walks' that formed each of its settings in chronological order.

It is October 2018. In the centre of Athens, I walk up-and-down the eight-floor *Polykatoikia*. Back in London, via SfM photogrammetry, I begin to handle its ruined staircase on my screen, the building's inside-out space bringing to mind what artist Robert Smithson calls 'ruins in reverse', which is 'the opposite of the "romantic ruin" because the buildings don't fall into ruin after they are built but rather rise into ruin before they are built' (1996 [1967]: 72). Smithson's reversal is chronological, while taking

A Tour of the Monuments of Passaic, New Jersey around a construction site; in the many holes of Passaic, Smithson senses ‘the monumental vacancies that define, without trying, the memory-traces of an abandoned set of futures’ (1996 [1967]: 72).

It is August 2019. In the village of Astros, Arcadia, not far from the abandoned farmhouse, is a long-deserted construction site; a *yapi*, from the Turkish word for *structure* (Fig.60). For years, it has drawn me from a distance, for how it mimics the buildings of my *Apodemy* (2012), a film about emigration and the Greek economic crisis, which ground the building industry into a halt (Fig.59). Scholar and urban planner Dimitris Philippidis says that, at that time, the *yapia* ‘went quiet’ (2012: 222). A *yapi* shouts, with wood, and bricks, and metal rods; with the deep scraping of the digger; the staccato of the concrete mixer keeping it in flux. A long-quiet *yapi* is not only unfinished business, but a gaping mouth. I perform a ‘camera-walk’ on its two floors, and find in its basement a makeshift bed of cardboard, because ‘[t]here is no place entirely unpopulated or empty. [...] Places are textures woven by interpenetrating lives’ (Craig, 2017: 146). The cicadas are shouting. Back in London, within Blender 3D, I multiply my photogrammetric *yapi* into multiples, and into a new construction site (Fig.61). What grabs my attention is its underbelly; because my ‘camera-walk’ traced the *yapi*’s basement, the underground room has turned inside-out, so this ‘ruin in reverse’ is brought to light (Figs.62-63). Traveling towards it from below, I find a new planet (Fig.64).

It is March 2020. In the centre of Athens, the Varvakeios central market is bustling with shoppers. I perform a ‘camera-walk’ under its arches, passing parked motorcycles, a white van, and graffitied walls; shopkeepers call my attention to their meat, hanging from hooks within display fridges. Two butchers smile at me, mother and daughter, under fluorescent lights. I return to England as the pandemic is arriving. I extract stills from the video, turn them into models (Figs.66-67) and, once inside, I find me smeared across the floor. I create multiple meshes through the same images (Fig.68), like new words from the same letters.

It is August 2021. In Astros, soot flakes are flying down from nearby forest fires, like dirty snow. When I travel to Athens, there has been a fire in the nearby forest of Varybombi. I visited this place as a schoolgirl, now I walk with my camera among the dead trees (Figs.69-70). The ground is soft with ash, the silence smells. Walking along a path, I find a tree which I circle fully, moving my camera in-between the ‘V’ formed by its trunk. Back in London, I rotate around its model with a virtual camera, in a way that reminds me of how I circled it on the day. I animate smoke coming out of it and soot-snow falling because this forest, and other forests, never stop burning.

The physical places that I have described – the polykatoikia, the *yapi*, the market, the forest – became out of bounds during the COVID-19 pandemic, only their ruins accessible to me on screen. Among

multiple camera-walks and meshes, I gravitated towards *these* ones not nostalgically, but peripatetically, through a series of ‘what ifs’ (Mandoki, 2007: 94). What if I place the Polykatoikia in the new yapi-planet? What if I bring the virtual Polykatoikia in the physical one? What if I meet, there, an artist who is also a lawyer, to entangle our places of work and form a brand new place? Over the years, I have been returning alone to the model, but when I meet with Koutsoukos on the eighth floor, I pay attention to his voice, and reply in images. In April 2022, his response to our exchange is in the form of a poem. Because this is also *his* building, the poem, which he demarcates as his first⁷³, becomes a spine for the body (parts) of my work. As its limbs join-up, the composition (both as the setting of the 3D scenes and as the editing of the filmic scenes) is ‘bringing order to chaos and creating meaning from all the tumbling fragments’ (Lilja, in Kozel, 2012: 338).

Koutsoukos sends me the poem along with a message that he has re-appropriated his place of work via my work⁷⁴. Like my animations de-familiarised him from his everyday, his poetry trips me up within my well-trodden digital landscape, and I approach it afresh. The poem imposes its own visions – but the text also echoes our AR exchange, such as when I warned Koutsoukos “you are on the *verge*” (that of the staircase and that between model and reality). *That* vocal verge is now written in. Or rather, the word is *μεταίχμιο*, and my first job is translation, not only into English, because all my work entails translation: from here to there, from space to place; from the feet to the hands; from procession to processing – and back. I write to Koutsoukos that he can edit the translation, and he replies ‘no, no, I will not change anything. Translation is autotelic labour!’. When I suggest that it can also be co-labour, he says that ‘translation is a new work, and I don’t want to intervene. I want to read it like a reader’ (personal communication, April 2022). He is also happy with me creating a new version for the voice-over, spiraling forward. I was led by the poem: each line begins with a capital letter and there is never a full stop, so while reading I am fully free to go forth, while pulled backwards; even separated by a line, the words maintain a relationship with the previous phrase, and the meaning changes in-between readings (Figs.57-58). In my head, I can do it in one mental breath, but I can also pause to take a mental breath. The writing allows me to roam peripatetically, and a linear, ‘straight’ reading of the poem would constrain this freedom, fixing the elastic distance in a set pace. I add repetition, to make room for the words and give them back their bounce⁷⁵, a further translation⁷⁶. When Swinn reads the poem aloud, she enfleshes a new mother-tongue, a new gender, and a new grain into Koutsoukos’ text. I liken the repetition to her as re-reading one’s diary to understand one’s own thoughts; re-reading a

⁷³ Personal communication with Koutsoukos in April 2022.

⁷⁴ Personal communication with Koutsoukos in April 2022.

⁷⁶ I have included the original poem as well as the text for the voice-over within the Appendix (pp.241-243).

letter to understand another's; increasing one's sense of a place by returning somewhere at different times. I am also inspired by Farocki's editing process wanting 'to be able to view everything from a different perspective, again and again, in the way one rephrases an idea after talking to different people, hoping that the idea might increase in depth and form' (in Hüser, 2002: unpaginated). The vocal repetition rephrases the poem's form into different perspectives, the voice *trying* to make its mind up over the meanings in-between the words. Resisting a singular reading of meaning, the voice singularly asserts itself through a range of exaggerated deliveries, enthusiastic and deflated, wide-eyed and sleepy. All those translations/movements stretch the text, moving Koutsoukos and I into different grounds, pleasantly distancing and estranging us from our works. Estrangement within a VR-informed practice is also an antidote to the empathy-machine.

Koutsoukos has instilled into his poem words from our AR exchange, and I also install his words inside my thesis⁷⁷. I abstain from asking him what his words mean, so they remain an enigma for me to perambulate. Not to solve, but to wonder and wander, to attend and interpret. Some of the poem's places – a staircase, a road, an arcade – are already in my repertoire-as-inventory (Taylor, 2003), so I glean from my 'camera-walk' archive. I imagine the poem's old Kawasaki among the motorcycles within the Varvakeios market; I light that space as 'an arcade with neon lights, purple, blue and pink' (Koutsoukos, 2022a) so that words illuminate images, and images illuminate words (Figs.71-72). I *play* the iterative meshes from the market as a sequence, model-after-model, each one appearing for 1/12 of a second, their instants succeeding into animation. Rather than a single arcade, there are multiples, and in-between their frames (both filmic and structural) *this* animation's truth, in this particular sequence in the film, plays at 12 frames per second. The effect is of an animated boil (Torre, 2015) but here, rather than an original drawing copied in multiple tracings, the original place has been *emphatically* retraced, feet-first, and then, by hand-picking individual frames, into multiple meshes. Their multitude resists the singularity of an ideal replica, and at the same time, the 'boil' deriving when one is played after another, afflicts them with the *liveness* that animation alludes to.

