Bio-rhythms / Digi-rhythms: Synthesising the Digitally Mediated Body Through Performative Methodologies

Kathryn Lawson Hughes (BA Hons, MA)

Supervised by: Dr Marilyn Allen

Submitted in partial fulfilment for the award of the degree of Doctor of Philosophy

University of Wales Trinity Saint David

2020

Acknowledgements

Abstract

This research focuses on contemporary practices of digital self-tracking, popularised through the rise in biometric devices, which enable subjects to track their health in terms of biometric data and movements such as the *Quantified Self* which provide a platform for individuals to share their health data and self-tracking practices. This research explores how biometric devices enable us to simultaneously self-produce our identities and allow data versions of ourselves to be 'captured' by big-data analytics, which subsequently inform the health parameters of a biopolitical discourse. As digital devices increasingly permeate our lives, the 'biorhythms' of embodied experience are arguably given less cultural significance. This research proposes the development of a subjective negotiation of the body, through performative and embodied aesthetic research methodologies, which will develop a theoretical framework for how we might better 'speak' our bodies in a post-digital context.

Using the theory of *Rhythmanalysis* (2004), developed by Henri Lefebvre, rhythm will be adopted as a metaphor for re-thinking our interrelation with digital interfaces, beyond the limiting parameters of a dualistic understanding of the biological body and the digitally-mediated body. This research proposes a 'rhythm-analytical' approach, a space between the sensory body (bio-rhythm) and its mediation through the digital (digi-rhythm), as a methodology to synthesise bio/digital polarities.

Contents

List of Figures

List of Figures for Appendix

List of MP3 Sound 'Data-Streams'

Introduction

The rise in contemporary subjective digital health-tracking practices in recent years, facilitated by the affordability of wearable and mobile digital devices, is indisputably proliferating a culture of measurement in relation to our bodies and our physical health-related pursuits; which Btihaj Ajana theorises in her research article *Digital health and the biopolitics of the Quantified Self* (2017) as 'an intensive growth of systems of measurement and an increasing integration of data processes into various spheres of everyday life' (Ajana 2017: 1). This culture of 'self-tracking', in which individuals are encouraged to monitor and regulate their everyday embodied behaviours using digitally-networked biometric wearable fitness devices, is reinforced by biopolitical and biomedical governmental health recommendations; such as the '10,000 steps' daily walking 'goal' (see Appendix, Figure i.) which is pre-programmed as a baseline quantifiable metric in the *Fitbit* wearable activity trackers (Rosenbaum 2019). The term 'biometrics' within the context of this research enquiry thus refers to the materialities of our biological bodies which can be translated into quantifiable data-numerics by digital wearable sensing-technologies which 'track' our embodied activities; for example heart-rate (see Appendix, Figure ii.), aerobic-capacity ('VO2 Max'), cadence, speed, location ('GPS') etc. The growing popularity in digitised 'self-tracking' practices has also given rise to socially-networked cultural movements such as the *Quantified Self* (Kelly and Wolf 2007) and *Strava* (2009), which provide online digital platforms and communities for individuals to 'share' the biometric outcomes of their personal data-tracking activities for motivational purposes; towards 'improving their wellbeing and productivity or charting their fitness progress' (Ajana 2017: 1).

However, while the cultural popularity and subjective appeal of digitised 'self-tracking' practices appears to be on the rise due to the aptitude of contemporary digital devices to enlighten individual users with 'self-knowledge through numbers' (*Quantified Self* 2007), the adverse physiological and psychological effects of self-monitoring behaviours are beginning to be discerned. In a research article entitled *The Hidden Cost of Personal Quantification* (2016), psychologist Jordan Etkin asks, 'might the new tools people are using [for] quantifying life- rob them of some of the benefits of engaging in those activities?' (Etkin 2016: 967). Etkin's study reveals that while the initial enthusiasm of 'personal quantification' using a digital wearable data-tracking device can motivate and stimulate individuals to increase the amount of physical activity that they engage in, 'it can simultaneously reduce how much people enjoy those activities' (Etkin 2016: 967); with measurement consequentially 'undermin[ing] intrinsic motivation' (Etkin 2016: 967).

> By drawing attention to output, measurement can make enjoyable activities feel more like work, which reduces their enjoyment. As a result, measurement can decrease continued engagement in the activity and subjective well-being.

> (Etkin 2016: 967)

As Etkin's study suggests, the cultural prevalence which is placed on the measurable biometric 'data-outputs' of our physical embodied activities in post-digital culture is superseding the potentials for our subjective experiential enjoyment from engaging in physical health-enhancing pursuits. The increased socio-cultural incentives to quantify and share the 'data-products' of our subjective experiences, through a plethora of socially-networked online platforms, digital communities and apps., are arguably

diminishing the empirical, sensorial and self-reflexive qualities of our embodied experiences. Furthermore, the ever-expanding integration and use of digital wearable and mobile devices in our everyday lives, reinforced by cultural practices of quantification and 'data-sharing' which Ajana considers 'biopolitical processes and approaches to body and health' (Ajana 2017: 2), entangle our 'data-bodies' into complex networks of 'big-data' capture and analytics, over which we have limited subjective control. As Ajana attests, our body-data, whether subjective or aggregated into a homogenised 'big-data' mass 'are by no means disembodied or immaterial' (Ajana 2017: 13); as growing processes of 'data-capture' and data-driven categorisations inform socio-political decision-making which directly 'affect the material experiences of individuals and groups and shape their life chances' (Ajana 2017: 13), in 'real-world' contexts.

With digital mobile and wearable biometric devices increasingly permeating our everyday lives, this research proposes an empirical subjective 'autoethnographic' (Adams, Jones and Ellis 2015) study into the practice of 'self-tracking' to develop a theoretical/experiential framework for how we might better 'speak' our digitally-mediated, embodied experiences in contemporary culture. While this research proffers that the qualitative 'biological' embodied dimensions of our digitally-mediated subjective experiences are arguably given less cultural prevalence, this enquiry will attempt to resist reaffirming existing socio-cultural polarities between our qualitative/quantitative and bio/digital spheres of lived experience. The central aim of this research is to develop a theoretical/experiential paradigm of synthesis using praxis, for 're-thinking' how current quantifiable perceptions of our digitally-mediated

'data-bodies' may be renegotiated subjectively to include the empirical and sensorial dimensions of embodied experience. This research enquiry attempts to develop a methodology for synthesising the abstract theoretical concern of bio/digital 'data-tracking' polarities, through the pragmatic process of lived subjective experience, as such, praxis is used as an approach to destabilise the dichotomy between theory and practice.

> Praxis refers to the interplay between reflection and action […] In praxis-based research, the purpose is to use the act of doing research as a means to revise stereotypes, habits of mind, and deeply held meanings that guide people's thinking about social and political issues and to encourage actions that demonstrate these changes in theories or worldviews underscoring the ways in which people live in society.
>
> (Finley 2008: 98)

This research thus proposes a new alternative 'praxis' approach for 'doing autoethnography' (Adams, Jones and Ellis 2015: 1); using performative embodied interventions, sound 'data-streams' and a pragmatic methodological application of Henri Lefebvre's theory of *Rhythmanalysis* (2004), to renegotiate a subjective 'data-set' which includes embodiment. As such, while the researcher uses practice-based methods and processes to 'perform' the research proposition and engage subjectivities through the lived experiential 'act of doing research' (Finley 2008: 98), the role of practice within this enquiry is to further develop the methodological paradigm; towards a theoretical/experiential synthesis of embodied knowledge in relation to our digitally-mediated experiences. The researcher's performative physical interventions, which are 'data-captured' through the sound-recording function on a

digital smartphone device (see Appendix, Figure iii.), will proffer an empirical subjective approach to existing methods of quantitative biometric 'self-tracking' practices. 'Rhythmanalysis' will be applied as a metaphor and methodology for 'thinking through' the 'bio/digi-mediated' body (the neologism applied throughout this research for considering the affective mediation of our embodied interactions with digital devices); towards converging the 'bio-rhythms' of our sensorial experiences with the 'digi-rhythms' of our digital interactions and practices, in the 'third' experimental space of praxis. This research enquiry thus attempts to develop a framework for a 'bio/digi-rhythmic' synthesis, towards re-negotiating existing polarities in relation to our digitally-mediated embodied experiences, subjectively, utilising the empirical potentials of rhythmic affect.

Through the *Contextual Literature Review* in Chapter 1, this research will develop a contextual critique from existing literature in the field for understanding the ways in which contemporary digital 'self-tracking' practices contribute to polarised perceptions of our digitally-mediated embodied experiences, subjectivities and identities, in a 'post-digital' condition (a term adopted by this research to denote our increasing everyday social and cultural inter-relations with digital technologies). This research will consider how established popularised biometric 'self-tracking' practices, as quantifiable processes of bodily 'data-capture', become 'technologies of the self' (Foucault 1982), which entangle our 'data-bodies' in problematic biopolitical discourses and inequitable, complex systems of 'big-data' capture, arguably limiting and polarising the potentials for what our lived embodied subjective 'bio/digital' experiences could be.

The *Methodologies* Chapter 2 will elucidate and expand upon the methodological approach and assemblage of processes that the researcher will use to renegotiate and perform a subjective synthesis of the 'bio/digi-mediated' body: Towards critiquing existing binary systems (qualitative/quantitative, bio/digital, mind/body, theoretical/experiential) by including the empirical, sensorial and embodied registers of lived digital-experience in a subjective 'data-set'. This enquiry will introduce Brad Haseman's concept of the 'performative research paradigm' (Haseman 2006: 98) to contextualise the methodological framework used within this praxis; 'a third paradigm' (Haseman 2006: 98) for creative research which functions as a space 'between' the existing polarities of conventional qualitative and quantitative research paradigms. This research will set out its methodological proposition for utilising praxis as the 'third' performative paradigmatic space of 'bio/digi-rhythmic' synthesis, by proffering the reader a 're-experiencing' of the researcher's subjective data-set through sound 'data-streams'.

The *Contextual Case Studies* considered in Chapter 3 will further develop the research proposition and critical discourse for 're-imagining' the existing polarities of our 'digital-cultural' and 'digital-social' lived experiences through a 'bio/digi-rhythmic' synthesis. This chapter will apply the performative methodological research paradigm outlined in the *Methodologies* chapter to three existing 'real-world' case studies and explore the emancipatory potentials of embodied agency through an 'autoethnographic' lens, 're-thinking' embodied practices of 'bio/digi-mediation' and digital mobility in relation to our subjective and collectivised 'digital-social' and 'digital-cultural' lived experiences.

The *Performative Praxis* case studies in Chapter 4 will attempt to 'perform' the theoretical/experiential research proposition for a 'bio/digi-rhythmic' synthesis, through three praxis case studies which each have an accompanying empirical subjective 'data-set' in the form of a sound 'data-stream' (*SoundCloud* links are embedded in the body of the text for the reader to 'experience'). The performative praxis case studies will explore the affective, rhythmic, processual and sensorial potentials to synthesise problematic dichotomies in relation to our 'bio/digi-mediated' embodied experiences (bio/digital, qualitative/quantitative, mind/body, theoretical/experiential, virtual/actual) in the 'third' space of praxis. Using an empirical 'data-set' which the researcher will develop through performative interventions, an application of 'rhythmanalysis' and sound 'data-streams' as a method for capturing subjective data. As the sound 'data-streams' proffer the reader/listener a new 'bio/digi-mediated' embodied sound experience, this research will attempt to extend its proposition for renegotiating the subjective 'voice' of bio/digital experience, by potentially investing the reader/listener with the embodied agency to reconsider their own subjective 'bio-rhythms' and 'digi-rhythms' in relation to digital everyday experiences.

The *Conclusion*, Chapter 5, will reflect upon and summarise the proposition to renegotiate a subjective synthesis of our 'bio/digi-rhythms' in the 'third' theoretical/experiential space of praxis. The conclusion to this research will consider the future potential and scope for 're-imagining' our digitally-mediated data-tracking

practices, towards including embodiment and sensory experience in bio/digital discourses.

Chapter 1: Contextual Literature Review

Introduction

This *Contextual Literature Review* Chapter 1 aims to establish a contextual framework for understanding the multiplicity of ways in which popularised biometric embodied health practices of 'self-tracking' may be negotiated. Our understanding of health practices is facilitated by advances in wearable digital technologies, whilst concurrently entangling our subjectivities into the complex biopolitical systems which are characteristic of contemporary post-digital society and culture. This research will proffer, using the literature critiqued within this chapter, that such biopolitical and technological mechanisms which contribute to the biometric quantification of our bodies into 'data-products', place quantifiable limits on the experiential embodied freedoms of individuals who participate in 'self-tracking' behaviours and activities; encouraging us to regulate and habituate our bodies, at the same time as they proffer to 'enlighten' us with heightened capacities for self-knowledge, self-enhancement, self-improvement and self-optimisation. This chapter will contextualise and critique the bio/digital polarities and paradoxes which emerge from problematic biopolitical, technological discourses of data-quantification; suggesting a reversal of 'Cartesian' thinking has been enacted wherein the biological, corporeal body has emerged as a separate entity from the digital, biometric body, thus arguably re-establishing mind/body, qualitative/quantitative, theoretical/experiential, bio/digital dichotomies. Through an application and synthesis of the contextual literature critiqued within this

chapter, this research proposes that a subjective renegotiation of the empirical dimensions of our 'bio/digi-mediated' bodily experiences is central to destabilising and 'rethinking' our interrelations with digital devices; as existing technological frameworks increasingly negate the individual 'voice' of subjectivity through pervasive 'surveillance' processes. These processes of digital-mediation enmesh our biometric bodies into homogeneous 'big-data' masses which are subsequently used to inform the biopolitical discourses and actions employed for 'governing life's processes' (Shilling 2016: 75).

The research proposition, which is shaped throughout this chapter, is structured around the work of a number of key thinkers operating across the intersecting fields of body politics, critical theory, cultural studies, sociology, philosophy and health humanities. The heterogeneous assemblage of theorists converged within this *Contextual Literature Review* thus enables this praxis to outline, shape and synthesise a theoretical/experiential paradigm in which the research proposition can operate; towards renegotiating a synchronicity of bio/digi-mediated subjectivity in the space of praxis, using performative embodied methodologies (an approach that will be clarified in the *Methodologies* Chapter 2). This chapter is informally structured in two parts, though for the purposes of synthesising the theoretical proposition made by this research praxis, it will not be separated within the body of the text, rather delineated in this introduction. In the first part of this chapter (pg. 16- 50), cultural theorisations concerning the ubiquitous surveillance processes and practices of 'biopolitical' paradigmatic forms of governance, as exercised on our subjectivities in the lived context of contemporaneous global-capitalist, post-digital societies, will be explored.