The poem is a postcard sent from a holiday on a tropical island, as imagined during a walk to work. To render that postcard, and bring the sea to my concrete planet, I clear the ground of the yapi by cutting off its concrete beams. Thus, by ruining the ruin some more, room is made for two beach-chairs awaiting their sitters (Figs.73-74). What remains are the beams' long shadows from that specific time of day, in August 2019. I rotate the virtual sun illuminating the 3D scene, so that the beach-chairs' projected shadows align with the landscape's truth (Fig.75). The sea does not appear as a body of

⁷⁷ When I write that '[i]t is relevant to consider also how one gets to gaze at a landscape; whether they arrived on foot or on a bicycle' (p.x), I echo the poem's line '[o]n foot or on a bicycle, with eyes closed or with a dog' (Koutsoukos 2022a).

water, but is aurally elicited by Savvas Metaxas. I send him a rough edit of the film in August 2022, and he replies back with an initial, melodic composition. I include here part of my email reply to him, for the way it clarifies the setting of my film⁷⁸. I explain that:

‘[y]our work got me thinking, making it clear to me how important the "climate" of each scene is. [...] I think that on the whole, [the composition] should not be melodic, because the voice becomes lost. And the sound should somewhat cut from scene to scene because we are changing place and time of the day. That's what makes the melody difficult, that it unites them while they're separate. It's like we were there with a video camera. [...] I imagine you being there on the planet and collecting the natural sounds around you, like you are doing a field recording’ (email to Metaxas, 2022).

My reply to my composer shows my own understanding of my work as an extended documentary practice, where a space becomes place by walking it purposefully with a camera-on-a-stick, documenting both landscape and documentarian. Once the model has been assembled, it continues to carry the truth of my entrance and my exit, within a mesh indexed by my own traces. Each place carries its own light, as projected by the photographic texture on the model, and each place carries a memory of sound⁷⁹. Entering those spaces through my screen *feels* real, not only through the photographically-derived textures, but because of my movement while handling my computer peripherals, the views responding to my gestures. When the sun of the film comes down, the concrete planet becomes the centre of Athens, its multiple spinning *Polykatoikias* lit by neon lights. This is a poetic space, given an aural aura by Metaxas who uses field recordings to inject another real into the virtual. However, it is not just the truth of the recording that makes the work *ring* true; there is the ground truth of the ‘camera-walk’, the gestural truth of the AR exchange, the lyrical truth of the poem, the granular truth of the voice, the concrete centre of Athens felt through the feet. When I write to Metaxas that ‘I imagine you being there on the planet and collecting the natural sounds around you, like you are doing a field recording’ I am motivated by a sense of place as a poetic truth while I am still ‘making it-up’⁸⁰; I want him to breathe the planet’s air, to turn the different climates of each scene into the film’s atmosphere. That ‘we are there with a video camera’ encapsulates my entrance within my work as a documentarian and a witness to a virtual reality. Turkle warns that simulation brings new ways to see as well as to forget (2009: Xiv), and I make sure to reveal (and remind) my audience of both the digital fabric of my practice, and the haptic gestures of its makings. For this, I include within

⁷⁸ By this I mean that writing back clarifies the setting of the film, and as I articulate the response I get a better understanding of what the work is doing, and what it needs to do.

⁷⁹ In 2020 I had wondered in my notes ‘why do I always imagine [...] spaces under strong sun and immersed in the sound of cicadas? The rhythm of the cicadas is absolute and all-encompassing, it is the sound of the sun’.

⁸⁰ As I explained in the *Thesis Overview* (p.16), through ‘*poiein* to make’ (Brookes et al., 2023: 1539), I consider the poetic as ‘the thing made’ and also as ‘the thing made-up’, as creation rather than deceit.

the film some process recordings (Athanasopoulou, 2021a), that I had previously shared with Koutsoukos, demonstrating the body of the Polykatoikia as a digital object manipulated by hand, with the white arrow of my mouse cursor manifesting my index finger, and my digital gestures (Fig.76-77).

In July 2022, on a short holiday, I find in Astros the old desk-globe I had as a schoolgirl, which is also a lamp (Fig.78). It does not work anymore; its bulb is gone, and some places have since been erased from the map. Back in London, I turn it into a photogrammetric mesh, and twirl the globe on my screen, re-electrified. I release it inside the film, it gets caught in the tree's branches (Fig.79), it tumbles down the well of the staircase, and bounces into a beach ball: an old planet lighting up a new one. When I start sharing the film, it is also like I am throwing a beach ball for someone to pick up and play. Among the first who watch it is Duška Zagorak, writer, producer, and director of documentaries; she writes to me that '[t]o me it just feels it's about life that could be my life' (personal communication, 2022); she writes again on the following day saying:

'I woke up thinking of your film. I thought it just could have been inspired by my own memories, my own building in Sarajevo...But everyone will find a piece of themselves in it because it is so personal. I always think when something is most personal it becomes most universal. The imagery is just out of this world. The kind that you don't forget' (personal communication, 2022).

That my film inspired in my viewer a sense of place, allows it to exceed its point of origin. Cresswell says that a sense of place can be evoked by novelists and filmmakers (2015: 14), and Zagorak's response grants that evocation; the personal gets picked up from a distance and a connection forms a new meaningful location. Artist and curator Robert Seidel invites the film within the *Window Display* at the *Künstlerhaus Bethanien* art space, in Berlin, from January to February 2023. The exhibition text says 'Athanasopoulou [...] strips away the perceived accuracy of digital scanning and rendering processes and postulates artefacts of a future media nostalgia'; the film forms part of the ongoing *Phantom Horizons* series of works questioning the paradigm of linear perspective, seeking to 'open up multifaceted, unseen horizons' via deconstruction and contemporary film creation (Künstlerhaus Bethanien, 2023). I cannot visit, but fellow artist working with animation, Gudrun Krebitz, emails me her photographs of the building front, with the film playing behind a glass façade looking out to the level of the street (Fig.80). The scene brings to my mind Flusser and Farocki in dialogue in a Berlin café, with only a glass separating them from the passers-by (Fig.3). My film beginning its journey with viewers walking by it, glancing through a glass screen – is an ideal, peripatetic setting. I post her images on Instagram, thanking Krebitz, who comments '[w]hat an absolute joy it was to see your mesmerising work. It was so wonderful to meet you if only through the distance of a window'. Her photograph with the oblique beach-chairs and the pavement stretching ahead, puts side-by-side the paradigm of linear perspective and the *Phantom Horizons* that contest it (Fig.81). I say to Krebitz that the chairs awaiting

their sitters and the pavement extending forward brings to my mind Diana Silberman Keller speaking of virtuality as ‘the unexpected version of reality, the horizon of possible projection’ (2009: 184), and how her image brings this to me, from a distance. On the film’s next journey, at *Tampere Film Festival* in March 2023, I follow along, finding myself once again inside the black box of the cinema auditorium. Within the catalogue, the thumbnail accompanying my film is the burning tree (Fig.70), and the text by the festival’s executive director, Rinna Mikkonen, takes me back to the beginning. Mikkonen asks, in the aftermath of COVID-19, amidst the war waged on Ukraine, the suppression of women’s rights around the world, and the climate crisis:

‘[i]s it right to come together to watch films while the world is burning? [...] Art can convey things that science is unable to describe. And I cannot think of another artform that can communicate thoughts and emotions as effectively as cinema. Every year, we screen films from around the globe, and each of them is capable of evoking thoughts, feelings and even empathy’ (Mikkonen, 2023: 8).

Mikkonen wishes for an ‘understanding that there are different ways of living and establish a dialogue between individuals who think differently’ (2023: 8), which calls for an embracing of alterity; she also makes me reflect on how, the one thing I *could* do when the forests were burning back home, was to walk among the ashes; to keep a single tree burning through my practice, so that it did not die in vein.

I am gifted another peripetetic setting by *Video Art Miden*, in July 2023, screening my film within a pedestrianised street in Kalamata, Greece; amidst shop fronts and houses, the film’s reflections expand into another distant horizon (Figs.82-83). Unable to attend, I receive feedback through the curation, my film part of the section ‘Chasing my tail’, which features ‘works that either express doubt or depict the Sisyphean dimension of life’ (Video Art Miden. 2023a: unpaginated). This programme asks, ‘going around in circles, wasting my time. Is it really a wasteful time? Or is it one of the most creative processes?’ (Video Art Miden 2023b: 9). Such texts give me an idea of how my work is received, among fellow artists, perambulating filmmaking itself. Sometimes feedback is offered in the form of an invitation: a festival encourages me to submit, because, having seen the film, ‘[they] fell in love with [my] visual language and the relationship to the poem’ (Anonymous, personal communication, 2023). At other times, my submission is met with silence. I remind myself that throwing a beach-ball into the world does not mean that others will *have* to play. One of the emails of non-acceptance explains that ‘as always it was a tough decision accompanied by a lot of thoughts and emotional discussions’ (Anonymous, 2022). Any rejection is painful, but such a message – *especially* if it is a standard one – conveys the emotional labour invested by festival organisers; among hundreds or thousands of other entries, a selection can only be a gift (of love) rather than an expectation. Still doing the festival rounds, one of the most recent screenings was at the Zebra Poetry

Film Festival, in Berlin, in October 2023. Unable to attend, it is in the festival text that I glean feedback for the film, again. The screening programme description, entitled 'PRISM: The Worlds inside your mind – MEMORIES & DREAMS' foresees:

'[m]ysterious monologues on the soundtrack. Worlds of thought between abyss and contemplation. Memories, partly invented, full of postcards, animals and fragmented things. We take a look into the world of ghosts and tortured souls. And show poetry films as manifestations of boundless imagination, as a revolt against the absurdity of suffering' (Zebra Poetry Film Festival, 2023: unpaginated).

There are seventeen films within this programme, and although I cannot claim this 'universal' text for my own work, I am at home in such a contemplative abyss of postcards and fragments. A little further down, rather than my own provided synopsis describing the film, I am gifted a synopsis created by the festival; a poetic review, reciting the film through a new voice:

'Sunbeds are poised on a beach like game pieces. Cut-up cities. A globe is taped to a burning tree. Then: a cyberpunk street in Athens at night, and a skyscraper in decay, fantastically animated. "Inside it a sea is hidden, and the sand gets in my eyes." A cinematic poem between night and day, labyrinth and eruption' (Zebra Poetry Film Festival, 2023: unpaginated)

The film is envisioned afresh, the beach-chairs as pawns, the globe and the tree as paper-craft. The cyberpunk reference reconnects me with my study, and the labyrinth finds a clew. Koutsoukos' poetry is in the flesh of the text; his presence is spoken for. In a separate text, he delineates his place (his *thesis*) in the work. He says that '[t]he point that liberated me from the typical approach I would have into the space was a phrase by the creator, "inside this building of countless nomologists, I did not know there was an artist." Due to this effect, I was able to perceive the true scale of the space and reconstruct the materials through words' (Koutsoukos 2022b). His words demonstrate our collaboration as a kind of co-authorising of authorship: we write back-and-forth, spurring each other to go, reading, writing, and editing; through voices, words, translations, gestures and images. And yet, speaking of and for himself, he simultaneously solves and resets the enigma of the film, saying:

'the distance between the staircase and the sky may be short or long, it may be millions or thousands of millions of kilometers, or light years, or years, or perhaps I was taught in school exactly how long it is and no longer remember, or perhaps at a certain moment and at a certain point the sky ends, there is a goal post, and then the earth like a deflated ball, just like in the work of Katerina Athanasopoulou, falls into the void and swirls into the eternal spiral' (Koutsoukos, 2022b).

Athanasopoulou, K. (2022) *The distance between the staircase and the sky* [short film]. Available at: <https://vimeo.com/753065903> password: planet

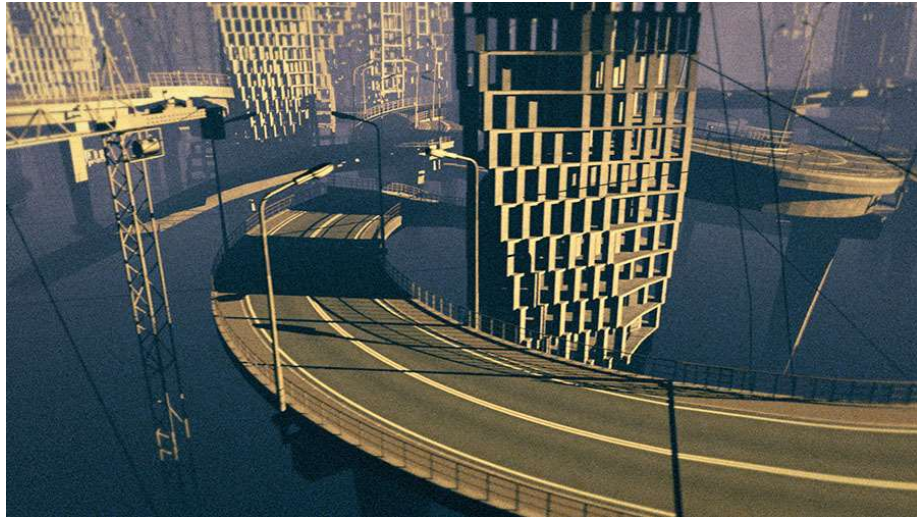


Figure 59. Still from *Apodemy* (Athanasopoulou, 2012)



Figure 60. Yapi, Google Street View, November 2011 (©2023 Google)