In order to develop the theoretical context for this praxis, this research will begin by considering digital biometric 'self-tracking' devices as technologies that facilitate a reterritorialization of the temporal and spatial dimensions of the body, in line with biopolitical agendas. Sarah Sharma's theoretical framework of 'power-chronography' (Sharma 2014: 9), will be introduced to elucidate the ways in which entangled biopolitical discourses of speed, time, and digitality converge with lived experiences in a global-capitalist economy, to perform inequitable techniques of biopower on our subjective embodied experiences of temporality and mobility, in the contemporary post-digital condition. This research will suggest that bio/digi-mediated practices of 'self-regulation' are interdependent on what Sharma theorises as 'an intensified technological and economic mode of subjecthood that depends on already established cultural anxieties about time and mobility' (Sharma 2014: 133). These contemporary forms of 'self-surveillance' activities will be contextualised in relation to Michel Foucault's influential writing on the shape-shifting mechanisms of 'biopower' in pre-digitalised postmodern society and culture, through his concept of *Technologies of the Self* (Foucault 1988). Taking an in-depth analysis of Foucault's instrumental theorisations around biopolitical mechanisms of 'governmentality' and 'capillary' methods of biopower, as 'techniques for achieving the subjugation of bodies and the control of populations' (Foucault 1978: 140), this research will contextualise Foucault's critique within the contemporary digital-cultural paradigm, in relation to established 'self-tracking' technologies and practices of bio/digi-mediation. This research will apply Foucault's theorisations of 'biopower', as 'control by stimulation' (Foucault 1980: 57), to propose that techniques of biopower in the post-digital age operate by 'productively stimulating' subjectivities to modify physical embodied behaviours through lived everyday behavioural practices of 'self-tracking'; facilitated and validated by the

biometric paradigms of bio/digi-mediation that wearable digital 'self-tracking' devices authenticate. This research will problematise the embodied tensions and bio/digital polarities that emerge from the arguably paradoxical contemporary biopolitical health discourses which uphold principles of 'self-responsibility', performed subjectively through 'technologies of the self', while simultaneously limiting the parameters for subjective embodied autonomies using pre-determined frameworks (for example, the '10,000 steps' daily baseline biometric). This research will consider the *Quantified Self* movement, founded in 2007 by *Wired* magazine editors Kevin Kelly and Gary Wolf with the axiom *'*Self-knowledge through numbers' (Kelly and Wolf 2007), as perhaps the most significant global digital-cultural self-tracking 'community'; having gained an international following which pre-dates the widespread popularity of other socially-networked sports-specific GPS (Global Navigation Satellite System) tracking applications, such as the running and cycling app. *Strava* (2009) (see Appendix, Figure iv.). In synchronicity with Chris Shilling's theorisations, this research considers the *Quantified Self* movement as evidence of the '"softer and more "productive" techniques' (Shilling 2016: 75) of governmentality in the post-digital age. Shilling references Nikolas Rose's contemporary revision and extension of Foucault's biopolitics into an 'ethnopolitics'. In Rose's text *The Politics of Life Itself* (2001), a 'normalising' method which converges ethics and politics to determine 'how life should be lived' (Ajana 2013: 43), formulates the production of 'bio value' (Shilling 2016: 84) as a powerful mode of subjugation within globalised digital-health agendas. Furthermore, Deborah Lupton's extensive critique on *The Quantified Self* (Lupton 2016) cultural movement, and other contemporary digital-health practices, is considered significant to this research enquiry, as she draws on Foucault's influential theorisations around subjectivity and citizenship as key to developing an

understanding of how 'self-tracking' cultures and 'technologies of the self' function within a globalised biopolitical domain. Lupton's analysis extends to the problematic biopolitical metanarratives of 'big-data' capture that produce and underpin inequitable paradigms of 'bio value', as well as the global-capitalist consumerist agendas that drive data-acquisition in the contemporary 'digital economy', which she terms 'knowing capitalism' (the title of Nigel Thrift's 2005 text). The homogenising biopolitical and global-capitalist paradigms of 'big-data' capture that this research proffers, negate the potentials for an embodied 'voice' of subjectivity, will be contextualised in relation to Alan Kirby's contention that a 'new cultural paradigm' has emerged in the post-digital age, which he theorises as 'Digimodernism' (Kirby 2009). For Kirby, 'digimodernism' has supplanted postmodernism in the contemporary era, to reconfigure post-digital culture in accordance with some of the more problematic dimensions of modernist archetypes; for example, the tendency towards societal beliefs in grand narratives and universal 'truths' (authenticated, in the paradigm of 'biometrics', by the biomedical and life sciences). This research suggests that while existing biopolitical frameworks which inform biometric 'self-tracking' practices arguably reaffirm such problematic ideologies in relation to our bodies and our bio/digi-mediated experiences (exemplified in the *Quantified Self* motto 'Self-knowledge through numbers', 2007), there is scope to develop an alternative theoretical/experiential paradigm which better 'speaks' the voice of bio/digi-mediated subjectivity in the contemporary lived context.

In the second part of this *Contextual Literature Review* chapter (pg. 51- 77), this research will begin to formulate, articulate and 'set up' the proposition for an alternative 'bio/digi-rhythmic' paradigm for 're-thinking' a subjective renegotiation of existing

'bio/digital' polarities, between our biological bodies and our digitally mediated bodies; towards a synthesis of our 'bio-rhythms' and 'digi-rhythms'. Btihaj Ajana's theorisations on the polarising biopolitical practices applied to our bio/digital bodies in the contemporary era, as 'an ironic twist vis-à-vis Cartesian dualism' (Ajana 2013: 88), in her significant text *Governing Through Biometrics: The Biopolitics of Identity* (2013), will be applied to contextualise an understanding of the paradoxical reversal of mind/body dualisms in the post-digital age. For Ajana, 'biometric technology […], lays claim to the idea that identity can "objectively" be determined through the body and in ways that are somewhat independent of consciousness' (Ajana 2013: 88). This reductionist biopolitical technique is arguably used to render and 'fix' our subjectivities and identities into biometric 'data-products'; suppressing the 'voice' of individuality and embodied experience, 'where "I" is heavily reliant on the body, and its algorithmic representation, to assert its (official) identity' (Ajana 2013: 88). This research proposes that biometrics, as the dominant authenticating 'data-language' attributed to our subjective bodies in the post-digital age, 'silences the biographical story' (Ajana 2013: 89), superseding the elements of embodied subjectivity which cannot be easily measured, quantified or systematised. There is scope within this research praxis, therefore, to explore how it might be possible to 'speak' through the bio/digi-mediated body in ways that do not polarise our bio/digital dimensions of experience, or 'close down the possibilities for what life can be' (Kember 2013); towards renegotiating an emancipatory synthesis of the qualitative/quantitative, corporeal/incorporeal, mind/body, theoretical/experiential, affective, rhythmic, and phenomenological registers of embodied 'bio/digital' experience. While this *Contextual Literature Review* does not establish a comprehensive philosophical review in relation to differing phenomenological schools of thought, this research enquiry acknowledges the

significance of phenomenology in the context of an embodied and experiential research praxis, to foreground a culture of sensorial thinking around the bio/digital body. In Stamatia Portanova's text, *Moving Without a Body: Digital Philosophy and Choreographic Thoughts* (2013), theorisations around how thought processes of 'abstraction' are required to 'make sense' of contemporary biometric paradigms, in which 'the physicality of our movements is translated into a numerical code by a technological system' (Portanova 2013: 2) are considered. Portanova proffers that in order to 'think' biometric processes beyond the algorithmic 'dematerialisation of physical bodily presence into 0s and 1s' (Portanova 2013: 3), a theorising of the body as an abstract 'incorporeal idea' (Portanova 2013: 142) is required for synthesising the 'opposition between the anatomical body as a physical thing and the subjective body as a phenomenological experiencer' (Portanova 2013: 142). This research will introduce Gilles Deleuze's influential concept of the 'Body without Organs' (Deleuze 1969), a heterogeneous 'assemblage-body' which is formulated through its affective inter-relations within the existing 'system that it aims to subvert' (Message 2010: 38), as a theoretical perspective to contextualise a re-thinking of the 'bio/digi-rhythmic' body as an affective, rhythmic 'assemblage-body' which seeks an alternative 'mode of articulation that is free from the binding tropes of [biometric] subjectification and signification' (Message 2010: 38). This research will consider the potentialities of the 'bio/digi-rhythmic' body to traverse and synthesise the realms between the virtual/actual, immaterial/material, incorporeal/corporeal, and theoretical/experiential registers of bio/digital embodied experience; re-imagining the bio/digi-mediated body as a material 'data-process' using sound 'data-streams' (sound as a method will be outlined in the *Methodologies* Chapter 2). Derek P. McCormack's conceptualisations towards a 're-thinking' of methods of biometric and bodily abstraction, in his text

Refrains for Moving Bodies: Experience and Experiment in Affective Spaces (2013), will be applied to further contextualise the 'bio/digi-rhythmic' paradigm proposed by this research praxis, as a theoretical/experiential synthesis of the moving 'bio/digi-mediated' body's 'lively materialities' (McCormack 2013: 165). Concluding the theoretical and contextual framework for this research enquiry, a consideration of the affective relational potentials for our 'bio/digi-mediated' embodied subjectivities will be introduced, through the neurological, physiological, and philosophical concepts of the 'body schema' (Robinson 2015: 139) and its 'peripersonal' (Di Pellegrino and Làdavas 2014) sensory spatial surroundings. Sarah Robinson's assertion that 'our body's apprehension of surrounding space and its contents comes into being through a dynamic, multisensory process irreducible to a gross measure of inside and outside' (Robinson 2015: 139), will be used to contextualise and affirm this research's proposition, towards synthesising our embodied 'bio/digi-rhythms' in the affective space of praxis.

Contemporary 'Post-Digital' Subjectivity

In the contemporary 'post-digital' cultural and political epoch, we are experiencing a paradigmatic shift in which new virtues of biometric-citizenship are being cultivated, through the convergence of biology with technology at an immense socio-cultural scale. With the emergence and dialogic application of affordable biometric 'self-tracking' technologies that enable bodily self-monitoring, with neologisms like 'active citizenship' and 'citizen engagement' (Armstrong 2013), in

good governance and public health campaigns, the performativity of an idealised, self-regulating, health-conscious subjectivity is being introduced and adopted into the public consciousness at large. The 'post-digital', a neologism used within contemporary discourses of digital arts and cultural practices to indicate the significance of our rapidly changing relations to digital technologies, describes the current paradigm in which it is possible to explore the human-digital interrelation. This research praxis explores the changing experiential dimensions of embodied subjectivity that 'self-tracking' practices of digital-mediation are making possible; in particular biometric technologies which translate the body's physiological processes into quantifiable data. In Sarah Sharma's *In the Meantime: Temporality and Cultural Politics* (2014), Sharma proposes the re-shaping of spatio-temporalities and mobilities, enabled by digital technologies, as crucial to the shifting and expanding dimensions of subjectivity, in post-digital culture:

> The subjective and experiential dimensions of living in a capitalist society are experienced through one's relationship to time and staying on the right path […] The mobility and tempo, the pace and path that capital relies on have become unhinged and vulnerable to a resistant reshaping.

(Sharma 2014: 132)

Sharma argues that in the wake of global economic and energy crises, critical situations that she attests are 'crises in pace, energy flow, and time' (Sharma 2014: 132), the type of self-regulating, 'active citizenship' that biopolitical ideologies foster, is interdependent on 'an intensified technological and economic mode of subjecthood that depends on already established cultural anxieties about time and mobility'

(Sharma 2014: 133). The 'biopolitical' rationale, which French philosopher Michel Foucault (1926-1984) theorises is the political ideology and practical application of administration towards biology, with the goal of sustaining and ordering life and populations, will be contextualised further in this discourse in relation to contemporary 'technologies of the self' (Foucault 1988). For Sharma, though, the rise in popularity and proliferation of biometric digital technologies, like self-tracking fitness devices, technologies that enable self-regulation, control and re-calibration of the body in relation to shifting spatio-temporalities and mobilities, arguably signify a wider socio-cultural re-emergence of modernist epistemological beliefs. During unstable, precarious socio-political and economic times, when anxieties towards a shifting and emerging 'post-digital' condition run high, objective beliefs in the capacities of innovation, technology and science to 'fix' the body and identity as knowable entities have arguably resurfaced.

> capitalists and other disciplinary institutions of power […] construct new and innovative ways to control people's time and regulate their movements in space […] a reterritorialization of the temporal and spatial dimensions of home, work, and leisure. It is a remaking of space to deal with a change in pace.
>
> (Sharma 2014: 133)

In this research enquiry, biometric 'self-tracking' devices will be considered as technologies that reterritorialize the temporal and spatial dimensions of the body, in alignment with the hegemonic re-organisation of other temporal and spatial dimensions in public and private life, within a post-digital context. Contemporary self-tracking technologies will be critiqued as 'technologies of the self' (Foucault 1988),

which enable softer 'capillary' (Foucault 1977) modes of biopolitics to be enacted through subjectivity, as theorised by Foucault. An existing example of such a biopolitical technique already established in an increasingly digitised world, is the present-day shift towards the digitalisation of healthcare services, referred to as 'eHealth' (WHO Europe 2016), in Europe and the rest of the Western world. In the globalised model for self-regulating, health-conscious subjectivities, being instituted and promoted by 'eHealth', the invisible labour of maintaining 'good health' practices is outsourced and distributed to embodied individuals; who are tasked with re-calibrating the body's experiential temporalities and mobilities to actively engage in attaining a 'healthy' subjectivity. Such digitalised health services and provisions, which digitally-mediate the biological body's activities and processes through biometric 'self-tracking' devices, have already been widely implemented in Northern Europe; as exemplified in the Swedish government's *Vision for eHealth 2025* (2016) report, which pledges a 'common vision' that by 2025 Sweden will be,

> Best in the world at using the opportunities offered by digitisation and eHealth to make it easier for people to achieve good and equal health and welfare, and to develop and strengthen their own resources for increased independence and participation in the life of society.

> (Wikström and Regnér 2016)

In this governmental vision for 'eHealth', the temporal and spatial politics that Sharma synthesises in *In the Meantime* (2014) play out in a familiar biopolitical discourse, aligning self-responsibility for one's embodied health practices to the increased mobility that the digitisation of health care and social welfare services enables. While

the Swedish government's report frames these changes through a positivist lens, citing increases in equality and subjective independence, for Sharma such biopolitical shifts are largely inequitable. Through a contextual approach that she terms 'power-chronography' (Sharma 2014: 9), Sharma delineates the intersection where biopower, discourses of speed, digital-mediation, and globalisation converge to exert a biopolitics on subjective experiences of time, mobility and spatio-temporality, in contemporary post-digital life. In digitised Western societies, while spending time managing the body is an increasingly valorised biopolitical value, as an effect of temporal-spatial compression and structural inequalities experienced at the level of time by subjective individuals, Sharma attests that it is not a pursuit that is equitable for all. As a result, individuals must learn to recalibrate certain subjective dimensions of embodiment, mobility and experience, 'to learn how to deal with time, be on top of one's time, to learn when to be fast and when to be slow' (Sharma 2014: 18). In such applications of biopower, understood by Sharma as exerted through a biopolitics of speed, subjective bodies recalibrate by synchronising to an exterior relation, for example institutions, other subjects, ideologies, and, increasingly, mobilised digital technologies. For Sharma, however, the alignment of a discourse around speed to embodied perceptions of digitisation, which imparts to individuals the self-regulating responsibility to 'keep-up' with socio-cultural changes in pace, 'continues to offer a completely inadequate and limited view of the temporal' (Sharma 2014: 15). Sharma also critiques contemporary discourses around time, which she contends 'maintain lines of temporal normalisation that elevate certain practices and relationships to time while de-valuing others' (Sharma 2014: 15). This research suggests that Sharma's theorisations can be applied to contextualise the rise in popularity of biometric 'self-tracking' devices, which arguably 'elevate' practices of quantifying the biological body,

through processes of bio/digital-mediation. This research considers that the processes

of recalibration and synchronicity (to dominant global-capitalist temporal orders) that

embodied subjects are required to enact, within the post-digital socio-cultural context,

are facilitated by the capacity of digital self-tracking technologies to aid in assisting

with these modes of bodily recalibration (through inter-connected functions which

digitally-mediate the biological body, including in-built sensors, accelerometers, apps.,

online sharing platforms, etc.). As Sharma concurs, such processes have a

homogenising effect on the spatio-temporalities and mobilities of subjective embodied

experience, in a post-digital context.

> The temporal subject's living day, as part of its livelihood, includes technologies of the self contrived for synchronizing to the time of others or having others synchronize to them. The meaning of these subjects' own times and experiences of time is in large part structured and controlled by both the institutional arrangements they inhabit and the time of others- other temporalities.