Figure 61. *Yapi* mesh, view from above, from 'camera-walk' on August 2019

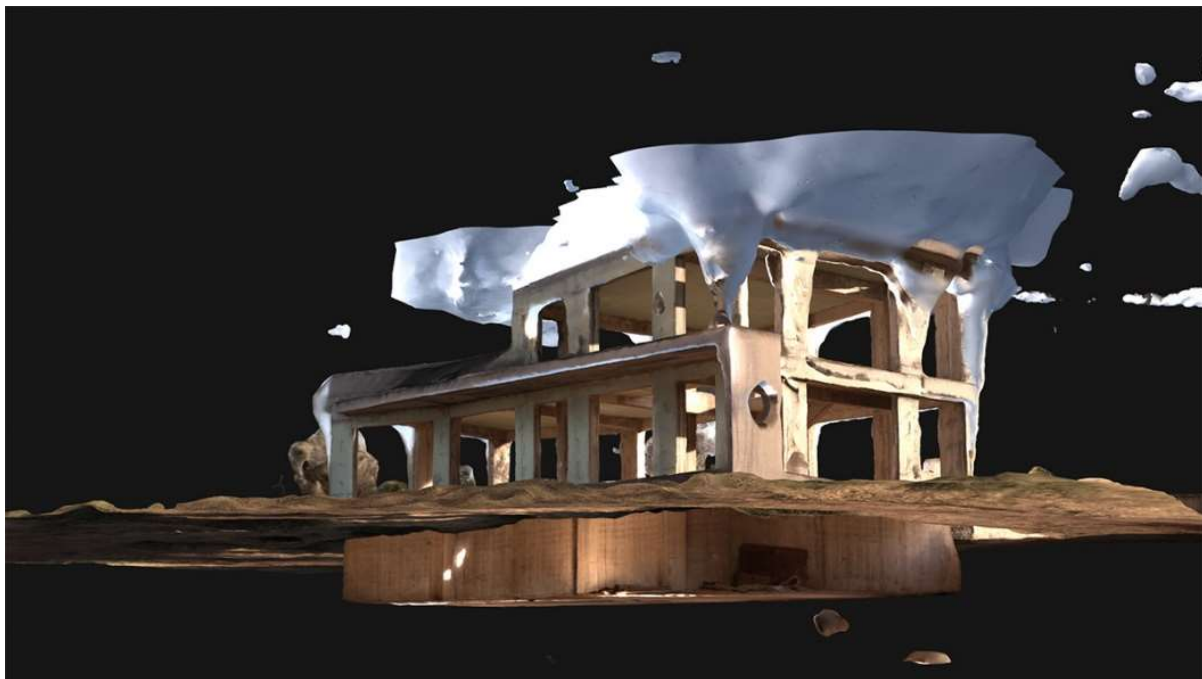


Figure 62. *Yapi* mesh, view with basement



Figure 63. *Yapi*, basement, view from below



Figure 64. *Yapi Planet*, process render

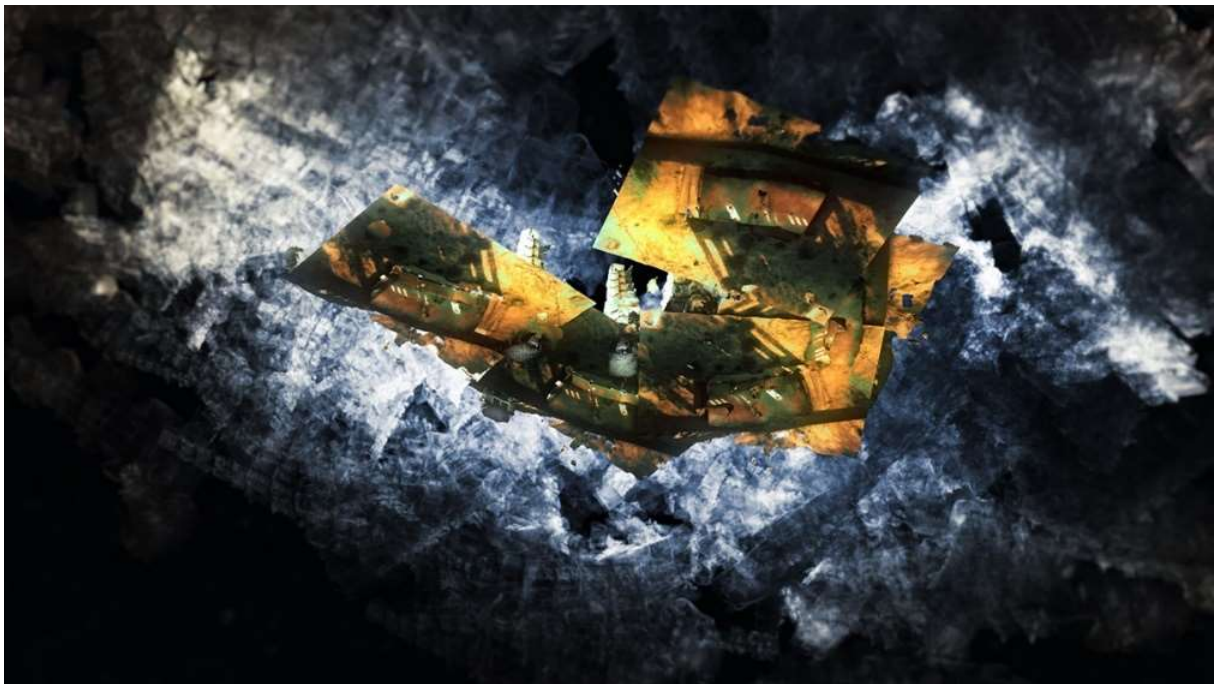


Figure 65. Still from *The distance between the staircase and the sky* (2022)

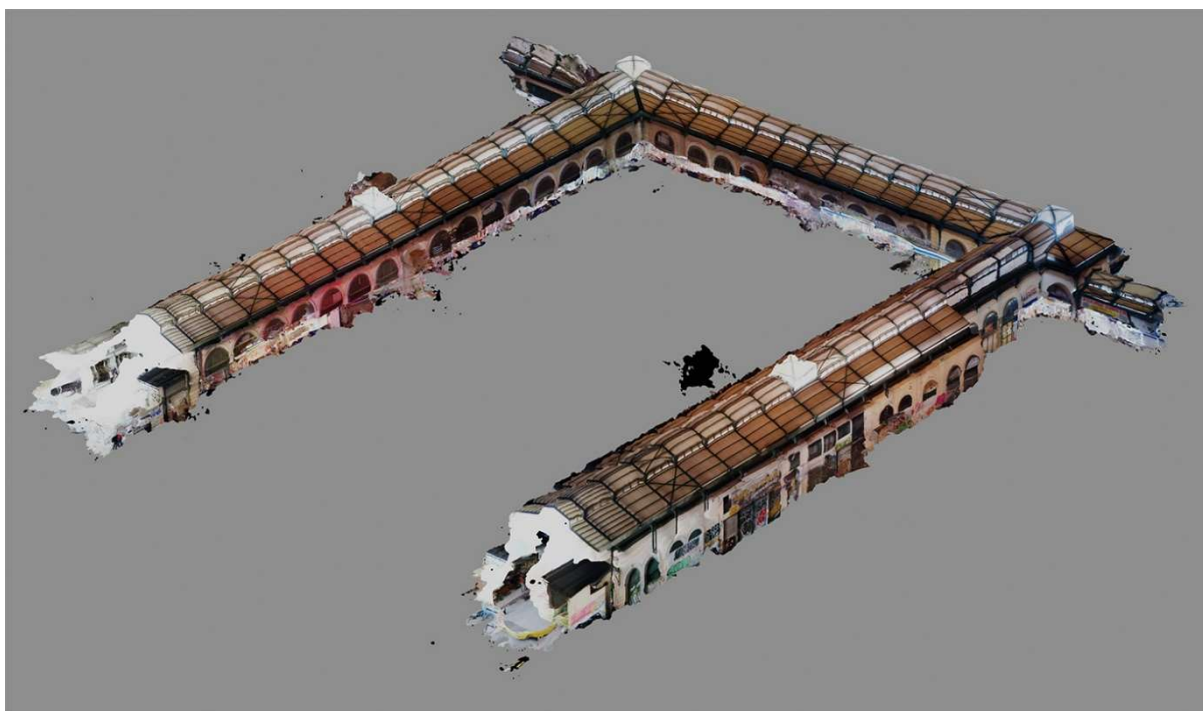


Figure 66. *Varvakeios market*, process render from above, from 'camera-walk' on March 2020

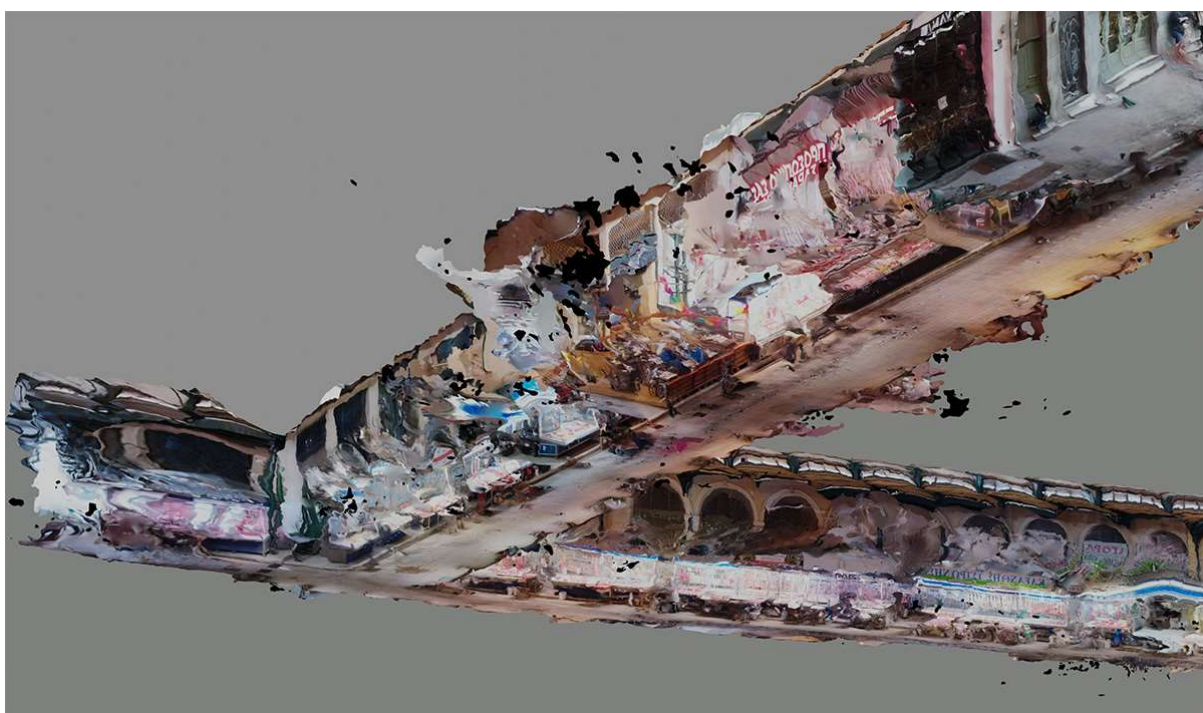


Figure 67. *Varvakeios market*, process render from below



Figure 68. *Varvakeios market* iterative meshes, process renders



Figure 69. Front lens, 'camera-walk' in the burnt forest of Varybombi, August 2021