> (Sharma 2014: 8)

This research praxis will explore how self-tracking technologies, as biometric devices

that digitally-mediate the physiological processes of the body, homogenise the body's

biological temporalities, to synchronize and recalibrate the tempo of subjective

embodied experience within a limiting biopolitical, paradigmatic context. Biometric

self-tracking technologies enable particular embodied activities and biological

processes to be quantified and translated into data, in accordance with predominant

health discourses, which privilege certain bodily metrics and embodied practices over

others. One evident example is discernible in the *Fitbit* (Park and Friedman 2007)

wearable activity-tracking device's widely recognised '10,000-steps' daily goal; a standardised, quantifiable bio-metric, programmed as a baseline criterion for subscribing users to this particular self-tracking technology and founded on the USA government's physical activity guideline recommendations for adults of 'at least 150 minutes of moderate-intensity aerobic activity each week' (U.S. Department of Health and Human Services 2018). The *Fitbit Inc. Company* (founded in 2007 by CEO James Park and Eric Friedman) also endorses the type of corporate wellness programmes that Sharma contends are designed for 'Recalibrating the sedentary worker' (Sharma 2014: 81) in sync. with biopolitical and organisational productivity goals. For Sharma, however, 'The very offering of time for the self for the worker while at work is a biopolitical intervention' (Sharma 2014: 105), as increased digitisation in the workplace enables dimensions of subjective embodied experience to be regulated in new, ubiquitous ways. Sharma refers to such processes of recalibration, which produce time as 'a site of material struggle, subject to biopolitical intervention' (Sharma 2014: 105), through the homogenisation of subjective spatio-temporalities and mobilities within the workplace and in everyday life, as using the paradoxical concept of 'mobile immobility' (Sharma 2014: 132). In a contextual case study in Chapter 3, the Coastal Housing Group's implementation of an alternative, heterogeneous, organisational approach to the shifting spatio-temporalities, mobilities, recalibrations and synchronicities enabled by processes of digitisation within the workplace, will be explored and critiqued by this research. Firstly, in order to further contextualise an understanding of how biopolitics functions in a contemporary post-digital context, through the homogenisation of subjective experience as facilitated by technologies and processes of 'self-surveillance' (which align with Foucault's theorisation of

'technologies of the self'), the following section will introduce Foucault's work on biopolitics and biopower.

Foucault's Biopolitics and Biopower

The oeuvre of Foucault is critical to this research, for moving towards a clearer understanding of how power is enacted on subjects politically and socio-culturally; through the complex and multifaceted control, manipulation, normalisation, and regulation of bodies, and their movements through time and space. In a seminar he presented in 1982 entitled *Technologies of the Self* (Foucault 1988), Foucault defined four interrelated techniques or 'technologies' that human beings have developed and utilised over time to gain knowledge and understanding of themselves; technologies of production, technologies of sign systems, technologies of power or domination, and technologies of the self. While Foucault acknowledged in his delineation of these 'technologies' (which perhaps can be better understood as a modus-operandi for the practices of life), that they rarely function in isolation, he was more concerned with how the latter two technologies, those of power or domination and the self, are interwoven to be enacted through subjectivity. Foucault defined these practices as,

technologies of power, which determine the conduct of individuals and submit them to certain ends or domination, an objectivizing of the subject; technologies of the self, which permit individuals to effect by their own means or with the help of others a certain number of operations on their own bodies and souls, thoughts, conduct, and way of being, so as to transform themselves in order to attain a certain state of happiness, purity, wisdom, perfection, or immortality.

(Foucault 1982)

Foucault first delineated his post-structuralist application of the theory of biopolitics, a multifaceted mode of governmentality which functions at the intersectional realm between biology and politics, in *The History of Sexuality, Volume 1* (1978). Critiquing the historical transition from classical sovereignty to modern forms of politics and governance, political models which function through the production of forms of 'biopower', modern biopolitical models operate as 'techniques for achieving the subjugation of bodies and the control of populations' (Foucault 1978: 140). For Foucault, this theory of governmentality served to explain how nation states, through their legislative practices and regulations (or 'codes of conduct'), exercise and exert their powers of biopolitical control by shaping the social-body of the populace, within societies. Therefore, if biopolitics can be understood as the political and social rationality of power, to take the control, regulate and positively manage life and its populations as a central undertaking 'to ensure, sustain, and multiply life, to put this life in order' (Foucault 1978: 138), then biopower names how biopolitics functions, or is 'put to work', in a society. For Foucault, biopolitics defines the style of governmentality that regulates populations through the practices of biopower which are applied to, and located within, the impacts of political power on all aspects of life;

> power that exerts a positive influence on life, that endeavours to administer, optimize, and multiply it, subjecting it to precise controls and comprehensive regulations.
>
> (Foucault 1978: 137)

Foucault outlines two models of biopower at work in societies: The first, an 'anatomo-politics of the human body' (Foucault 1978: 139), is centred on seizing power over the human body, maximising its potentials and capacities, through discipline and optimisation, 'the parallel increases of its usefulness and its docility, [and] its integration into systems of efficient and economic control' (Foucault 1978: 139). The second model of biopower, Foucault contends, is focused on the regulatory control of the population or 'the species body, the body imbued with the mechanics of life and serving as the basis of the biological processes: propagation, births and mortality […] life expectancy and longevity' (Foucault 1978: 139). Through these models, the mobilisation of power to manage life, regulate populations and discipline the human body through subjectivity can be enacted through biopolitical mechanisms of measurement, practices of normalisation and methods of statistical control. Foucault emphasises how biopower was instrumental to the rise and expansive development of capitalism in the late nineteenth and early twentieth centuries, an economic system that 'would not have been possible without the controlled insertion of bodies into the machinery of production and the adjustment of the phenomena of population to economic processes' (Foucault 1978: 141). This is a theorisation concurred by Btihaj Ajana in *Governing Through Biometrics: The Biopolitics of Identity* (2013), who identifies techniques of biopower for having 'provided the mechanisms by which

bodies and populations could be managed and rendered more productive and adjustable to economic growth and processes' (Ajana 2013: 36).

'Capillary' Power and 'Technologies of the Self'

In the contemporary post-digital world, technologies of biopower and 'technologies of the self' have indisputably merged, making it increasingly difficult to delineate the shifting boundaries of biopolitics at play in globalised societies and cultures today. Digitisation has given rise to processes of digital-mediation (for example through the types of biometric self-tracking technologies of central concern to this research praxis) which enable the biopolitical control and management of populations to be enacted digitally, through 'self-regulatory' techniques practiced by individual subjectivities who engage in embodied biometric acts of 'self-surveillance'. In *Discipline and Punish: The Birth of the Prison* (1975), Foucault introduces and critiques the concept of the 'Panopticon', 18th Century English philosopher Jeremy Bentham's (1748- 1832) design for an institutional building in which the productive surveillance technique of a single centrally-located watchman affects subjects to monitor and self-regulate their behavioural conduct under the apprehension that they are being watched at any given time; 'a new mode of obtaining power of mind over mind, in a quantity hitherto without example' (Bentham 1843: 39). Foucault's ideation, in *Discipline and Punish* (1975) is that Bentham's concept for the Panopticon can be traced as an evident historical pre-cursor to contemporary methods of self-regulation, enacted through behavioural practices of 'self-surveillance'. While the types of

surveillance techniques prevalent in the latter half of the 20th Century, for example CCTV (Closed-circuit television), draw more obvious comparisons to Bentham's traditional model for the Panopticon, in an article written for *The Guardian* in 2015 Thomas McMullan poses the critical question for the contemporary post-digital age, 'What does the Panopticon mean in the age of digital surveillance?' (McMullan 2015). As we unquestioningly adopt new, innovative technologies of 'self-surveillance' into our lives, we arguably risk limiting and objectifying dimensions of our embodied experiences and identities within the parameters of biopolitical, institutional power that Foucault describes in *Discipline and Punish* (1975), rendering our subjective selves 'the object of information, never a subject in communication' (Foucault 1975: 200). This research suggests that while biometric self-tracking devices, along with other digitally-meditated forms of communication, proffer to open up and extend the communicative potentials for subjectivity in the post-digital age, such potentials are delimited within the technological and biopolitical frameworks through which they operate. In post-digital culture the individual 'voices' of our subjective embodied experiences are indisputably entangled into complex biopolitical power-relations and through homogenising processes of 'data-capture' and analysis are furthermore lost in 'big-data' sets, which arguably concentrate bodies into biometric mass 'object ['s] of information' (Foucault 1975: 200). This research proposes the development of a subjective negotiation into the practice of bio/digital 'self-tracking' which will explore the embodied experiential dimensions of bio/digital-mediation; an attempt to expand a discursive, performative space of synthesis between the bio/digital realms through praxis, in which the 'subject in communication' (Foucault 1975: 200) might be given a 'voice'.

Today's ubiquity of digitised, systematic self-surveillance technologies, arguably attests to our involuntary compliance and complicity in the regulation practices of 'hyper-capitalist' societies; the terminology used by Marxist scholars to denote the extremes of globalised, market-driven capitalism, at the expense of more humanist values such as social-justice, wellbeing, moral, ethical and environmental concerns. Foucault attributed the rapid growth of capitalist consumer culture, alongside the taxonomical drives and desires of science and technology to organise the world in the latter half of the 20th Century, to the rise in softer and more sophisticated techniques of biopolitical bodily control, which he theorised through the concept of 'capillary' power;

> when I think of the mechanics of power, I have in mind rather its capillary form of existence, at the point where power returns into the very grain of individuals, touches their bodies, and comes to insert itself into their gestures and attitudes, their discourses, apprenticeships and daily lives.

(Foucault 1980)

For Foucault, capillary modes of biopower function through fluid and unstable networks, with no fixed or easily recognisable 'centres' of control, therefore, flowing in diffuse and multiple directions and rendering any identification invisible or, at the very least, difficult to discern. Biopower, as a mode of capillary power operating at all levels in contemporary societies is, for Foucault, not repressive but thoroughly productive; a method of control through 'productive stimulation', as opposed to historical modes of authoritarian, disciplinary repression. This research suggests that such biopolitical

methods of 'productive stimulation' are integral to contemporary cultural and biomedical health discourses, which paradoxically uphold 'technologies of the self' (such as biometric self-tracking practices), while limiting the parameters for subjective, embodied autonomies, through predetermined frameworks. This praxis, conversely, attempts to harness the subjective forms of agency integral to productive processes of stimulation, such as 'self-tracking' practices, using performative bio/digital interventions (mediated through the digital device, as sound 'data-streams') to generate experiential embodied affects, which proffer an alternative to the current, arguably repressive, systematic biometric outcomes encoded in conventional practices of bio/digital mediation.

> a new mode of investment which presents itself no longer in the form of control by repression but that of control by stimulation. "Get undressed- but be slim, good-looking, tanned!"

> (Foucault 1980: 57)

In contemporary capillary processes of biopower, the micro-tactics and concealed practices that biopolitical discourses use to stimulate subjects into changing embodied behaviours (through processes of self-scrutiny, self-surveillance and self-regulation), are often so effective, evasive and normalised that we no longer notice ourselves being shaped; as we become the ones doing the 'shaping' of ourselves. The embodied behavioural practice of 'self-regulation' (as a 'technology of the self'), arguably functions as a powerfully productive stimulant for subjects engaged in digital self-tracking practices, as it produces bodily affects. However, this research suggests that these 'biometric' embodied affects are limited within the repressive biopolitical

frameworks of 'self-governance' and 'self-surveillance' from which they emerge. With a plethora of digital platforms and biometric self-tracking devices available to assist us in achieving biopolitical 'self-optimising' goals, we have arguably become active and supportive participants in the very systems that function to suppress us. As we increasingly self-regulate our embodied behaviours in accordance with quantifiable biometric measurements and established biopolitical health parameters (whilst re-enforcing these 'standard' norms by scrutinising those who refuse to comply), everyday life within a post-digital globalised culture is arguably 'self-governed' by narrowing sets of embodied subjective choices, whilst still believing in our individual freedom to choose. The imposition of such reductive, narrowing biometric frameworks placed on embodied subjects, through biopolitical discourses and practices in the post-digital age, alludes to the fact that contemporary, capillary forms of biopower still function repressively, though under an illusory guise of self-stimulated productivity. This biopolitical methodology of subjective, self-regulating behaviour is what Foucault articulates through his concept of 'technologies of the self' (Foucault 1988). 'Technologies of the self', for Foucault, rely on the ideological capitalist promise of extending or enhancing the embodied capacities of existing subjecthood. These softer, more productive 'capillary' techniques of self-scrutiny through self-surveillance are enhanced by advances in biomedical and biometric sensor-technologies, which can digitally-mediate the body's biological processes into data-streams. Therefore, overtly authoritarian, repressive, or hierarchical governmental techniques for establishing biopower are no longer required to explicitly objectivise subjects, when 'technologies of the self' (enacted through digital biometric devices, for example) can operate on bodies in ever-more pervasive, subtle, and ambiguous ways. In *The Body: A Very Short Introduction* (2016), Chris Shilling argues that such advancements in

biometric technologies, which digitally-mediate the biological body, and thus arguably act as digital extensions to embodiment in everyday life 'have stimulated far deeper commercially driven interventions into the molecular level of people's bodily being' (Shilling 2016: 84). Raising pressing concerns over subjective privacy and data-protection, Shilling elucidates the inequities of digitally-mediated methods of data-surveillance in the post-digital age, in which 'multinational companies dominate the production of exploitable knowledge at the molecular level of the human being' (Shilling 2016: 86). Biometric 'self-tracking' technologies enable invisible 'big-data' corporations to accumulate biological data gathered from a multitude of embodied subjectivities, who are engaged in such practices of bio/digital-mediation at a global scale. Subsequently, with 'self-tracking' devices operating as contemporary 'technologies of the self', biopolitical agendas which promote values of 'self-responsibility' to maintain a healthy and productive populous, can be achieved from a distance; enacted and facilitated by these capillary methods of subjective 'self-regulatory' control. Therefore, 'biopower' in the post-digital age productively stimulates subjects to modify individual embodied behaviours (as discerned by Foucault as a 'control by stimulation', Foucault 1980: 57), through everyday behavioural practices of 'self-tracking' using processes of bio/digital-mediation.

> Such opportunities may promise historically unprecedented degrees of self-control, but they also place on embodied subjects a considerable burden of responsibility and self-governance. The recent growth of notions of biological and neurological citizenship, for example, contain the implication that people need to monitor, evaluate and work on themselves using as their guide expert knowledge from the 'received facts' of science and medicine.

> (Shilling 2016: 76)

The Production of 'Bio Value'

Interpreted broadly, bio value refers to processes that enable bodily material to be exploited for the development of medical and other products.

(Shilling 2016: 84)

Nikolas Rose, in his contemporary revision of Foucault's influential theorisations on capillary modes of biopower and 'technologies of the self', *The Politics of Life Itself* (2001), exemplifies how the production of 'bio value' operates as a powerful modality of subjugation, within globalised biopolitical health agendas. Rose cites the advances in biomedicine, bioscience and biotechnology for their role in shaping and organising current formations of biopolitics, signifying the broader shift in the public consciousness towards the types of mechanisms of bodily scrutiny that medical governance bolsters. Rose's conceptualisation of an 'ethnopolitics', a hybrid combination of risk and molecular politics, which is in his estimation the predominant contemporary biopolitical model, is borne out of the cultural anxieties raised by the latter forms of biopolitical governance.

If discipline individualizes and normalizes, and biopower collectivizes and socializes, ethnopolitics concerns itself with the self-techniques by which human beings should judge themselves and act upon themselves to make themselves better than they are.

(Rose 2001: 18)

For Rose, ethnopolitics functions as a 'normalising' modality, as it merges ethics and politics to delineate 'how life should be lived and generate new ways for making individuals aware of their future risk and able to make informed decisions regarding their health and life in general' (Ajana 2013: 43). Subjects entangled in these imposed biomedical paradigms become what Kaushik Sunder Rajan theorises in *Biocapital: The Constitution of Postgenomic Life* (2006) as 'patients-in-waiting' (Rajan 2006: 144); adopting embodied health practices of self-governance, using methods such as biometric self-tracking, to buffer themselves against the 'ghosts of potential, future illness' (Little 2016). For Rajan, like Shilling, the 'patient-in-waiting' paradigm has significant economic and market value, as it 'configures their subjectivities as consumers-in-waiting' (Rajan 2006: 144), proliferating pharmaceutical development and a booming health and wellness 'lifestyle' industry reliant on the anxieties borne out of such biological citizenship models. Jo Little (Little 2016) elucidates the disproportionate socio-cultural inequalities embedded in biopolitical models for 'self-optimisation', which actively produce 'bio value' through the homogenisation of subjectively embodied spatio-temporalities and mobilities; concurring with Sharma's concept of 'mobile immobility' (Sharma 2014: 132).