Figure 70. 'Little planet' style render of 'camera-walk' in the burnt forest of Varybombi, August 2021



Figure 71. Still from *The distance between the staircase and the sky* (2022)



Figure 72. Still from *The distance between the staircase and the sky* (2022)



Figure 73. Process render, *Yapi*



Figure 74. Process render, *Yapi*



Figure 75. Still from *The distance between the staircase and the sky* (2022)



Figure 76. Recorded live handling of the Polykatoikia on-screen



Figure 77. Still from *The distance between the staircase and the sky* (2022)



Figure 78. Desk-globe, Astros, Arcadia, July 2022



Figure 79. Still from *The distance between the staircase and the sky* (2022)



Figure 80. *Window Display, Künstlerhaus Bethanien, February 2023* ©Gudrun Krebitz

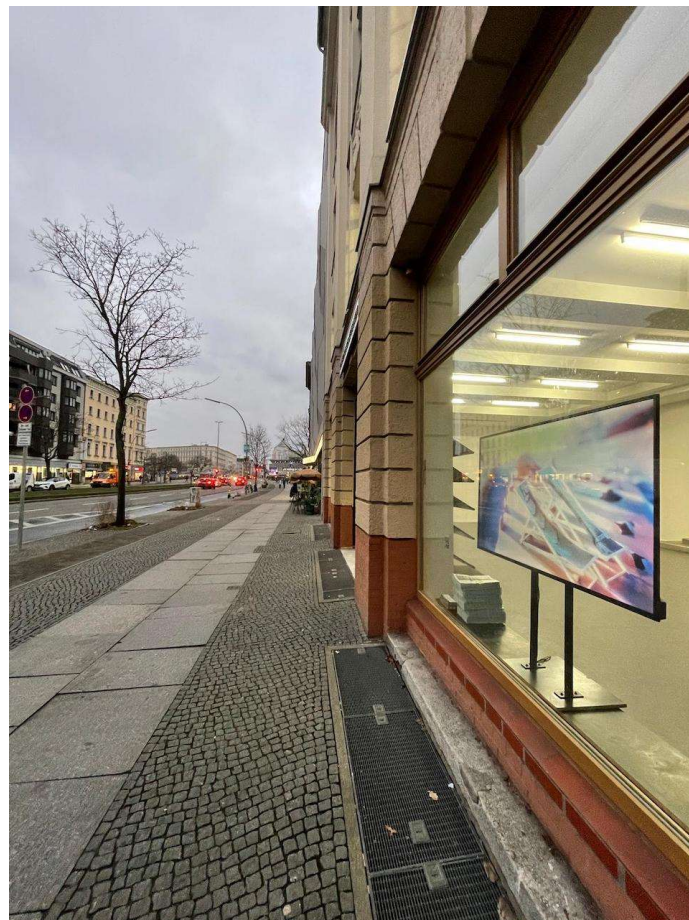


Figure 81. *Window Display, Künstlerhaus Bethanien, February 2023* ©Gudrun Krebitz



Figure 82. *Video Art Miden*, Kalamata, Greece, July 2023 © *Video Art Miden*



Figure 83. *Video Art Miden*, Kalamata, Greece, July 2023 © *Video Art Miden*

Chapter 7: Discussion and Conclusions

Introduction

My thesis title foretells the research journey: I begin by walking away from VR as ‘empathy-machine’, towards a peripatetic practice that creates animation from the very tools of VR – albeit used ‘dangerously’. The final project provides a poetic answer to my thesis’ aims, and is experienced within a cinema auditorium rather than with a 6DoF headset. *The distance between the staircase and the sky* evokes a sense of place from walking, so that a short film may become a *place* – that is, a space of meaningful connections for those who attend it.

My research gravitates towards points of origin – beginnings, etymologies, visions, idioms, foundations – not to return to the past but to envision futures, including abandoned and inverted ones. A neologism can also be a reverse-etymology. This gravitational pull is not nostalgic and certainly not patriotic, because I have learned from Flusser, Farocki, Perec, and Yuxweluptun that nationalism, war, and colonialism go hand-in-hand. My thesis ruminates, affected by how COVID-19 drew a sharp highlight on the fragility of bodies and itineraries. My research project changed along the way, in that I took the VR headset off, but the spaces it explores (and the bodies that made those spaces) are still with me, even those that are no longer here. This study will be of relevance to those in the fields of VR, AR, animation, and documentary studies, but also to researchers and practitioners working with poetry film, and those working with photogrammetry and volumetric capture. Although the work was not tested with healthcare professionals, as envisioned, it draws tentative links around agency and phenomenology, through poetry and the reflections from a patient’s diary. I have not attempted a definition of empathy, because my study searched for a specific idiom and its imbrications in VR. The colonialist foundations of ‘walk in the other’s shoes’ were not known to me when I began this project, and my hope is that this knowledge will begin further conversations.

The texts in this thesis are also in conversation, with themes threading in-between that will inform my further study: the spiralling staircase, the labyrinth, the mise-en-abyme, the hand, the ghost, the voice, the body. Another research opening is offered by Sheets-Johnstone’s emphasis on ‘animation’ over ‘embodiment’, which she considers to be a lexical band-aid over the wound of the Cartesian mind-body split (2009: 375). While there exists a wealth of research on embodiment, to research animation *as* animation, as doubled-up and back-and-forth vitality, *moves* me.

The significance of 'walking in someone else's shoes' within the rhetoric of VR as empathy-machine

Within the *Thesis Overview* (p.16) I explained how the first line of my enquiry was spurred by empathy's negative connotations in my mother-tongue and how its explainer as 'walking in the other's shoes' intrigued, rather than convinced me. To understand the language of the idiom, I examined its history through texts. In Chapter 3, I showed how it stems from American settler colonialism and the subjugation of Indigenous People. Rooted in a late 19th century poem claiming to sympathise with the Native American, it serves to ennoble the settler's domination, while cementing the reader's Christian faith. The poem occludes the impact of settler colonialism on the Indigenous body and, when re-emerging as Native American wisdom in the 1920s-1930s, conjures a fictitious spirituality towards reinforcing a sense of American identity. The biblical undertones, now called an 'Indian prayer', transform the moccasin wearer into an incomplete proto-Christian from whom the white man may further 'borrow'. Through *Judge Softly* I highlight the idiom's point of origin next to the reservation camp, which is 'a colonial internment camp, a concentration camp' (Yuxweluptun, 2016), the model of the African reserve, and the inspiration behind the Nazi concentration camp (Mamdani, 2015).