> While some bodies (namely those of the middle classes) are more able to mobilize resources to respond to the disciplinary expectations of society, other bodies become more 'docile' and subject to the biopower of experts.
>
> (Little 2016)

For Foucault it is crucial that we critique the new contemporary methods and processes of 'invention' driven by the biomedical sciences and digital-technologies in order to understand the forms of biopower at work on subjects in contemporary societies. The scientific drive to categorise and organise life, rendering life itself the object of optimisation, 'objectivisation' and scrutiny, has led to the types of technological advancements in processes of biological 'measurability' and 'data capture' that biometrics exemplifies. In turn, we adopt and utilise these methods, metrics and measurements which are privileged within the biometric discourses and paradigms of biomedical science and technology, in contemporary everyday life; to measure, define, and self-regulate our embodied experiences and subjectivities. Thus biometric paradigms, as a contemporary method of biopower, actively produce (through 'normalising' metrics and rationales) the particular models we use to construct and reshape our subjectivities in the post-digital age. It is worth clarifying the concept of 'objectivisation' here, in its difference and comparison to more traditional methods of objectification. While objectification serves to diminish subjects, rendering them as object or commodity through a repressive exertion of power, operating for Foucault as 'the object of information, never a subject in communication' (Foucault 1975: 200), objectivisation perhaps better explains our participation in making objects of information and scrutiny out of ourselves. In post-digital culture, the structural biopolitical power systems of observational objectification and repression, which Foucault theorised as polarised through their negation of the subjective 'voice', have significantly shifted. The modalities through which biopolitical, capillary forms of power are exercised in the digital age have become considerably more complex for embodied subjects to navigate. As we increasingly adopt self-surveillance technologies and practices into our lives, viewing our embodied activities through the biometric lens of

digital mediation, the concealment of contemporary biopolitical methods of data-processing, for example 'big data' capture, arguably obfuscates the fact that we are still being observed as 'object['s] of information' (Foucault 1975: 200). Objectivising ourselves under often illusory beliefs that we are unrestricted 'subject['s] in communication' (Foucault 1975: 200), we actively and productively engage in subjective processes of bio/digi-mediation, stimulated by our increased usage of digital devices in a post-digital culture. These tensions will be further explored and developed throughout this discourse, initiated by a critique of the *Quantified Self* (Kelly and Wolf 2007) movement, in the following section. Unlike historical sovereign and repressive modes of disciplinary power, that unequivocally objectify subjects, Foucault recognised that it is not possible to overturn capillary forms of biopower in the same way, due to their instability and shape-shifting forms. This research proffers, however, that it is nonetheless crucial that we work towards recognising, reshaping, and redefining the repressive, dominant, biopolitical metanarratives that actively produce discriminatory, inequitable forms of 'bio value' in post-digital culture, as they serve to impose biometric measurements and self-regulatory behaviours as limits to our embodied freedoms. This research praxis attempts to develop a subjective renegotiation of 'self-tracking' biometric practices, using an explorative, performative embodied method and process to critique such capillary forms of biopower; made possible by advances in technologies of 'bio/digital-mediation' in contemporary post-digital culture. Proposing the development of a theoretical framework for how we might better 'speak' our embodied experiences beyond objectivising ourselves using biometric self-tracking devices, this research will renegotiate the practice of 'self-tracking' subjectively, through embodied and performative research methods which

will generate an alternative subjective 'data-set' (outlined in depth in the *Methodologies*, Chapter 2, and *Performative Praxis*, Chapter 4).

The Quantified Self

In a text entitled *The Quantified Self* (2016), Deborah Lupton, who has written extensively on contemporary digital-health practices (including the tensions and implications between subjective 'personal-data' practices and 'big-data' politics), cites Foucault's theorising on subjectivity and citizenship as key to developing an understanding of how self-tracking cultures and practices of selfhood operate within a globalised biopolitical domain. She advocates that 'his concept of governmentality via biopolitics, or the ways in which citizens and societies are managed by "soft" power that emphasizes their own responsibility' (Lupton 2016: 46), through the modes of capillary biopower and inverted forms of self-surveillance that Foucault's later works outlined, are socio-culturally contingent on the prevailing dominant biopolitical discourses of the epoch. Therefore, if notions of subjectivity and selfhood (in alignment with Foucault's post-structuralist delineations) are 'fashioned through and with the articulation of power and intersections of discourses and practices' (Lupton 2016: 46), we must firstly discern what the prevailing biopolitical ideologies and discourses are, in the post-digital era, in order to better understand how biopower functions through subjective, embodied behavioural practices. The *Quantified Self* (Kelly and Wolf 2007) movement on which Lupton's research is centred, whose expounding motto 'Self-knowledge through numbers' (Kelly and Wolf 2007) elucidates the particular concept

of life-logging through data which is enabled by innovations in wearable biometric self-tracking technologies, was founded in 2007 by *Wired* magazine editors Kevin Kelly and Gary Wolf. Followers and members of the *Quantified Self* movement, a contemporary participatory socio-cultural movement comprised of biometric 'self-trackers' which Chris Till identifies as 'a loose global network' (Till 2014: 447), subscribe to a system of beliefs in the ability of personal data-acquisition to optimise subjective embodied experiences; with the potential of enhancing physical, emotional, and mental health-parameters. Individual self-trackers interactively involved in the *Quantified Self* 'community' convene at local 'Meetups' hosted around the globe; where they share often innovative approaches to the self-tracking techniques and methodologies adopted to attain, analyse, optimise, and critique embodied data, with other users of similar technologies and digital devices. The *Quantified Self* web platform also provides an extensive interconnected online resource, where self-tracking subjects can 'share' biometric data, information and techniques through a 'show and tell' archive, blog, forum and list of upcoming global 'Meetup' events, conferences and symposia.

The concept of 'self-monitoring' as an embodied, regulatory behavioural practice is indisputably a long-lasting tenet of our evolutionary psychology; from private acts of self-analysis and critique, through methods such as diaristic-writing and other forms of subjective documentation, to the observation and regulation of embodied behaviours in public and social contexts (practices concurrent with Foucault's ideations around 'technologies of the self'). For Gina Neff and Dawn Nafus, in their text *Self-Tracking* (2016), the practice of self-tracking 'does not necessarily require

technology more complex than pen and paper' (Neff and Nafus 2016: 2). The ability to track embodied behaviours and physiological bodily functions, with the heightened levels of scrutiny that wearable, biometric, digital-sensing devices enable, however, is a contemporary, unfolding phenomenon distinct to the post-digital age. This emerging socio-cultural phenomenon of digital self-tracking is acknowledged by Neff and Nafus, who concur that 'technologies extend the areas of life that can be measured, and they make it possible to keep track with greater frequency than ever before' (Neff and Nafus 2016: 2). This research considers that while the ideologies surrounding biometric practices of self-tracking and 'quantifying' the self, appear to bestow individuals with limitless potentials for 'self-knowledge' through data-acquisition, subjects are consequently entangled into complex, yet limited, biopolitical frameworks by engaging in such practices of bio/digital-mediation. Though there is an emphasis within the *Quantified Self* community on self-tracking as a method of self-experimentation, this research suggests that individuals are inevitably interwoven into pervasive biopolitical paradigms, through the use of digital biometric technologies. While subjects participating in *Quantified Self* 'meetups' or 'show and tell' events are actively encouraged to 'share' their personal practices of self-tracking (for example, techniques used, methods adopted, and data-produced) with others members of the community, the emphasis on these practices is one of 'self'-revelation and discovery. This modality of 'single-subject' research which is integral to self-tracking practices (actively encouraged within the *Quantified Self* movement as well as other online biometric 'data-sharing' platforms), is arguably proliferated by similar conceptual illusions of 'selfhood', subjectivity and identity into which other popular, contemporary 'digital-cultural' and 'digital-social' behaviours are entangled. For example, in the unprecedented rise in social-media platforms, whereby subjects are 'productively

stimulated' to construct multiple 'ideologies of the self', using a plethora of intertextual and inter-connected digital-communication networks, on a global scale. Thus, the emphasis on ontologies of the 'self' and discoveries of 'self-knowledge', which are integral to the *Quantified Self* socio-cultural movement, arguably serve to conceal the larger biopolitical mechanisms into which subjects become enmeshed, through processes of 'big-data' capture. Lupton's observations affirm that the concealment of such capillary methods of biopower, exercised through the modes of 'productive stimulation' that Foucault discerned, is integral to maintaining subjective perceptions of self-tracking as 'empowering' within the *Quantified Self* movement; 'In many cases self-tracking is a purely voluntary personal enterprise initiated by the person who is engaging in it' (Lupton 2016: 3). This research proffers, however, that the *Quantified Self* movement exemplifies the forms of 'productive stimulation', enacted subjectively through participatory methods of self-governing 'objectivisation', that individuals voluntarily subscribe to in the post-digital age. Initiated through contemporary practices of digital self-tracking, which function as biometric 'technologies of the self', translating the body's biological processes into data through processes of bio/digi-mediation, the *Quantified Self* movement arguably provides a platform for subjects to share the data that subsequently informs the parameters of larger 'big-data' biopolitical health discourses. For Ajana, in *Digital health and the biopolitics of the Quantified Self* (2017), the modalities of biometric self-tracking practices that the *Quantified Self* movement proliferates, exemplifies an 'instantiation of a "biopolitics of the self" in which the body is made amenable to management techniques according to a set of agreed upon fitness norms' (Ajana 2017: 6). Ajana draws on the culturally recognisable example of the '10,000 steps' daily biometric recommendation, which is currently programmed 'across all health platforms and self-tracking devices' (Ajana

2017: 6) and is subsequently now fully embedded in globalised biopolitical health discourses and self-surveillance practices 'as the baseline that needs to be met by users if they are to be deemed as healthy and active bio-citizens' (Ajana 2017: 6). Applying Foucault's theorisations on capillary modes of biopower to the ideologies surrounding self-tracking, which are prevalent within the *Quantified Self* movement, for Ajana 'the self-quantifier ends up conforming to a pre-given standard of health and fitness and being normalised and (self-)assessed according to an idealised numeric identity' (Ajana 2017: 6), having subjectively internalised these biometric norms. This research thus suggests that the illusions of 'self-discovery' that biometric self-tracking practices promote, as digitally-mediated methods of 'productive stimulation', limit subjectivities within predetermined, systematised frameworks, under illusory promises of self-enhancement. Ajana references Foucault's work on biopower to contextualise practices of self-tracking within a biopolitical framework through which 'control begins with the self itself, controlling its abilities, performance and productivity' (Ajana 2017: 5), methods which are contingent on ideologies of self-knowledge and discovery. For Foucault, as outlined previously, such modalities of biopolitical control homogenise the embodied capacities of subjects politically and socio-culturally, not through 'repressive discipline and coercion but normalisation and control in the name of freedom itself' (Ajana 2017: 5).

This research praxis has emerged from these polarising biopolitical tensions, intrinsic to biometric self-tracking practices, which digitally-mediate experiences of embodied subjectivity in the post-digital age. As digital devices increasingly permeate our lives, the representational biometric 'data-products' that our embodied interactions with such

technologies generate, have arguably gained cultural and biopolitical significance over the sensory dimensions of our embodied experiences. In the following section the implications of ubiquitous global surveillance processes of 'big-data' capture, the biopolitical mechanism which this research proffers homogenises individual subjectivities through the collection of mass biometric 'data-sets', will be discerned. This research will consider how 'big-data' capture negates the individual subjective 'voice' of embodied experience and critique the inequitable biopolitical power-dynamics of who gets to 'speak' with our body-data in contemporary digitally-networked societies and cultures.

Big-Data: Who 'Speaks' with Our Data?

For Lupton, when embodied subjectivities produce biometric data, by using self-tracking technologies which digitally-mediate the activities of the sensory body, the 'data-products' produced by self-tracking processes live on through the digital phenomenon she terms 'lively data' (Lupton 2016: 4). 'Lively data', for Lupton, is facilitated (as it is collected) by the apps., software programmers, makers, designers, and producers of the digital-sensing technologies used by 'self-tracking' individuals to generate biometric data, beyond the parameters of a subjective use of data (as documentation of experiential embodied activities in 'real-time', for example). For Lupton, the concept of 'lively data' conjures a conceptual framework for theorising self-tracking cultures, 'so as to denote the manifold ways in which personal digital data (whether deliberately generated for individuals' own purposes or collected by others

about them) are vital' (Lupton 2016: 5). While she acknowledges, on the level of the individual subject, that 'Digital data generate new forms of knowledge and new insights into people's bodies and selves' (Lupton 2016: 5), with personal data increasingly uploaded to cloud storage databases and online sharing platforms, there is the growing potential for this biometric information (as a generatively abundant 'knowledge source') to be outsourced and repurposed by third parties, for any number of commercial, political, economic or scientific ends.

> these data have a vitality of their own in the digital data economy by virtue of the fact that they circulate, enact new forms of knowledge and are purposed and repurposed in many different ways. In other words, they have their own social lives, which are quite independent of the humans who originally generated them. Digital data about people's lives are also vital in their effects.
>
> (Lupton 2016: 5)

In a contemporary post-digital culture, which functions within a political and socio-economic framework of interconnected globalisation (a socio-economic paradigm which veers towards deregulated free-market global capitalism), digital 'data-as-information' has increasingly become the most valuable resource in the pursuit of political, economic and commercial growth. The production, circulation, and amassing of large quantities of digital data, as part of an emerging global digital data-economy (increasingly referred to as the 'big-data' economy), arguably signifies the ways in which softer 'capillary' (Foucault 1977) modes of power now operate through methods of communication, to procure data as a form of knowledge acquisition. Lupton cites

the phrase 'knowing capitalism', the title of Nigel Thrift's 2005 text, 'to denote this new form of global economy' (Lupton 2016: 42).

> Knowing capitalism depends both on technologies that generate knowledge in the form of digital data in massive quantities and on the commodification of these knowledges. It also rests on the valuing and promotion of innovation, for which new knowledges are required. Digital data have become highly valuable and commercially profitable as forms of knowledge, particularly when they are aggregated into big data sets (such a set is commonly referred to as 'big data').

> (Lupton 2016: 42)

The digital cultural turn towards 'big-data' sets, as a form of 'knowledge capitalism', is entirely dependent on the subjective, embodied behaviours of digital technology users; such as the 'self-tracking' enthusiasts who comprise the *Quantified Self* movement (other digital-cultural examples include the plethora of apps., devices, and socially-networked platforms available to facilitate 'self-tracking' behaviours). As Lupton emphasises, the biopolitical power of big-data sets in the post-digital age lies in their continuous generation, production and sheer volume, 'offering unprecedented potential to generate insights into human behaviours, public services, healthcare and public health' (Lupton 2016: 42). The production of big-data sets, is therefore entirely contingent on the mass of individual embodied subjective 'voices' utilising digital technologies towards their own 'self-optimising' ends, whom 'via their routine encounters with these technologies are integral to the digital data economy' (Lupton 2016: 42). Lupton references the neologism of 'prosumption' (Lupton 2016: 42), a term coined by 'futurist' Alvin Toffler (1928- 2016), to denote how subjects have become both the producers and consumers of digital content and data-knowledge, through the

proliferated use of digital devices and socially-networked online sharing platforms, within the contemporary digital-cultural sphere. Through the bio/digi-mediated processes encoded in the functional usage of digital devices, our biological bodies generate data, which in turn is further repurposed and put to alternative uses by imperceptible parties; with the nuances and differences of individual subjective embodied 'voices' subsequently lost, as our data is aggregated into vast, homogenised 'big-data' sets. For Neff and Nafus, however, emancipatory potentials for resisting 'big-data' capture (considered in this research as an inequitable 'capillary' form of biopolitical power) are still possible for individuals, beginning with an expansion of the 'digital-social' consciousness, at the subjective level of everyday lived practices.

> The choices we make in our day-to-day lives about what data to collect matter for what other people can do with that data, and how it might be used against us. When we do not actually have a choice about what data is collected, or about where our data goes, our ability to raise our voices as citizens begins to matter even more.

> (Neff and Nafus 2016: 8)

Suggesting that an awakening of the public 'digital-social' consciousness could open up crucial spaces in which to 'raise our voices' of individual subjectivity, Neff and Nafus contend that 'Wider public participation in the debates that surround self-tracking could tip the balance towards things working in the public interest' (Neff and Nafus 2016: 8). This research, within its capacity, attempts to extend a discursive space for a subjectively embodied renegotiation of 'self-tracking' practices, in the performative 'third' space of praxis; a research proposition which has arisen from such problematic

dominant biopolitical 'big-data' discourses which arguably afford precedence to quantifiable biometric processes of 'bio/digi-mediation' in contemporary culture, negating the 'voice' of subjectivity. In the *Contextual Case Studies* in Chapter 3, this research will consider the affective and emancipatory potentials for an interactive, socially-engaged digitally-mediated experiential arts practice to engage 'wider public participation' (Neff and Nafus 2016: 8) in the digital-social debates surrounding biopolitical forms of data-capture, through the artist and cultural theorist Hito Steyerl's 'augmented-reality' work, *Actual Reality*[OS] (2019). This research will proffer that in *Actual Reality*[OS] (2019) Steyerl utilises the potentials of 'bio/digi-mediation' through the digital device to generate a 'virtual/actual' discursive performative space, which engages viewers/participants in a critical interactive discourse around biopolitical inequality data, through a lived embodied 'AR' cultural experience. The inequitable biopolitical discourses and mechanisms which privilege quantitative forms of 'data-capture' from our subjective bodies as a primary source of knowledge, information and 'truth' (enacted through 'big-data' processes of digital mediation which abstract the biometrics our bodies generate, absorbing them into mass homogeneous 'big-data' sets in order to commodify and capitalise on our data), will be further explored in the following section.

In his introduction to *The Data Gaze: Capitalism, Power and Perception* (2019), David Beer poses critical biopolitical questions regarding 'big-data' capture and our data traces; 'With all these amassing data about people, places, organisations and nation states, who has the power to speak with those data? Or, perhaps more fittingly, who has the power to speak with *our* data?' (Beer 2019: 1). The title of Beer's text, *The*

Data Gaze (2019), references Foucault's term the 'medical gaze', which was introduced by the philosopher in his seminal work *The Birth of the Clinic: An Archaeology of Medical Perception* (1963), to denote the dehumanising effect of the medical 'regard', or gaze, on embodied individuals when they are subject to the biopolitics of medical encounters; an objectifying mechanism which operates by separating the perception of a person's body from their sense of identity, subjecthood and ideations of 'self'. In *The Data Gaze* (2019), Beer adopts Foucault's concept of the gaze (translated from the French 'regard' or 'perception') to denote how capillary power operates in the digital-age through decentralised forms of media, attesting that while 'the power of data is located in what they are used to reveal […] behind this power is an industry of activity working to spread those analytics and the optic horizons of the data gaze' (Beer 2019: 15). While the 'data gaze' is seemingly decentralised, dispersed, pervasive and indirect (in comparison to the direct dehumanising subjective encounter of Foucault's authoritative 'medical gaze'), Beer asserts that its panoptical horizon can be located in the decisions made by the overseers of the data-analytics industry, who decide the parameters for how data-knowledge is legitimated and framed.

> The data themselves come to life and begin to have consequences when they are analysed and when those analyses are integrated into social, governmental and organisational structures.

(Beer 2019: 15)

Beer cites post-structuralist Jacques Derrida's (1930- 2004) ideations on the 'archive', elucidated in the philosopher's lecture *Archive Fever* (1995), and the 'shadowy figure of the "archon"' (Beer 2019: 1); the authoritative figure Derrida portrays as having the power to control, dictate and order knowledge, thus prescribing 'what the archive could be used to say' (Beer 2019: 1).

> For Derrida, the power of the archive rested in the hands of these archons and was embodied in their practices, judgements and selections. Derrida's point is that when data and metadata accumulate, it is those who oversee its storage and retrieval that have the real sway.

(Beer 2019: 1)

Concurring with Beer, this research suggests that Derrida's ideations on the power of the archive and role of the 'archon' could be considered an allegorical precedent for biopolitical paradigms of 'big-data' capture, which are enacted through 'capillary' surveillance techniques of bio/digital mediation and 'technologies of the self' in contemporary culture. This enquiry posits that such inequitable biopolitical mechanisms, which abstract and compress quantifiable biometric data from our individual subjective bodies into an homogeneous informational 'big-data' mass, are far from benign. This research proffers that the 'hype' (Milne 2020) surrounding new technologies and forms of digitality often obscures the very real biopolitical policies and decision-making that our data are being used to shape and inform. Citing Thrift's concept of 'knowing capitalism' (Thrift 2005) in synchronicity with Lupton's prior analysis to elucidate the importance of data-knowledge to the proliferation of global-capitalism in the digital age, Beer acknowledges that advancements in digital

technologies 'bring new possibilities for capturing and using data' (Beer 2019: 3). This research proposes that contemporary wearable biometric 'self-tracking' devices exemplify and realise new biopolitical paradigmatic possibilities for 'capturing' our body-data, enacted subjectively through the lived experiential everyday methods and practices of 'productive stimulation' that Foucault theorised as 'technologies of the self' (Foucault 1988). In the *Performative Praxis* Chapter 4, this research develops a performative paradigmatic embodied praxis, towards 'rethinking' how we might better 'speak' and communicate our subjective bio/digital experiences in the post-digital age, beyond homogenising biopolitical paradigms which negate the 'voice' of subjectivity through such methods of 'big-data' capture, which this research proffers are used as observational techniques of control.

> Claims that data can answer our dreams of an ideal lifestyle/ body/ organisation/ performance/ nation/ future/ economy/ environment/ other (delete as appropriate) are not hard to find. We are often confronted with such dreams. We are surrounded by powerful visions of what data can achieve, what they can solve, how they might help us to thrive, what they are able to reveal and how they are able to make us more informed, efficient or better at things […] But what agendas underpin such dreamwork? What are these claims being used to achieve?

> (Beer 2019: 14)

Perhaps the burgeoning biopolitical data-metanarratives that our bodies are simultaneously producing and attributing to, in the age of 'big-data' capture, can be better understood through philosopher and cultural critic Alan Kirby's theory of 'digimodernism'. In *Digimodernism: How New Technologies Dismantle the Postmodern and Reconfigure Our Culture* (2009), Kirby contends that postmodernism

has been supplanted, displaced and rendered irrelevant for how we contextualise cultural forms in the digital age in favour of a new post-digital cultural paradigm which he terms 'digimodernism'. For Kirby, 'digimodernism' denotes the reappearance of some of the more problematic paradigmatic realms of modernism, such as a tendency towards grand narratives and universal truths, proliferated by and reformulated through the innovative digital technologies and newly accessible cultural forms and practices emerging in the post-digital age. With the popularity of subjective 'self-tracking' practices on the rise, alongside cultural movements such as the *Quantified Self* (whose members are motivated by the introspective accumulation and procurement of data-information on their own bodies and subjective experiences), this research proffers that problematic 'digi-modernist' rationales which promise expanded self-knowledgeable 'truths' are burgeoning within an increasingly digitised and globalised biopolitical discourse. This research suggests that biometric practices of 'self-tracking' proliferate digi-modernist ideologies towards the enhancement of subjectivity through metanarratives of digital 'progress', where biopolitical promises of self-knowledge, self-optimisation and self-enlightenment are seemingly authenticated through biometric forms of measurement. However, this research considers the type of universal truths and grand narratives that 'digi-modernist' biometric rationales espouse, in the capacity of biometrics to make us deeply knowable to ourselves (legitimated and validated by the data the body produces in 'real time' through the wearable device) misleading, as they entangle our bodies and subjectivities into inequitable 'big-data' power-dynamics with biopolitical, global-capitalist objectives, where the 'voice' of individual subjective difference is arguably lost. While biometric 'digi-modernist' rationales surrounding self-tracking practices debatably intensify subjective faith in the ability and potential of data to 'speak' for itself, through such self-

evident metric 'truths' (thus illuminating how biopower operates through these 'softer' capillary modes of self-surveillance), this research proffers that standardising bodies using numeric data-paradigms wholly invalidates the lived empirical dimensions of subjective embodied experience and subsequently the nuanced differences of identity.

In the following section, the proliferation of such dualisms between our bio- and digitally-mediated experiences of embodiment will be explored through what Ajana theorises as an 'ironic twist' (Ajana 2013: 88) on established modes of thought around the 'Cartesian Self'. In biometric self-tracking practices, the 'illusion of self' which is fundamental to Cartesian mind-body dualistic ideologies, is arguably reversed, with subjects probing the biometric data-body as a source of objective 'truth', 'whereby technologically mediated quantification is regarded as the most reliable and efficient path towards "truth" and self-improvement' (Ajana 2017: 6). This research praxis uses performative methodologies to 'rethink' our embodied interrelations with digital devices; exploring alternative, experiential subjective processes of embodied 'data-capture' to renegotiate existing bio/digital-polarities of embodiment, which are proliferated by the quantifiable 'data-language' of biometrics, in established 'self-tracking' practices (popularised within the *Quantified Self* movement and pervasive across many other contemporary digital socio-cultural paradigms). As such, this research will attempt to synthesise a 'rethinking' of the 'bio/digi-mediated' body through the performative 'third' space of praxis, in order to renegotiate the existing bio/digital inequities which are currently proliferated by biopolitical health discourses, methods of 'big-data' capture and the subjective internalisation of prevailing biometric 'norms'.

The Digitally-Mediated 'Cartesian Self'

In *Governing Through Biometrics: The Biopolitics of Identity* (2013), Ajana contends that 'the (re)turn to the body for the establishment of identity in biometric technology seems almost like an ironic twist vis-à-vis Cartesian dualism' (Ajana 2013: 88). The theoretical doctrine of mind-body dualism proliferated by René Descartes (1596-1650), with significant ensuing effect on Western philosophy and so pervasively embedded in society and culture, is arguably being reordered through biometric ideologies. Through contemporary bio/digi-mediated self-tracking practices, Ajana argues that recognised theoretical models of Cartesian mind/body dualism, which ontologically split the 'non-physicality' of the mind and ideations of 'self' from the corporeality of the body and its material dimensions, are being reversed.

> For while the Cartesian imaginary is underlined by the (erroneous) belief that consciousness is detached from the body, that the body has little relevance to identity and that it is an impediment to objectivity, biometric technology, on the other hand, lays claim to the idea that identity can 'objectively' be determined through the body and in ways that are somewhat independent of consciousness.
>
> (Ajana 2013: 88)

This research concurs with Ajana's theorisations, that the biometric metanarrative towards the body's ability to 'speak for itself' through data generated by self-tracking and other bio/digi-mediated practices is increasingly afforded supremacy over the

experiential, narrative and phenomenological dimensions of embodiment and subjectivity. This research considers that while potentials emerge for different paradigms of subjectivity to burgeon under a globalised biopolitical agenda (through processes of bio/digital-mediation), current biomedical discourses limit insights into ontological dilemmas of embodiment and identity within biometric parameters. Biometrics could, therefore, be considered to be reversing the internal order of Cartesian mind/body dualism, to 'body/mind' dualism; whereby the body 'speaks' through data, which the mind (of the subjective 'self-tracking' individual, or the symbolic 'mind' of the computer processor) is required to make sense of. In this paradoxical Cartesian inversion, dualities attributed to the body are maintained yet the privilege of mind-over-body is arguably reversed; as the quest to 'fix' subjectivity through biological conceptions of identity, establishes biometrics as an ideal paradigm for the post-digital age. While other popularised bio/digi-mediated modes of communication, such as social-networking, arguably depend on traditional methods of Cartesian mind/body dualism (encouraging individuals to construct multiple 'illusions of self' across platforms), biometric processes and practices operate by engendering the distinct embodied bio/digi-polarities that Ajana delineates above. The method of subjective 'objectivisation' that self-tracking practices encourage, arguably reduce and split the biological dimensions of embodiment which can be easily measured and quantified through biometric processes into 'data-products'. In accordance with Foucault's theorisations on biopolitical modes of productive stimulation, enacted through self-regulatory behaviours, such reductionist constitutions of embodiment and subjectivity, propagated by biometric self-tracking practices, serve to advantage the 'big-data' agendas of a globalised biopolitics. For Ajana, the emergence in popularity of biometrics, as a system of identification, authentication and measurability 'is mainly

due to its ability to automate the process of linking bodies to identities; distribute biological and behavioural data across computer networks and databases; be adapted to different uses and purposes' (Ajana 2013: 3). The adaptability of biometric, bodily-data representations, produced through subjective interactions with digital devices, shapes a new biometric language of identity which is increasingly being applied to subjectivity; as individual bodies are entangled into distributed biopolitical networks and discourses. The biopolitical assumptions of objectivity and rationality which are applied to biometric data, which Ajana disputes only 'allegedly [provide] more accurate, reliable and hard-to-tamper-with means of verifying identity' (Ajana 2013: 3), further legitimate biometrics as a measure of indisputable biological 'truths'.

> Biometrics, which is literally the 'measurement of life', refers to the technology of measuring, analyzing and processing the digital representations of unique biological data and behavioural traits such as fingerprints, eye retinas, irises, voice and facial patterns, body odours, hand geometry and so on. It can be used in two ways: *identification* in order to determine who the person is, through one-to-many comparison, and *verification* in order to determine whether the person is who he claims to be, through one-to-one comparison […]

> (Ajana 2013: 3)

This research proffers that the biometric data-language attributed to subjective bodies is increasingly superseding the biological, sensory and phenomenological dimensions of embodied experience; elements of embodiment which cannot be easily measured, quantified or systematised. As the experiential dimensions of subjectivity which can be measured through digitised practices of mediation are reduced to biometric data representations, the material, biological processes of the body are arguably made

manifest through the biometric 'data-double'. This research suggests, however, that such a homogenising data process inequitably supresses the 'voice' of subjective embodied experience, 'where "I" is heavily reliant on the body, and its algorithmic representation, to assert its (official) identity' (Ajana 2013: 88). There is scope within this research praxis, therefore, to explore how it might be possible to 'speak' through the bio/digi-mediated body and its unfolding dimensions of experience, in less polarising ways. As contemporary biometric models of subjectivity and identity appear to reverse traditional Cartesian mind/body polarities, biometrics disproportionately 'gives the body unprecedented relevance over the mind' (Aas 2006: 154). Biometric practices and biopolitical discourses thus maintain a duality between body and mind, albeit inverse, further negating the possibilities for synthesised bio/digital perceptions of subjective embodiment to exist. This research attempts to explore the potentials for such existing bio/digital polarities to be synchronised, using performative methods of praxis. While self-tracking is arguably a quantitative and qualitative practice, requiring subjects to 'make-meaning' out of biometric data, for Ajana, biometric technologies are reliant on an 'epistemic suspicion towards the "story"' (Ajana 2013: 89) of subjectively embodied experiences. This praxis attempts to renegotiate a performative space of synthesis, where the qualitative/quantitative dimensions of bio/digi-mediated embodied experience can potentially merge.

> when the biometric body speaks, it speaks in a language that silences the biographical story of the person whose body is ordered to speak. It therefore occludes the 'echo' of whoness while merely revealing the 'trace' of whatness.
>
> (Ajana 2013: 89)

Beyond a systematised, measurable and quantifiable data-classification process, Ajana defines biometrics as a 'form of "new media" to the extent that it digitally mediates between the body and identity, between technology and biology' (Ajana 2013: 3). This research suggests that as a mediating process, biometrics, like other media forms, holds the potential for experimentation and exploration; using performative embodied methods and processes, this praxis will attempt to generate an alternative subjective 'data-set' which works towards reshaping perceptions for what embodied bio/digi-mediated 'data-sets' could be. Concurring with Ajana's theorisations, Sarah Kember elucidates the paradoxical dualities which are integral to current biopolitical identification processes, as exercised through biometric 'technologies of the self', contesting that such technologies (which Kember terms 'iMedia' in her text *iMedia: The Gendering of Objects, Environments and Smart Materials,* 2016)*,* work by 'policing the boundaries of identity at a time when those boundaries appear to matter less [which makes them] subsequently matter more' (Kember 2013). As biometric technologies learn to distinguish biological differences through identification processes of 'big-data' capture, they simultaneously generate homogenised demographic databases, based on algorithms which amalgamate such biological differences. Embodied subjects are thus neutralised into data-subjects, while their biometric data becomes of tremendous value to a multiplicity of biopolitical, governmental and commercial bodies. In such a socio-political paradigm, at the same time as innovative biometric self-tracking technologies appear to expand the potentials of embodiment and subjectivity, through increased dimensions of self-knowledge, 'they simultaneously close down the possibilities for what life can be' (Kember 2013). The dimensions of embodied activity that can be measured and quantified through

biometric technologies are arguably guided within limited biopolitical parameters, as capillary forms of biopower are enacted through methods of 'big-data' capture, which 'regulates populations at a distance, meaning at a position of increased invisibility' (Kember 2013). In a paradoxical consequence arising from biometric identification processes, while the body is superficially made more transparent through the biometric 'exposure' of its inner physiological workings, the boundaries that exist between bodies are strengthened. For example, while members and contributors to the *Quantified Self* movement are actively encouraged to 'share' their biometric data and practices with other participants within the community, the self-scrutinising particularity of 'self-tracking' activities arguably shapes highly individualistic limits and perceptions towards embodied experiences. Furthermore, the frameworks used by biometric identification systems for gathering subjective bodily data, which until recently Shilling reasserts remained the 'staple features of border control' (Shilling 2016: 73), have infiltrated the everyday to mediate life at a biological level.