Once empathy is equated with 'walking in another's shoes' the metaphor simplifies a complex act of imagination into an expression already valued as 'good', whose hold in Anglo-American culture is so powerful that its deeply problematic origins have gone unquestioned. However, the expression cannot be divorced from the subjugation of Indigenous People. Regardless of the speaker's intentions, they are reciting the poetry of colonialism, enacting a masquerade where the settler dresses up as their victim to absolve themselves of guilt and to keep going. VR as giving you 'a concrete feeling for what it is like to walk in someone else's shoes' (Lanier, in Eggers, 2017: unpaginated), relies on the already established empathetic connotations of the idiom, outside of any specific technological affordances of VR. The saying's Anglo-American cultural hold ennoble the empathy-machine through mere mention; VR's walking affordances concretise the metaphor into truth, and subsequently cements the VR industry's foundations. My position is that, to paraphrase Pedwell⁸¹, the unquestioned view of 'walking in the other's shoes' as inherently 'good' has also occluded its problematic foundations. I do not suggest that the many researchers and practitioners that embraced the idiom are not moved by a genuine desire to create a kinder society – but I do purport that, once such a pattern is recognised, to keep it running in the present would be dishonest.

⁸¹ As I recounted within *Slippery Shoes* (p.61) Pedwell describes empathy as a notion 'so widely and unquestioningly viewed as 'good', its naming can represent a conceptual stoppage in conversation or analysis' (2012: 281).

While the first line of my inquiry has been elucidated through desk study, my enhanced *attention* to *Judge Softly* was inspired by my father-in-law Mick Clark's reading of *Tread Softly*. The two poems are of almost the same age and equally mis-titled: *Judge Softly* (1895) is better known as *Walk a Mile in His Moccasins*. *He wishes for the Cloths of Heaven* (1899) is better known as *Tread Softly*. In both poems, the essence lies in the final line: *Judge Softly* ends with '[t]ake the time to walk a mile in his moccasins'. *Tread Softly* ends with '[t]read softly because you tread on my dreams'. The *clue* is in the 'his' and 'my', the possessive determiners differentiating the two approaches as a matter of position by possession – it is for this reason that Gauntlett's 'take a walk in *my* shoes' provides a personally invested alternative to VR as empathy-machine, because what is suggested is a personal gift (or a loan) rather than an appropriation.

My contribution to knowledge in articulating the settler-colonialist significance of 'walking in the other's shoes' within VR as 'empathy-machine', takes place within a research project that is from the start peripatetic – structurally, methodologically, philosophically, and corporeally. A way to call the difference between a peripatetic and a coloniser can be elucidated through comparing the two practices: a *peripatos* is a stroll that wanders and then returns home, while a *colony* imposes itself in another's land, taking away their freedom, and stealing their shoes.

Researching as an animator, animating as a researcher

Landrum's discussion of the practice of theory as a travelling, or pilgrimage, from one's home city to another - to behold wondrous sights and return to recount them - illuminates theory beyond a purely contemplative activity (2016: 31). My 'camera-walk' also happens on foot, and Flusser's influence as a 'peripatetic, polyglot philosopher (Jaffe et al., 2021: 2) always trying to maintain the point of view of the immigrant, that is of the foreigner (Krause, 2006: 1), is key. Such an approach is especially valuable in interdisciplinary research, when one enters a new ground to acquire new knowledge like a new language, and simultaneously to enrich the field with the language they brought along. When I research VR within a performance milieu speaking the language of an animator, I am not a patriot but a *polyglot* who listens to a language of gestures, on a tactile-kinesthetic level that transcends the hegemony of the text. This sounds paradoxical because I am expressing these thoughts on the page via a written articulation. But the words came post-kinesis, my insights triggered and gleaned through the silent 'camera-walk' which 'opened my eyes' to that which is beyond the visual, only. Within Chapter 5 (p.138), I have explained that through its lack of viewfinder and LCD screen, my GoPro frames the walk but not the view. By not focusing on the camera, and by staying silent, I listen to my body and 'walk into' my own kinesthesia through peripatetic wanderings. The centrality of movement continues in my interactions with my computer and its peripherals, as I augment my animator's language with performance's repertoire.

Pierre Hébert's question as an artist working with performance and animation – '[w]hat do I really do when I animate?' (2005: 182) – echoes in my aim to articulate what I really do when I research as an animator, and when I animate as a researcher. Unpicking the enmeshed processes, I keep tinkering with black boxes, through – and aware of – my body in the centre, the maker's body that Hébert's own practice and text brings to light. His resistance to the pervasiveness of illusion within animation discourse also meets that of Tom Gunning. Here, I research as an *animator* by attending to Gunning's understanding of animation as activating the human sensorium on a level of perception, rather than illusion (2014: 4). As I articulated by paraphrasing Gunning (p.56), in VR the human sensorium is transformed (activated) by its encounter with a technological device through a controlled process of perception; at the very same time, VR is also activated by its encounter with a human sensorium through a controlled process of technological sensing and tracking. My position is that the human player in VR is firstly its *animator*, and the space of VR depends on her whim, intention and bravura, as expressed and impressed through her bodily gestures – an authorial centrality that I draw from Paul Wells' understanding of the cinematic animator (2013: 132). I have also discussed peripatetic aspects of VR and AR through Edwin Carel's notion of the museum visitor in-betweening the keyframes of

artworks (2013); I put this into practice through *Deep Waters*, for my visitor to activate the work through their perambulation, and I exchanged a mobile phone with my collaborator in *Polykatoikia: Peripatos*, for him to animate the virtual with his own body. Thus, while researching as an animator, I inform VR and AR studies with knowledge deriving from Animation studies, towards new knowledge that emphasises perception over illusion, and the body-moving as the centre of the immersive experience rather than something to leave behind. Researching as an animator also means practicing persistent, emphatic repetition. Like an animator drawing the same image again and again to produce a *boil*, and like a writer⁸² repeatedly copying a text to elicit a *closeness*, my methodological resilience is not satisfied with a single ‘true’ replica but elicits a poetic truth through the in-betweens of many, as they play at 12 (or 8, or 24, or 1000) frames per second.

Animating as a *researcher* means that the work presented in this thesis was made in anticipation of both readers and viewers. Facing my reader, my articulation and dissemination of my processes – pipelines, experiments, ephemeral exchanges – brings to light parts of labour that do not always make the *cut*; entire gestures that would be otherwise missed by audiences and critics who face only a *final* work. By sharing the in-betweens of a practice that is actively in dialogue with theory, I offer a documented first-person account of the *idion* of an experimental animation practice research. Within my thesis, such materials help elucidate my doing-in-thinking and thinking-in-doing as a form of knowledge-gleaning through the gestures of practice. Reflecting on the somatics of my tool-handlings, I acknowledge my engagement with my computer peripherals as playing an instrument rather than as dealing with code. I offer an insider’s view that contests the treatment of digital animation as ‘just’ simulation or as ‘just’ the product of code, computers and algorithms – an approach which ignores and makes disappear the body of the animator.

I have discussed (p.31) how a verbal articulation of practice research can be as painful as a live self-anatomy (particularly when the project is in-progress) but the exhibited practice also *performs* the work, and speaks in my silence, and even in my absence. Thus, when I animate as a *researcher* towards my viewer, the knowledge gleaned from my practice-research becomes articulated *beyond* words, in the tacit language of screen gestures and through the mouth of poetry. In other words, while *this* text articulates my conclusions, my practice outputs *perform* – and perform *as* – conclusions as well. Equally, the work *talks back* to me through my viewer’s feedback, who becomes a translator, enriching the work with new meaning. The feedback was not via an anonymous questionnaire, but through dialogue, or by reading-through exhibition materials. Here I encounter some friction. Nelson explains that an artwork may also stand alone as evidence of a research outcome, self-evidently illustrating

⁸² Ehmann on Farocki’s practice (2016: 24).

what has gone before (2009: 125). Does my final film function as such, or do its thick layers of translation occlude some of the evidence? Its enigmatic nature does not result from a desire to be obtuse, but antithetically, from being deeply personal – Koutsoukos' poem is semi-autobiographical, and the film traverses grounds that I have marked and that have marked me. While I gravitate towards them, their otherworldly banality may elude others.

There are two elements here: at its deepest level, *The Distance between the staircase and the sky* is an extended, peripatetic exchange between a poet (who is also a lawyer) and an animator (who is also a researcher). Beginning within a staircase, the dialogue in-between continues to this day, and accepts that certain impressions, memories, images, or words will remain untold, and/or unknown, and/or impossible to translate, even among the conversants. Equally, the film re-enacts my working practice, repeatedly and persistently witnessing the animation on my computer screen as my own first audience. Joanne 'Bob' Whalley and Lee Miller explain that while presenting at PARIP⁸³ their doctoral research which focuses upon the singular site of the motorway service station:

'we would feel as if we were showing holiday snaps or telling stories about people you had never met. For us the result was always a slippage, never a showing. We could never [...] put you all in a charabanc and take you all out on a road trip' (Whalley and Miller, 2009: 230).

To address this, in 2005 they brought the motorway to PARIP: for twelve hours, they got under delegates' feet, occupying a corridor space, and mapping those sites wherein their research is located. They explain that, rather than talking about it, they were showing the thinking through doing what they engage in while making sited work (Whalley and Miller, 2009: 230). The screen upon which my work is shown in the cinema is also a grand version of my computer screen; the cinema seat is like my desk chair. I have noted (p.13) that a 'thesis' in Greek is also a seat, a position, a place. Nowhere is the site of my work as silently face-to-face with luminous, mysterious on-screen images better shown than in the cinema auditorium. My viewer takes my place, and I have already taken theirs from the beginning. The film is better grasped watched multiple times, looped, as its structure intends, yet it sits (happily) in-between others within screenings, a short callout rather than a repeating echo. At the same time, its screening history shows that some people *do* pick up that beach-ball, where years of 'what has gone before' (Nelson, 2009: 125) are projected into seven minutes.

By maintaining a dialogue between the laws of theory and the idiosyncrasies of practice, my practice

⁸³ PARIP (Practice as Research in Performance) was a five-year project directed by Professor Baz Kershaw at the University of Bristol's Department of Drama. It investigated practice as research in performance and the creative-academic issues raised within. Dr Angela Piccini and Dr Caroline Rye were running the project from January 2001 to February 2005, and Dr Ludivine Allegue Fuschini from April 2005 to September 2006. The project was funded by the Arts and Humanities Research Board (PARIP, no date: unpaginated).

research imbricates the nomothetic and the idiographic by putting the nomological principle of the archive (Derrida, 1995: 9) into *play*, peripatetically, digitally, and haptically. I have recounted how a building of lawyers and their archives became a physical ground for such processes within my wider *Polykatoikia* project. As an animator-researcher and a researcher-animator my work also in-betweens corporeal phenomenology and hauntology. Drawing from both Sheets-Johnstone and Derrida creates another friction, considering that Sheets-Johnstone criticises Derrida's 'replacement of animate form with grammatical form' (1994: 95). The friction is etymologically extended in how certain words – like *empathia* and *empathy* – engage in a *phantomachia*, a word I borrow from Derrida's science of cinema, for how it suits the ghosts haunting 'method' and 'theory'; words whose interweavings of knowledge and traveling can only be dimly perceived through etymology (Turnbull, 2007: 142). Like Derridean specters, the motional-relational roots of these words return, persistently echoing that 'verbal language is post-kinetic' (Sheets-Johnstone, 2011a: 515), and 'movement is our mother tongue' (2011a: Xxv). Here, I encounter another doubling – animation as moving image, and animation as 'the foundational ground of life' (Sheets-Johnstone, 2011: 453) – and so, I realise my double role as animate animator, opening the black boxes that produce the filmic ghosts and elucidating their 'inner workings' (Flusser, 2000: 16).

What I witness in my work from the very first experiment with photogrammetry from/within the Church of São Domingos, is the statue/ghost of the man in the blue shirt (Fig.19) and my own smeary traces on the church floor, ghosts captured through a mis-use of SfM photogrammetry and 360-video. While the *acheiropoieta* tradition erases the hand of the painter towards the creation of miraculous, celestial images, my *Cheiropoieta* (Fig.22) is a *contaminated* miracle emplacing photogrammetry within the iconic lineage of religious painting and photography – old magic becoming techno-magic through the apparatus. PaR brings out phenomena that can only be encountered through a practice rather than book enquiry alone (Nelson, in Scott, 2016: Vii). My photogrammetric phenomena can also be read through a practice-led lens, as an accidental auto-ethnography which portrays the practice-researcher as a pilgrim. At the same time, what the images reveal goes beyond an artistic practice, because they elucidate how the technology functions in hiding the body in the centre.

Via the 'camera-walk' and its translation into SfM photogrammetry, my contribution to new knowledge manifests through images that would not have appeared had I been using a smart phone (with a selfie-stick), LIDAR scanning, non-panoramic or spherical images, or high-end volumetric video capture. SfM photogrammetry with materials shot via a conventional camera, a studio rig, or a drone, *looks away* from both the camera body and any human body behind the lens; LIDAR scanning omits photography, but similarly does not 'look back'. Part of the 360-camera's program is to self-erase its

body from the picture, so had I left the camera on a tripod or worn it on my head clipped on a helmet, the model would have been less stamped by my presence. It is precisely the invisibility of the humans that arrange the cameras, program the algorithms, press mouse and keyboards to reshape imperfect models, that gives digital photogrammetry its allure of computed objectivity - while equally occluding the human as programmed-back by the apparatus. However, because I carry forth the 360-video camera with, and slightly in front of, my own body, I am also documented as I document. Rather than fulfil the digital replica that SfM photogrammetry promises, my work exposes the animate.

There are openings for further research: a consideration of the VR and AR player as animator and in-betweeners can also be examined within Motion Capture (mocap), whose movements translated into animations already populate the stage of VR as ready-animated characters, or, in live performance, through sophisticated sensor motion capture suit systems, like the *Rokoko Smartsuit* (Strutt and Cisneros, 2021). However, even in 6DoF (or even 3DoF) VR systems, the tracking of the human body is already a kind of mocap, where the player's movements are captured for VR to be animated. There is therefore a meeting point between VR and mocap as harvesters of gestures. Mocap threatens the labour of animators by seemingly making them superfluous – although it takes their work to 'clean up' the mocap (Sito, 2013: 212) and to build upon it (Mihailova, 43: 2016). At the same time, mocap ghosts the body of the performer by discarding it after the fact, so only a gesturing skeleton remains. The frictions between moving-image animation and mocap, in triangulation with animation-as-liveness, offer scope for examining the mocap performer not only as actor, but as animate animator.

How does the 'camera-walk' as a peripatetic artistic practice *make room* for remote collaborations?

Flusser's notion of the 'dangerous' tool armed me with an understanding of my camera-on-a-stick beyond the heroics of its intended use, as a 'new' tool concealing unknown virtualities and permitting acts of emancipation (2014: 143). Ironically, in 2019 – only a year after I began experimenting – its 'newness' expired and it was discontinued. Outdated as such, my GoPro partakes in 'the hubris behind the innovation agenda that fuels the global economy, and that produces seemingly infinite amounts of technological fossils in the process' (Zylinska, 2017: 130). Through persisting in using the same camera-fossil, I revive its potential for danger through deflecting its obsolescence. Within my practice, I repurpose the adventure-seeking tool towards a gentle stroll (*peripatos*), and rather than exhibit its immersive video as-is, I extract 3D models from it. Spurred by Farocki's 'another kind of empathy' ([2008] 2016) and his '(unspoken) rules' (Ehmann, 2016), I walk away from VR as empathy-machine, into an expanded documentary practice that allows me to glean my audiovisual materials by simply traversing a room, carrying high a little box capturing the entire panorama.

When I enter another's personal space, the lack of an LCD screen frees my attention from the camera, so I can focus on the person, and be fully present in their presence; I face *them* rather than my apparatus. No assistants crowd the intimacy of this encounter; no equipment to hide behind by performing 'the director'. I may walk a space within minutes, and afterwards refer to the 360-video both for photogrammetric purposes as well as for the recorded sound; the video is also a memory-aid. Not only are thus my visits less intrusive, but the operational and performative simplicity of my 'camera-walk' – based on the automatisms of the apparatus and those of walking – allows me to pass it, like a baton, to the person next to me; to *make room* for them in my practice-research, and to let them 'make *their* room' also in the photogrammetric mesh.