> This ontology of body as information construes the body itself in terms of informational flows and communication patterns, exposing the porous and malleable nature of body boundaries. And when the body is viewed beyond its somatic and material contours, what ensues is a problematisation of the very distinction between materiality and immateriality and, with it, the distinction between the 'material' body and the body as 'information'.

(Ajana 2013: 7)

This research is attempting to develop a 'bio/digi-rhythmic' performative paradigm for reconfiguring the 'informational flows' of our bio/digi-mediated bodies rhythmically and experientially, in the space of praxis. This research proposes an ontological

consideration of our bodily 'bio-rhythms' and 'digi-rhythms' as convergent, using sound as an alternative process of embodied 'data-capture' for re-thinking the materiality of the 'bio/digi-mediated' body through its affective, rhythmic potentials, in the theoretical/experiential performative space. This praxis proffers an emancipatory embodied methodology (which will be outlined in the *Methodologies* Chapter 2) to better 'speak' the bio/digi-mediated body subjectively, beyond the inequitable biopolitical power-dynamics of 'big-data' capture; proposing a renegotiation of 'the porous and malleable nature of [our] body boundaries' (Ajana 2013: 7), through an empirical 'bio/digi-rhythmic' synthesis.

The Abstract Data Body

In a research article titled *Data for life: Wearable technology and the design of self-care* (2016), Natasha Dow Schüll (having attended a Digital Health Summit in the wake of President Obama's 'Affordable Care Act', 2014), makes explicit the commercial drives of the technology sector to 'capitalize on the new opportunities brought by health reform' (Schull 2016);

> As mobile technology spreads, as electronic sensors become more accurate, portable and affordable, and analytical software becomes more powerful and nuanced, consumers are offered an ever-expanding array of gadgets equipped to gather real-time information from their bodies and lives, convert this information into electrical signals, and run it through algorithms programmed to discern patterns and inform interventions into future behaviour.

> (Schull 2016)

In an increasingly digitised contemporary culture, sensor technologies are indisputably becoming integral to the functions of everyday life, as decreases in size and increases in sensitivity have enabled them to be embedded into functional objects such as smartphones and watches, engendering those objects as 'wearable tracking devices in themselves' (Schull 2016). Specialist self-tracking biometric fitness devices (while arguably embedded with more 'accurate' sensor technologies), are no longer a necessary requirement for tracking personal digitised health-data, as pervasive mass-market technologies like smartphones are designed with functions which make 'self-tracking' easy, inexpensive and omnipresent (for example, the *Apple iPhone* 'Health' app. which cannot be deleted from the device).

> We move in very abstract times […], many forms of physical expression have yielded to the same numerical abstraction, our dancing, playing, even suffering bodies being increasingly supported by the development of digital technologies of all sorts.
>
> (Portanova 2013:1)

In the introduction to her book, *Moving without a Body: Digital Philosophy and Choreographic Thoughts* (2013), Stamatia Portanova attempts to distinguish the numerical abstractions that our bodies, movements and forms of physical expression, are increasingly yielding to, through developments in technologies that digitally mediate our bodies. Portanova indicates that this abstraction of the body, of movement and of physical expression across as diverse a range of cultural platforms as dance-choreography, game-design, biomedical engineering, sporting practices, other performance realms, as well as practices embedded in everyday life, is defined by the same overarching central concern;

> The possibility to capture, store, and manipulate movement, abstracting it from the body and transforming it into numerical information, a data flow that can be used to activate further physical or mental, technical or creative processes.

> (Portanova 2013: 1)

Portanova emphasises that her definition of the term abstraction, throughout *Moving without a Body* (2013), is used as a broader philosophical apparatus for distinguishing the more material or concrete experiences of the physical body, from 'the abstract reality of mental experiences, without erasing their important relation' (Portanova 2013: 2). Moving beyond more simplistic understandings of the notion of abstraction, such as how it is applied to ideas of 'disembodiment' in discourses about the extensions of our bodies prompted by digital technologies and processes of bio/digi-mediation, for Portanova,

abstract is everything that can be "abstracted" from the palpable materiality of the real, such as the possibility of calculating the precise spatial and temporal locations of a body or an object, its reduction to a *datum*.

(Portanova 2013: 2)

Portanova contends that if post-Cartesian philosophy has demonstrated that 'no element of our experience can be said to possess this calculable character in itself' (2013: 2), any realities arrived at through 'precisely located bits of material, or numerically definable entities' (2013: 2), must first go through a process of abstraction. In *Moving without a Body*, Portanova defines the processing of such abstractions of body, movement and physical experiences into a datum, as a process of mind*,* with the central research inquiry of her text driven by the question of; 'to what extent digital technology can also be said to be a mind' (Portanova 2013: 141).

what really happens when the physicality of our movements is translated into a numerical code by a technological system (or when this physicality becomes *numbers*) [?]

(Portanova 2013: 2)

Thinking beyond the 'dematerialisation of physical bodily presence into 0s and 1s' (2013: 3), Portanova questions how the scope of a process like abstraction enables us to think about movement, in the absence of a physically moving material body. As such, *Moving without a Body* (2013) 'conceptualises the simultaneity of bodily

presence/absence as a relation between de-subjectified matter and its powers of abstraction' (Portanova 2013: 142), a theorising of the body more attuned to a 'virtual body' removed from its own physical dimension, than a concrete material body leaving a representational trace. This 'virtual body', for Portanova, emerges as an 'incorporeal idea' (Portanova 2013: 142), an assemblage-body that merges the 'opposition between the anatomical body as a physical thing and the subjective body as a phenomenological experiencer' (Portanova 2013: 142), into the incorporeal idea of the 'virtual body'. This is a theoretical extension of embodied potential which is concurred by Melanie Swan in a research article entitled *The Quantified Self: Fundamental Disruption in Big Data Science and Biological Discovery* (Swan 2013). For Swan, practices of biometric digital-mediation engender an intimate relationship between subjects and their data, as self-tracking practices mediate the embodied, phenomenological experience of reality at the same time as they enable bodies to become 'more knowable, calculable, and administrable object['s]' (Swan 2013: 85). Through the types of embodied, experiential 'bio/digi-mediations' which are prevalent in the post-digital age, Swan conceptualises a future in which 'the quantified self may become additionally transformed into the extended exoself as data quantification and self-tracking enable the development of new sense capabilities that are not possible with ordinary senses' (Swan 2013: 85). While Swan's future predictions appear to propose a hybrid embodied synchronisation of bio/digi-mediated experiences, this research proffers that cultural predominance is disproportionately placed on the quantifiable data-body in contemporary discourses. In this research praxis, sound is used as a method and process to 'rethink' the bio/digi-rhythmic 'virtual body' in the theoretical/experiential performative space, through a material 're-experiencing' of the body-data for the reader/listener. This research is attempting to develop a

performative 'bio/digi-rhythmic' paradigm in which the space of praxis becomes the space where the bio/digi-rhythmic 'assemblage-body' synthesises oppositions between 'the [bio/digital] body as a physical thing and the subjective body as a phenomenological experiencer' (Portanova 2013: 142) into the virtual/actual idea of the 'bio/digi-rhythmic' body.

The 'Body without Organs'

It would be useful to introduce French philosopher Gilles Deleuze's (1925-1995) conceptual thinking around bodies here, in particular his concept of the 'Body without Organs' (BwO), which he began to delineate in *The Logic of Sense* (1969), and further explored in *A Thousand Plateaus: Capitalism and Schizophrenia* (1980), one of many research collaborations with French psychoanalyst Felix Guattari (1930-1992). In *The Deleuze Dictionary Revised Edition* (Parr 2010), Bruce Baugh outlines Deleuze's definition of a body as 'any whole composed of parts, where these parts stand in some definite relation to one another, and has a capacity for being affected by other bodies' (Baugh 2010: 35). Baugh makes explicit that for Deleuze, however, the human body is merely just one of a multiplicity of examples of what could be considered a 'body', as bodies, for Deleuze, are not defined by their materiality, organic or biological, structure, but by the affective relations and interactions of their parts. In the example of a collective or social body, where, 'its parts are human individuals who stand in a certain relation to each other' (Baugh 2010: 35), dominant power relations are formed within the body when the composite parts interact and

compound to express, 'the "essence" or a power of existing of that body' (Baugh 2010: 36). Baugh is quick to assert that for Deleuze, this very degree of existence or intensity that compounds a body into being, also delimits its power to be affected, 'The more power a thing has, or the greater its power of existence, the greater number of ways in which it can be affected' (Baugh 2010: 36). For Deleuze, the idea of a 'Body without Organs' delineates the other 'possibly more affective- fields of immanence and states of being' (Message 2010: 37) that could be generated within such organisational bodies, a 'productive-machine that is multiple' (Message 2010: 37), in a constant state of flux, and thus gives way to 'openings and spaces for the creation of new modes of experience' (Message 2010: 37), felt both internally and externally to the organised body. The concept of the 'Body without Organs', as a 'non-formed, non-organised, non-stratified, or de-stratified body or term' (Message 2010: 37), introduces an expansive, destabilising element into the organised workings of the homogenous body in question, introducing an affective body with heterogeneous parts which resists an oppositional position to the pre-organised body.

> although the BwO is a process that is directed toward a course of continual becoming, it cannot break away entirely from the system that it desires escape from. While it seeks a mode of articulation that is free from the binding tropes of subjectification and signification, it must play a delicate game of maintaining some reference to these systems of stratification, or else risk obliteration or reterritorialization back into these systems.

> (Message 2010: 38)

The 'Body without Organs', as an assemblage-body, or complex constellation of heterogeneous elements, simultaneously 'exists within stratified fields of organisation

at the same time as it offers an alternative mode of being or experience (becoming)' (Message 2010: 38). While the 'Body without Organs', as a process, can function as a dynamic and productive force from within the systems of stratification it operates, any subversion interjected into existing organisational systems by the 'Body without Organs' is 'an incomplete process' (Message 2010: 38). The 'Body without Organs' instead destabilises through a mode of continual, processual becoming, through movement and momentum, while still maintaining a position 'within the system that it aims to subvert' (Message 2010: 38).

In the *Contextual Case Studies* in Chapter 3, this research will apply Deleuze's theorisations around the 'Body without Organs' to the artist and choreographer Xavier Le Roy's embodied performance practice. This research will suggest that in his work *Self Unfinished* (1998), Le Roy uses a performative process of embodied transformational 'becoming' that could be considered a corporeal expression of Deleuze's concept of the 'BwO'; undoing his existing image of 'self' from the 'binding tropes of subjectification and signification' (Message 2010: 38). It is the existing predominant biopolitical, biometric 'systems of stratification' (Message 2010: 38), that this research is attempting to destabilise; techniques of bio/digi-mediation which arguably 'reterritorialize' embodied subjectivities 'back into [the] systems' (Message 2010: 38) they profess to subvert through problematic paradoxical tropes such as 'Self-knowledge through numbers' (*Quantified Self*, 2007). In this research praxis, the 'data-bodies' that we generate and produce through our interactions with digital 'self-tracking' devices, will be re-conceptualised in line with the processual terms that Deleuze outlines for a 'Body without Organs'. The 'data-body', re-imagined through

the sound 'data-stream' in synchronicity with how Deleuze's 'BwO' functions, arguably challenges 'the world of the articulating, self-defining and enclosed subject' (Message 2010: 37), by producing a bio/digi-rhythmic 'other' data-body that is also 'multiple and in a state of constant flux' (Message 2010: 37). While the archetypal biometric data-body arguably has as its 'mode of articulation' (Message 2010: 38) the digital-data produced from the bio/digi-mediated interrelation with the biological body, this research proffers that 'it cannot break away entirely from the system [of the physical subjective body] that it desires escape from' (Message 2010: 38), as the conventional bio/digi-mediated body is 'reterritorialized' back into the striated, homogenising biopolitical systems of algorithmic meaning-production (through quantifiable biometric processes of 'big-data' capture). It is crucial within this research enquiry to renegotiate a non-dualistic 'bio/digi-rhythmic' space of synthesis through praxis; an 'assemblage-body' which merges the heterogeneous embodied dimensions of both the biometric ('digi-rhythmic') and biological ('bio-rhythmic') bodies, towards a new theoretical/experiential proposition for how a bio/digital 'BwO' could function. This research uses embodied performative practice and sound 'data-streams', as a methodology for 're-imagining' a bio/digi-rhythmic synthesis in the space of praxis, which better 'speaks' the subjectivity of bio/digi-mediated experience at the same time as it resists re-territorialising the bio/digital body back into the stratified systems of existing biometric models. Returning to Portanova's theorisation of the virtual body as an 'incorporeal idea' (Portanova 2013: 142), the 'BwO' as a process of continuous 'becoming', arguably destabilises prevailing polarising bio/digital discourses, re-conceptualising the bio/digital body as synchronously 'virtual/actual', and thus non-dichotomous in its situatedness between both registers of the 'real' and the 'virtual'. In this research, the bio/digi-mediated body is re-materialised into the 'bio/digi-rhythmic'

body through praxis, as an 'assemblage-body' which traverses and oscillates between the realms of the 'actual' and the 'virtual'. For Deleuze, the virtual is no less 'real' than the actual, as the virtual contains the inherent 'capacity to bring about actualisation' (Boundas 2010: 300); though not as a linear process of actualisation, but through its affective tendencies. This process of 'becoming', as it oscillates between the virtual/ actual realms of reality, is thus a process of non-determining tendencies. Perhaps crucial to Deleuze's conception of the 'virtual' realm is that it should not 'be understood as duplicating or resembling the actual, nor should it be taken to mean transcendence' (Boundas 2010: 302), as such determinations would wrongly serve to reduce the potentialities of the 'virtual' sphere in opposition to the 'actual' (as a merely representational dimensional space, rather than a synchronised inter-relational process of 'becoming'). In the succeeding *Methodologies* Chapter 2, the bio/digital, virtual/actual, theoretical/experiential space of praxis that this research is attempting to develop will be further conceptualised through the performative paradigm of the bio/digi-rhythmic 'event'. In the *Performative Praxis* Chapter 4, the bio/digi-rhythmic 'events' generated by this research through embodied interventions and sound 'data-streams' will be introduced and considered in the converging 'virtual/actual' affective space of praxis.

'Re-thinking' Biometric Abstraction

In *Refrains for Moving Bodies: Experience and Experiment in Affective Spaces* (2013), Derek P. McCormack, concurring with Ajana and Portanova's theorisations

around techniques of bodily abstraction in the post-digital age, also calls for a re-conceptualisation or a 're-thinking' of the terms of abstraction, as applied to perceptions of our 'data-bodies'.

> abstraction is often framed as an epistemological process through which the rational mind, facilitated by the terms of the Cartesian mind-body split, withdraws itself from the lively, chaotic, and unpredictable energies of the sensate world in order to better understand this world from a distance.

> (McCormack 2013: 165)

Critiquing such problematic Western philosophical dualistic theorisations, which have been inherited from Cartesian thought, McCormack considers that the denigration of concepts of abstraction to these polarised terms has led to critiques of abstraction as culpable for 'disembodied habits of thinking, techniques of value generation through alienation, and a failure to recognise the lived reality of everyday corporeal difference as it is experienced' (McCormack 2013: 166). In the contemporary digitised world, such delimited models for thinking the 'terms of abstraction', for McCormack,

> underpins the production and distribution of particular models of bodily regulation and comportment that, having been separated from lived experience, are then used to generate practices and technologies through which to harness the surplus energetic value of real, fleshy bodies in multiple contexts.

> (McCormack 2013: 166)

Applying this method of 'thinking abstraction' that McCormack outlines here to contemporary forms of 'dataveillance', 'big-data' capture and biometric digital 'self-tracking' practices in post-digital culture, this research proffers that 'technologies of the self' (as technologies of surveillance) become 'techniques of alienation' (McCormack 2013: 166); bio/digi-mediated practices through which 'subjects come to understand themselves as necessarily distanced from the immediacy of their lived, embodied, and affective experience in different spheres of life' (McCormack 2013: 166). Echoing both Foucault and Sharma's ideations on how capillary forms of biopower are put to work in globalised-biopolitical societies, McCormack contends that applying prevailing concepts of digital abstraction to 'techniques of alienation' in this way (beyond a purely philosophical thinking), facilitates 'the affective energies of bodies to be captured and mobilized to productive ends, most obviously through time and motion studies applied to industrial and ergonomic systems' (McCormack 2013: 166).

> How, and in what ways, should the relation between abstraction, space, and moving bodies best be understood? It is not unfair to say that answers to this question within the social sciences and humanities have for the most part tended to cast abstraction as something that works against the critical or creative apprehension of the lived, affective spacetimes of moving bodies. That is, abstraction has often been understood as both a process and device through which the differentiated meaning and lively materialities of moving bodies are incorporated within philosophical, technical, and political frameworks that reduce and constrain this difference and life.
>
> (McCormack 2013: 165)

Though just as Portanova proposes in *Moving Without a Body* (2013), that 'numerical technologies certainly do not exhaust the realm of the abstract' (Portanova 2013: 2),

McCormack's theoretical and practical concern in *Refrains for Moving Bodies* (2013),

is to liberate 'abstraction' from the limitations imposed by contemporary critiques, to

explore 'how, and in what ways, does it remain possible to affirm abstraction […], as

part of the process of thinking through and experimenting with the affective spacetimes

of moving bodies?' (McCormack 2013: 166). Questioning how 'abstraction' could

move beyond such critiques, towards an opening up of its potentials, 'Where then to

begin thinking through abstraction, space and moving bodies in ways that open up

possibilities for affirming the relations between these terms?' (McCormack 2013: 167).

McCormack conceptualises an alternative paradigm of thought-in-practice, for

applying choreographic techniques and technologies of 'abstraction' to moving bodies;

thinking and moving through experimental processes which would aim instead 'to

sensitize bodies to their capacities for movement and to facilitate experiment with this

movement' (McCormack 2013: 166) towards an 'experimental generation of affective

spacetimes through movement' (McCormack 2013: 186).

This research enquiry, in synchronicity with McCormack's proposition in *Refrains for

Moving Bodies* (2013), attempts to develop a new paradigm for thinking, through an

experimental, embodied and generative performative praxis; towards renegotiating a

synthesis at the interstices where theory/praxis, mind/body, the physical/cognitive,

qualitative/quantitative and virtual/actual spheres of bio/digital experience merge. As

predominant forms of bio/digital-mediation increasingly 'abstract' an understanding of

the moving body's 'lively materialities' (McCormack 2013: 165) into a biometric data-

language, this praxis attempts to facilitate a sensitisation of our empirically embodied

subjective capacities, through the 'bio/digi-rhythmic' realm. However, while

McCormack's emphasis remains with the affective capacities and generative potentialities of the physically moving biological body in space, this research praxis resists re-affirming polarities between our bio/digi-mediated dimensions of embodiment; instead, working towards re-imagining a subjective synthesis of bio/digital polarities in the 'third' space of praxis. As biometric 'self-tracking' technologies translate the material body's physical effort and exertion into an abstracted, numerical and quantifiable data-language (in 'real-time' with the digital-sensing device), this research praxis attempts to re-negotiate these terms of bodily 'abstraction' through the rhythmically affective spatio-temporal dimensions of embodied praxis. In the following *Methodologies* Chapter 2, this research will contextualise the use of sound 'data-streams' as an alternative method and process of data-capture, to rethink our perceptions of what 'body-data' can be. This research will suggest that sound has the potential to proffer a new theoretical/experiential understanding of 'body-data', in the 'abstract' performative paradigmatic space of praxis; emancipating the bio/digi-mediated body from existing reductionist biopolitical frameworks, which arguably diminish the 'lively materialities' (McCormack 2013: 165) of embodied experience into quantifiable biometric paradigms.

The Body Schema

This research considers that digital 'self-tracking' devices, as wearable devices that are worn on the body and function through haptic contact with the skin, are incorporated into what the cognitive neurosciences term the 'peri-personal space' (Di

Pellegrino and Làdavas 2014) of the body schema, thus arguably becoming extensions of the body itself. In *Mind in Architecture: Neuroscience, Embodiment, and the Future of Design* (2015), Sarah Robinson details this malleable ability of the body to incorporate tools into its schematic organisation:

> The body schema is plastic, amenable to constant revision, extends beyond the envelope of the skin, and has important implications for tool use. Recent studies have shown that tools are incorporated into the body schema within seconds, regardless of whether the subjects of the experiment had prior training or exposure to them. Our body readily integrates tools into its organised model of itself.
>
> (Robinson 2015: 138)

Increasingly expanding understandings within the cognitive neurosciences towards the body schema's aptitude at processing sensory and inter-relational activities, affirm that the extent to which the body can still be considered an impermeable 'boundary that delimits qualities, persons, ideas, substances, objects or processes' (Robinson 2015: 137) in contemporary post-digital society and culture is superseded. Robinson confirms that, 'We can no longer consider the organism and the environment to be independent entities' (Robinson 2015: 139).

> The body schema, peripersonal space, and extrapersonal space, rather than being distinct entities, are emergent attributes of interacting cortical and subcortical areas. In other words, our body's apprehension of surrounding space and its contents comes into being through a dynamic, multisensory process irreducible to a gross measure of inside and outside.
>
> (Robinson 2015: 139)

Acknowledging such a significant conceptual shift 'away from the disembodied mind of an isolated individual, toward the incarnation of meaning through the interaction of embodied beings actively engaged in their environments and with each other' (Robinson 2015: 141), Robinson forewarns against the limitations of quantifying brain and bodily processes, in methods popularised through technological practices of digitisation within the biological and neurosciences. Instead she advocates for methodologies which veer towards a 'reckoning with our embodiment' that wholly recognises our situatedness in 'a world whose subtle relations and intricate causality pattern our being at every level' (Robinson 2015: 152). Critiquing advanced technologies' ever increasing abilities to probe the infinite intricacies of our biological beings, including the surrounding cosmos, Robinson emphasises how paradoxically and inadequately 'the homeostatic bandwidth of daily life does not lend itself to the same scrutiny' (Robinson 2015: 153). Using the spatial-temporal delays present in the detection and processing of radio and light signals to produce fMRI brain-scan images, Robinson elucidates how these representational images, which are attributed great credibility in biomedical discourses, in reality depict 'mental activity three steps removed from the actual cognitive process' (Robinson 2015: 153). For Robinson, this significant revelation exposes the standardising techniques and methods through which biopolitical and biomedical discourses homogenise subjective bodies, 'in this normalising process, significant data are inevitably lost' (Robinson 2015: 153). Elucidating the methods through which the biomedical and neurosciences have 'developed techniques for averaging these test results' (Robinson 2015: 153), due to limitations in the augmented perceptive capacities of current biomedical technologies,

Robinson reveals that the images we see informing research advances in scientific journals are accumulated predictions of 'normalised findings projected onto a hypothetical stock brain' (Robinson 2015: 153). If, for Robinson, these 'methodological shortcomings underline the fact that neuroscience, like the accrual of all human knowledge, is vulnerable to error, misconception, and conceit' (Robinson 2015: 153), this research proffers that in the same way, biometric technologies which obtain data about our bodies from sensors built into digital wearable 'self-tracking' devices, are also arguably vulnerable to the same technological shortcomings. As a result, this research suggests that the frameworks of biopolitical health recommendations that are used to dictate and inform subjective health behaviours in contemporary culture, could be considered merely projected averages of biometric ideals. In such a homogenising process, biometric data which has been generated, accrued and abstracted from a multiplicity of subjective bodies on a global scale, is amalgamated through 'big-data' capture and algorithmic processes into a 'hypothetical stock' (Robinson 2015: 153) body; a biometric speculative 'ideal' which is subsequently inadequate for the lived, everyday subjective internalisation and behavioural applications by the plurality of embodied individuals who 'self-track'. Returning to McCormack's theorisations in *Refrains for Moving Bodies* (2013), this research suggests that such methods of biomedical hypothesis, operative through biometric processes of 'body-data' abstraction, bleakly emphasise the ways in which 'the differentiated meaning and lively materialities of moving bodies are incorporated within philosophical, technical, and political frameworks that reduce and constrain this difference and life' (McCormack 2013: 165). In the *Contextual Case Studies* Chapter 3, this research will further develop the argument for problematising the affect of reductionist biomedical frameworks on lived experiential subjectivity in contemporary post-digital culture,

through an applied contextualisation of the artist and choreographer Xavier Le Roy's performance work, *Product of Circumstances* (1999). This research will propose that Le Roy's embodied performance practice developed as a subjective corporeal renegotiation, from the tensions he experienced working within a biopolitical framework as a biomedical scientific researcher in a laboratory environment, tasked with developing a 'bio/digi-mediated' system of cellular classification.

> We now know that the thoughts and feelings that populate our subjective reality are not abstractions belonging solely to us; rather, they are constantly forming patterns of experiential interaction emerging from our continual engagement with the environment. What we understand to be our subjective reality is in fact an experiential process that is *in* and *of* the world, and not merely *about* the world.
>
> (Robinson 2015: 155)

This research enquiry also attempts to develop a subjective, embodied performative praxis for renegotiating the bio/digital polarities arising from such lived experiential tensions between contemporary digi-mediated discourses of the 'abstract' biometric 'data-body', and the physical, sensorial 'lively materialities' (McCormack 2013: 165) of the biological body; bio/digital polarities which arguably produce a discontinuity in our understanding of our 'data-bodies'. Contemporary neuroscientific perceptions continue to elucidate the significant malleability of the body schema and its 'peri-personal' spatial peripheries, towards new understandings of how we incorporate novel technologies, devices and interactions with others into our spatio-temporal conceptions of body, subjectivity and ideas of 'self'. For neuroscientists Giuseppe Di Pellegrino and Elisabetta Làdavas, in a research article titled *Peripersonal Space in*

the Brain (2014), the ways in which the 'brain constructs multiple, rapidly modifiable representations of space, centred on different body parts', reveals that 'PPS [peripersonal spatial] representations are pivotal in the sensory guidance of motor behaviour, allowing us to interact with objects and, […] with other people in the space around us' (Di Pellegrino and Làdavas 2014). This research, using the experimental performative methods of embodied interventions and sound 'data-streams', attempts to utilise this inter-personal space of the body schema through praxis, as an affective, rhythmic, theoretical/experiential space for a subjective renegotiation of biometric 'self-tracking' practices. In 're-imagining' the peri-personal space of the body schema as a 'virtual/actual' space with potential for embodied interventions, this praxis explores the body's affective 'bio/digi-rhythmic' capacities through the performative, experiential spatio-temporal dimensions of sound. This research attempts to synthesise an understanding of our 'bio/digi-rhythms' through the alternative bio/digi-mediated process of sound 'data-capture', towards synchronising the quantitative/qualitative languages of our biometric data-practices (our 'digi-rhythms') and our embodied sensory experiences (our 'bio-rhythms'), in the 'third' peri-personal space of praxis.

> Language, for instance, can be considered as the collective, decentralised product of cognition- an accretion of human knowledge invented by no one that belongs to everyone.

> (Robinson 2015: 140)

As the quantitative, digital biometric data-language embedded in 'self-tracking' practices has increasingly become the prevailing contemporary zeitgeist for thinking,

conceptualising and abstracting our biological bodies in a digitally-mediated world, this research proposes the use of performative embodied interventions to renegotiate an alternative subjective paradigm of praxis, which better 'speaks' the bio/digi-mediated body in a post-digital context. In a *Performative Praxis* case study in Chapter 4, entitled *Speaking the Data* (2017), this research uses such an embodied performative intervention (which is synchronously recorded through the accompanying sound 'data-stream', as an alternative process of bio/digi-mediated 'body-data' capture) to 're-materialise' the body's abstract biometric data output in 'real-time' using the phenomenological 'lively materialit[y]' (McCormack 2013: 165) of spoken language. In *Speaking the Data* (2017), the vocalised 'body-data' language arguably becomes an embodied, qualitative/quantitative communicative 'technology of the self' for 'making-sense' of the quantifiable biometric data-language that the body is producing in 'real-time', through its physiological interaction with the digital-sensing device. *Speaking the Data* (2017) thus attempts to repurpose the body's bio/digi-mediated data-processing, into a new affective 'bio/digi-rhythmic' language for the collective understanding of the reader/listener, in the space of praxis; an embodied theoretical/experiential encounter with 'the collective, decentralised product of cognition' (Robinson 2015: 140) that Robinson holds language to be. In the performative paradigmatic bio/digi-rhythmic 'sound-space' of praxis that this research proposes, the ways in which our bodies co-produce one another in affective mutuality will be explored (using bio/digi-mediated interactions which engage the peri-personal registers of the body schema), towards an extension and 'opening-up' of possibilities for better 'speaking' our bio/digital bodies subjectively, in the context of our lived experiences in post-digital culture.

The French philosopher and sociologist Henri Lefebvre's theory of *Rhythmanalysis* (2004), which is adopted and re-contextualised within this research enquiry as both a metaphor and methodology for 're-thinking' our lived subjective 'bio/digi-mediated' interactions with digital devices through embodied movement practices, performs a dual function within this study. While this research acknowledges that *Rhythmanalysis* (2004) informs the literature for the proposed 'data' collection and praxis interventions, it is the potentiality to renegotiate Lefebvre's theory of 'rhythmanalysis' as a pragmatic methodological embodied research approach, to consider a synthesis of our 'bio-rhythms' and 'digi-rhythms' through praxis, which is of significant importance to this enquiry. As such, this re-positioning of 'rhythmanalysis' as a methodological approach which shapes the research enquiry will be elucidated in depth within the following *Methodologies* Chapter 2.

Chapter Summary

This *Contextual Literature Review* Chapter 1 has attempted to reflect the plethora of literature that exists within the field of digital health practices, viewed through a socio-cultural lens. Through the extensive body of critical, theoretical texts converged within this chapter, this research has attempted to develop and contextualise a framework for understanding the affects of existing digital health practices on our concepts of 'self', subjectivity and perceptions of embodiment in contemporary culture. The ideologies produced through movements such as the

Quantified Self and established biometric 'self-tracking' practices have been considered in relation to Foucauldian philosophy and thus a discourse on biopolitical mechanisms of power. Through the selected literature reviewed within this chapter, this research has aligned digital health tracking systems (and the practices of 'self-tracking' using digital wearable devices that such systems promote) with Foucault's *Technologies of the Self,* and the concept of the 'panopticon' as a precursor to contemporary surveillance systems of regulation and control. The contemporary behavioural practices of self-regulation, self-optimisation, self-monitoring and self-governance associated with digital health practices have been posited as homogenising the complexities of physical embodiment and thus limiting the scope for subjective body narratives to be developed. This research has proffered (through the selected literature) that the Cartesian mind/body oppositional construct is arguably seeing a reversal in post-digital culture, as biometric 'self-tracking' technologies quantify our bodies into numeric 'data-products'. This research has suggested that our subjective perceptions towards our biological and digitally-mediated dimensions of embodied experience have subsequently become polarised. While digital wearable biometric devices enable us to 'self-actualise', by modifying and validating our embodied behavioural health practices in accordance with biopolitical recommendations, this research has considered how they also entangle our data-selves into processes of 'big-data' capture. The discourse relating to systems of 'big-data' capture has also acknowledged that our lived individual experiences are subject to homogenisation and that the scientific-technological drive to 'quantify' and 'measure' has privileged biometric-data over sensorial bodily experience, rendering the body an 'object of information' (Foucault 1975: 200).