My first collaboration within my research was with my father-in-law, Mick Clark, who not only let me find my feet within what was a still young practice, but also experienced the VR headset and carried the collaborative baton in his own 'camera-walk'. Crucially, before any engagement with technology our work began with him performing a reading of a poem, whose call to 'tread softly' informed my approach as a 'walking alongside' or 'walking with' my collaborator, but equally renewed my attention towards what was revealed as the colonial legacy of a seemingly 'good' expression. Within *Deep Waters*, a work created during a COVID-19 lockdown, the 'camera-walk's' performative procession, with its emphasis on the body, use of a consumer-grade camera and embrace of the imperfect photogrammetry, was flexible (and inexpensive) enough to be performed remotely by my 'distant

walker' Bill Psarras, in what became a 'gifted' collaboration. A site-specific installation thus began via telepresence, its peripatetics performed from a distance, towards bridging that distance.

Unlike a smart phone or a higher-spec camera, my GoPro fusion offers no other interactions once the recording button is pressed and centres my co-walker in the experience rather than burden them with complex technical manoeuvres. As they do not 'just' participate but involve themselves authorially and creatively through their body-moving, our company is one of equals. Walking with a camera-on-a-stick invites Ingold's consideration of the wayfarer as pacing a line with his feet that impress rather than inscribe the ground (Ingold, in Pink, 2011: 3). However, Sarah Pink proposes that wayfaring *can* be understood as a form of inscription, because the walkers she has worked with 'have been involved in drawing, designing and using maps of the same terrains that are walked' (2011: 5). My co-walkers and I leave our traces on photogrammetric grounds, within models-as-maps that double as self-portraits. When the model of the *Polykatoikia* is erected in unfamiliar grounds such as within Lisbon or returns to its place of origin in the centre of Athens, AR offers an additional kind of wayfaring, map-reading, and map-making.

I have discussed the camera-on-a-stick as a collaborative baton that I pass to my co-walker, in their presence or remotely, and how the model within AR becomes another kind of 'beach-ball' that appropriates the colonial legacy of the terrestrial sphere (Ramaswamy, 2017) into a thing to bounce, twirl, and play with; a thing to move around to be moved *by* (p.183). However, it is not the technology that makes room in the collaboration of the 'camera-walk'; firstly, it is the body-moving, which makes space by moving in space, because the 'concept of space itself derives from movement' (Sheets-Johnstone, 2010: 114). In *The Distance between the staircase and the sky*, the baton returns to my hand in the form of a poem; poetry makes room for Koutsoukos and leads to a new voice, augmented by translation, performance, and repetition.

Mick Clark passed me the baton of poetry even before I held that of the camera. I think back to the start of our collaboration, in June 2018, when he read out, with effort, "tread softly because you tread on my dreams". I paid attention to that voice, by staying silent, and then by listening to it, repetitively, in silence. As I reach the end of my research journey, I understand that Mick told me what I needed to know, right from the start.

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Appendix

Within the Appendix I am including the poem *Holidays in the Canary Islands* (p.241) that Koutsoukos wrote after our AR exchange which I describe within *Polykatoikia:Peripatos*. This is followed by the reworked version (pp.242-243) for the voice-over of *The distance between the staircase and the sky*. The last text *Life in scale and endless distances* was written by Koutsoukos describing his experience within our collaboration, shortly after the film was completed, in October 2022 (p.244).

Holidays in the Canary Islands

The distance between the staircase and the sky scares me
Few times have I faced it, most through glasses
Through spectacles or through a paper curtain, like the one we put on
To shield us from the sun
On a beach there is a wooden sign on which they wrote
All, those who passed from here
On an hour of day or night
On foot or on a bicycle, with eyes closed or with a dog
For company, at 0:00 o'clock, in the centre of Athens, I remember
I too had passed, even though I do not look at the sun face on
At that time there is no sun
The road is lit
By an arcade with neon lights, purple, blue and pink, in a city that is
Clean in general lines, with lots of green, cement and
Often balconies with crowds and big wheels
That make you dizzy, but most of all it makes me tired that I have to climb
All these stairs, because the elevator is small
Inside it a sea is hidden, and the sand gets in my eyes
When it is windy, between the floors, to reach so high
You must have patience and, most of all, to not to be afraid of heights
Like in an old work of art, I had seen a man
Falling from the balcony, with open arms, and standing
In the air, an old Kawasaki, with two young boys
And a round street-light, on a strip of faded yellow
At the same time, on the verge, between the hours, day and
Night, reminds me of my friend Maria
who lives on an island

Sotiris Koutsoukos 2022a

Translated from Greek by Katerina Athanasopoulou

The distance between the staircase and the sky, voice-over

The distance between the staircase and the sky scares me.

Few times have I faced it, most through glasses.

Few times have I faced it, most through glasses, through spectacles or through a paper curtain, like the one we put on to shield us from the sun.

Like the one we put on to shield us from the sun on a beach.

On a beach there is a wooden sign on which they wrote, all, those who passed from here.

All those who passed from here, on an hour of day, or night.

On an hour of day, or night, on foot or on a bicycle, with eyes closed or with a dog.

With eyes closed, or with a dog for company, at 00.00 o'clock.

At 00:00 o'clock in the centre of Athens.

At 00:00 o'clock, in the centre of Athens, I remember I too had passed, even though I do not look at the sun face on.

Even though I do not look at the sun face on, at that time there is no sun.

At that time there is no sun.

The road is lit by an arcade with neon lights.

The road is lit by an arcade with neon lights, purple, blue, and pink, in a city that is clean along general lines.

A city that is clean, along general lines, with lots of green, cement, and often balconies with crowds and big wheels.

Crowds and big wheels that make you dizzy.

That make you dizzy, but most of all, it makes me tired

But most of all it makes me tired that I have to climb all these stairs.

But most of all it makes me tired that I have to climb all these stairs, because the elevator is small.

Because the elevator is small, inside it a sea is hidden, and the sand gets in my eyes.

When it is windy, between the floors, to reach so high, you must have patience.

To reach so high, must have patience and, most of all.

And, most of all, to not be afraid of heights.

Like in an old work of art, I had seen a man falling from the balcony.

A man, falling from the balcony, with open arms, and standing in the air.

And standing in the air, an old Kawasaki, with two young boys.

With two young boys, and a round streetlight, on a strip of faded yellow.

A round streetlight, on a strip of faded yellow, at the same hour, on the verge.

At the same hour, on the verge, between the hours, day and night.

Day and Night, reminds me of my friend Maria, who lives on an island.

Life in scale and endless distances

What follows is not a typical text in the form of an interview, but rather a thank you letter to the creator, who let my body and my text enter a world known to me and at the same time foreign, familiar as well as alienated until its re-appropriation through art and participation.

My participation in the artistic research project of Katerina Athanasopoulou came about through what I would call a 'natural' method, that is closer to instinct than a classical methodology, since my position within the specific space-field-performative place, the *Polykatoikia*, derives through intimacy and the daily grind.

The point that liberated me from the typical approach I would have into the space was a phrase by the creator, "inside this building of countless nomologists, I did not know there was an artist." Because of this, I was able to perceive the true scale of the space and reconstruct the materials through words.

The office where I work is located on the eighth and final floor of the polykatoikia [apartment building] at Aioulou Street in Omonoia. A daily routine, such as my commute has changed over the last year, partly due to COVID-19, partly due to a desire for a little more exercise, and I walk up the stairs to get to the office .

So from there, from the three-dimensional, actual, model of the staircase, going up, I always tried to look towards the sky, but this was impossible, since my eye was constantly trapped in the walls and windows that enclose the empty volume of the light-well of the Polykatoikia, therefore the distance between the staircase and the sky may be short or long, it may be millions or thousands of millions of kilometres or light years, or years, or perhaps I was taught in school exactly how long it is and no longer remember, or perhaps at a certain moment and at a certain point the sky ends, there is a goal post, and then the earth like a deflated ball, just like in the work of Katerina Athanasopoulou, falls into the void and swirls into the eternal spiral.

Sotiris Koutsoukos 2022b

Translated from the Greek by Katerina Athanasopoulou