This research's proposition to renegotiate the biometric 'self-tracking' data phenomenon to include alternative subjective forms of data is foregrounded in this *Contextual Literature Review* through Deleuze's concept of the *'Body Without Organs'.* The *'Body without Organs'* proffers approaches which resist binary thought (body/digital, qualitative/quantitative, theoretical/experiential, virtual/actual) to introduce a multiplicity in flux; a de-stratified 'assemblage-body'. This research proffers that the 'undoing' of the qualitative/quantitative binary may be adopted as a method to include subjective embodied experience in contemporary health practices and discourses. This research proposes the development of an approach to health practices that synthesises digital data (our 'digi-rhythms') and the sensorial dimensions of subjectivity (our 'bio-rhythms'), extending existing data-capture practices to include embodied experience. The methods and methodologies to perform this synthesis will be outlined and examined in the following *Methodologies* Chapter 2.

Chapter 2: Methodologies

Introduction

The Performative Paradigm

In this chapter, the qualitative performative methodologies adopted, developed and applied by this research praxis (within the Performative Praxis case studies in Chapter 4) are introduced and proffered for their capacity to engender a re-thinking of subjectively bio/digi-mediated embodied experiences, practices and spatio-temporalities, using experimental methods which work towards a synthesis of bio/digital polarities. In *Strategies of Qualitative Inquiry* (2008), Norman K. Denzin and Yvonna S. Lincoln contend that qualitative research practices are 'a generative form of radical democratic practice', resistant to the modes of 'neo-positivist, evidence-based epistemologies' dominating discourses of 'scientifically based research paradigm' (Denzin and Lincoln 2008: viii), in fields such as biomedical research. As this research has attested throughout the *Contextual Literature Review* in Chapter 1, these are the very modes of biopolitical epistemologies, dominating the fields of biomedical sciences and technologies, which have produced the conditions of emergence through which cultural practices of datafication towards the biological body prevail (as enacted through processes such as 'self-tracking' and biometric forms of 'data-capture'). For Denzin and Lincoln, in a globalised and digitised world in which

national research organisations are increasingly turning towards quantitative epistemologies of data-collection and algorithmic analysis 'it is necessary to reengage the promise of qualitative research as a form of radical democratic practice' (Denzin and Lincoln 2008: viii). In her essay *Artistic Research: A Performative Paradigm?* (2016), Barbara Bolt puts forth a theorisation of a 'performative paradigm' (Bolt 2016) as a heterogeneous third alternative to the homogenising limitations imposed by dominant quantitative and qualitative research paradigms.

> While in the scientific quantitative paradigm the validity of research lies in repetition of the same, the performative paradigm operates according to repetition with difference. This is the generative potential of artistic research.
>
> (Bolt 2016)

For Bolt, established qualitative methodologies also belong to the dominant research paradigm, through their dichotomous binary relation to quantitative methods, whereby both 'provide the default modes of research in the academy' (Bolt 2016). Bolt develops her theorisation for a performative paradigm from Brad Haseman's *A Manifesto for Performative Research* (2006) in which Haseman, adopting a conceptualisation of the term 'performative' from J. L. Austin's 'speech act theory' (Austin 1962), argues for 'a third paradigm' (Haseman 2006: 98); a research paradigm more sympathetic to the 'practice-led' methodologies formulated by researchers in the fields of arts practice. Defining 'performative researchers' as 'those researchers who carry out practice-led research' (Haseman 2006: 100), Haseman argues for the performative paradigm as produced from the tensions faced by practice-led researchers to find 'serviceable

methodologies within the orthodox research paradigms of quantitative and qualitative research' (Haseman 2006: 98), methodologies which have long established a 'positioning of practice as an object of study, not as a method of research' (Haseman 2006: 99). For Haseman, the performative research paradigm differs from quantitative ('scientific method') and qualitative ('multi-method') paradigms, through its expression of non-numeric data 'in forms of symbolic data other than words in discursive text [including] material forms of practice, of still and moving images, of music and sound, of live action and digital code' (Haseman 2006: 103), thus opening out its research scope as a 'multi-method led by practice' (Haseman 2006: 103). For performative researchers practising within a methodological sphere of the 'performative paradigm', Haseman makes explicit the centrality of practice for driving the research; 'The "practice" in "practice-led research" is primary- it is not an optional extra; it is the necessary pre-condition of engagement in performative research' (Haseman 2006: 103).

> Practice-led research is intrinsically experiential and comes to the fore when the researcher creates new artistic forms for performance and exhibition […] Practice-led researchers construct experiential starting points from which practice follows. They tend to 'dive in', to commence practising to see what emerges.

> (Haseman 2006: 100)

Though this research enquiry is not 'practice-led' in the established context for artistic research that Haseman outlines in his essay, it uses the performative space of 'praxis' to further develop the theoretical paradigm. The heterogeneous assemblage of

performative methods and processes applied by this research could thus be considered, within the 'performative research paradigm', as a 'multi-method' based in praxis, rather than 'led by practice' (Haseman 2006: 103). Therefore (as it will be elucidated in depth within the *Performative Praxis* case studies in Chapter 4), while this research uses experiential embodied interventions and sound 'data-streams' as processes and methods of 'practice', the purpose they serve within this thesis is as part of a research assemblage towards further developing a performative space of 'praxis'; for formulating a theoretical paradigm through which an embodied synthesis of bio/digital polarities may emerge. This research thus arguably functions within the performative methodological framework that both Haseman and Bolt shape, as it attempts to develop the 'third', 'bio/digi-rhythmic' performative space using praxis; which works towards synthesising existing polarities, such as the bio/digital, the experiential/theoretical, the qualitative/quantitative, the mind/body. For Bolt, the performative paradigm is a research methodology 'characterised by a productive performativity where art is both productive in its own right as well as being data that could be analysed using qualitative and aesthetic modes' (Bolt 2016). This is a method of practice which, for Haseman, requires any evaluation of the research outcomes to be experienced 'in direct (co-presence) or indirect (asynchronous, recorded) form' (Haseman 2006: 101). In the following *Contextual Case Studies* Chapter 3, separate artworks by the artists Xavier Le Roy and Hito Steyerl will be introduced and critiqued for their 'performative paradigmatic' approach to practice. It will be suggested that these performative and 'productive' artworks function within this research praxis as 'data' through which to further contextualise and situate the theoretical paradigm for this enquiry; and as such will be analysed using the 'qualitative and aesthetic modes' (Bolt 2016) for performative research that Haseman and Bolt delineate.

An autoethnographic embodied research approach is adopted by the researcher as part of the 'performative paradigmatic' research assemblage, and will be applied to the *Contextual Case Studies* in Chapter 3 and *Performative Praxis* interventions in Chapter 4 as an integral element of the methodological approach used within this praxis. For Tony E. Adams, Stacy Holman Jones and Carolyn Ellis in *Autoethnography: Understanding Qualitative Research* (2015), 'Autoethnography is a method for putting theory into action' (Adams, Jones and Ellis 2015: 90), which 'Uses a researcher's personal experience to describe and critique cultural beliefs, practices, and experiences' (Adams, Jones and Ellis 2015: 1). This research praxis is attempting to develop an alternative embodied methodological approach for 'doing autoethnography' (Adams, Jones and Ellis 2015: 1) in relation to our bio/digi-mediated experiences, using an assemblage of research methods which includes performative interventions, sound 'data-streams' and an application of 'rhythmanalysis' (further elucidated throughout this chapter). While established methods of autoethnographic research practice are largely performed through a qualitative self-reflexive written analysis of subjective lived experiences undertaken by the researcher (which situates the researcher's embodied or personal experiences in contextual relation to the social, cultural or political research concerns), in this enquiry the researcher's body is deployed as 'an autoethnographic and metronomic device for registering rhythm at a corporeal scale, for sensing [bio/digital] rhythm[s]' (Lyon 2019: 45). In two 'real world' *Contextual Case Studies* in Chapter 3, a more conventional 'autoethnographic' approach is adopted by the researcher for navigating existing digital-social and digital-cultural 'bio/digi-mediated' interventions; with the researcher using her subjective

experience of the Coastal Housing Group's digitally-mobile, fluid organisational workspace (220 High Street, Swansea) and Hito Steyerl's digitally-mediated interactive installation *Actual Reality*[OS] (Serpentine Sackler Gallery, Hyde Park London) to shape the theoretical/experiential 'bio/digi-rhythmic' proposition. In the *Performative Praxis* case studies in Chapter 4, the embodied subjective experience of the researcher is central to performing, interpreting and renegotiating a synthesis of existing quantitative data-tracking practices through the bio/digi-mediated praxis 'events', in which the researchers subjective 'data-set' is 'captured' using sound 'data-streams' (outlined in the next section). This research enquiry will also consider the autoethnographic methodological approach as integral to the artist-choreographer Xavier Le Roy (Chapter 3) and artist-writer Kenneth Goldsmith's (Chapter 4) performance practices, both of whom critique their 'digital-experiential' dimensions of lived experience through subjectivity. As such, this research posits that using autoethnography to 'think through' the body as an empirical, subjective research approach attempts to perform the praxis proposition, and thus 'embod[y] the change it calls into being' (Adams, Jones and Ellis 2015: 114).

Sound 'Data': Method and Materiality

Sound is used within this research praxis as a method for rethinking forms of data-capture around the bio/digi-mediated body. This research proffers that the established processes and practices of biometric forms of data-capture (which we are increasingly adopting and applying to our bodies in post-digital culture through our

digital devices), arguably reproduce the experiences of the bio/digi-mediated embodied subject as a 'data-product'. Performing our bodies in accordance with contemporary biomedical health parameters and systems of measurement (for example the advisory '10,000 steps-a-day' metric, daily calorie-intake, diet and exercise recommendations), we are increasingly encouraged to reconceptualise our bodies and subjective experiences in terms of the quantifiable data-metrics they produce. Quantifying the body according to biometric recommendations in this way requires us, as embodied subjects, to intentionally use and interact with digital biometric 'self-tracking' devices when we are engaged in experiential, physical activities. This research praxis suggests that this prevailing model of use and interaction with wearable biometric 'self-tracking' devices, when engaging in embodied physical pursuits, arguably instigates a Cartesian disruption to the subjective experience. Embodied experiences, conceptualised within this biometric framework, become polarised, with the digital device enabling this mind/body 'bio/digi-mediated' split to occur as it reproduces the body's actions through data-streams, thus reshaping the more sensory, empirical and qualitative dimensions of our experiential worlds using the quantifiable language of biometrics. This research praxis contends that such bio/digi-mediated self-tracking behavioural practices furthermore cause subjective embodied activities and experiences to increasingly become synonymous with the data they produce. The psychological, social and cultural gravitas of the body envisaged as 'data-product', together with increased abilities to 'log' and 'share' biometric data with others on online platforms (for example, the *Quantified Self* and *Strava* applications), arguably even supersedes the experiential, phenomenological and sensory dimensions of embodied experiences for some.

This research suggests that the digital platforms and 'self-tracking' practices of posting and sharing quantifiable biometric data to digital online networked-cultures (such as the *Quantified Self*, *Strava*, *Facebook* and other social-networking platforms), are essentially contingent on long-established ideologies and constructs of 'visibility' regarding the body, spanning over decades in contemporary Western culture. In a post-digital globalised world, this research proffers that emphasis and precedence is still placed on the 'visible' body, as data-representation has increasingly become a contemporary phenomenon for visualising bodies through the ever pervasive language of biometrics. Using digital self-tracking devices as contemporary 'technologies of the self' (the internalised, self-regulating, 'capillary' mode of biopolitical subjectivity theorised by Foucault, which was introduced and applied to contextualise this research praxis in the *Contextual Literature Review*, Chapter 1), subjects are increasingly incentivised to share the biometric 'data-products' of their embodied experiential activities, to digitally-networked cultures. This research suggests that these prevalent biometric 'self-tracking' practices (as popular methods of bio/digi-mediation), reinforce quantitative perceptions for validating bodies, identities and subjectivities in post-digital culture; by aligning with underlying biopolitical and biomedical discourses which have arguably set a precedent for paramount models of contemporary subjectivity, through moralising ethical values of 'self-responsibility', 'self-regulation' and notions of 'the productive body' (Shilling 2016: 75). Biometric forms of quantification thus arguably become the visible 'data-products' of subjectively embodied activities which submit to and reinforce these virtuous health practices, towards good 'biological citizenship' (Shilling 2016: 106); whereby individuals are motivated to 'measure their own progress in relation to the norms of

their peer-group or other population' (Shilling 2016: 74) (as exemplified in the *Quantified Self* movement, *Strava* platform, and other digitally-networked 'virtual/actual' communities).

Adopting sound as a method in this research praxis is an experimental attempt to provide a new, experiential discourse on the body which bypasses the above-mentioned dominance of the 'visible' quantifiable biometric data-body, and visual discourses on bodily aesthetics, which are arguably prevalent in contemporary digital culture. Sound is one potential application of the digital device to renegotiate polarities of bio/digi-mediation, which this research is using as an empirical, exploratory, processual method of 'data-capture', to try to better articulate the subjectivity of embodied 'bio/digi-mediated' experiences (as digital devices permeate everyday practices of lived experience). This research suggests that sound offers a potentially expansive realm for synchronising and synthesising bio/digi-mediated experiences, through its inherently dynamic, embodied, phenomenological, material and sensory properties. Sound and rhythm are applied by this research for their potential to pragmatically synchronise the mind/body, qualitative/quantitative polarities of bio/digi-mediated experiences, using the digital device to conceptually synthesise our bio/digi-rhythms in the theoretical/experiential realm of praxis. Sound is arguably not quantifiable, measurable, or stable in the same way that biometric forms of bodily 'data-capture' claim to be; it permeates and fills space and time with its material porosity, reminding us that all spatio-temporal lived experiences (including our bio/digitally-mediated practices) are dynamic and relational, not static or fixed. This perception of sound as an embodied practice, proffered by this research's

methodological application and approach, is substantiated by Steven Connor in his essay *Ears Have Walls: On Hearing Art* (2011),

> Sound is exploratory rather than merely metric or analytic, because sound does not give us just the outline or contour of things- their size, shape and position- but also gives us the sense of their quality, or their relation to us: their texture, density, resistance, porosity, wetness, absorptiveness.

(Connor 2011: 133)

This praxis' perspective of sound and listening as empirical, experiential, intersubjectively embodied practices (for reimagining bio/digi-mediated 'data-streams') may be affirmed in Voegelin's suggestion that the predominance of visual ideologies in the Western philosophical tradition (with their rationalising and linguistic structures) have effectively produced false notions of 'stability' generated through a 'hierarchy between the senses' (Voegelin 2010: 13). For Voegelin, the sublimation of sound and listening in favour of predominant discourses of 'visibility' (which position the visual sensory register at the centre of our subjective, embodied experiences), form illusory notions of 'stability' which favour 'the object minus the action of perception' (Voegelin 2010: 11), while 'Sound by contrast negates stability through the force of sensory experience' (Voegelin 2010: 12). In established biometric self-tracking practices, the 'data-products' generated by this particular subjective mode of bio/digi-mediation, enacted through the digital device, arguably serve to fix the body and identity as knowable, stable entities (as 'the object minus the action of perception', Voegelin 2010: 11). This research therefore suggests that if we consider the biometric 'data-product' as a quantified form of evidence which visualises bodily experience as

'fixed' in this way (arguably 'muting' the voice of embodied subjectivity), this praxis uses sound 'data-streams' as a processual methodology which divergently 'renders the object [/subjective experience] dynamic […] and gives it a sense of process rather than a mute stability' (Voegelin 2010: 11).

This research uses sound as an alternative method of data-capture, in an attempt to document the experiential, phenomenological and material dimensions of embodied performativity, towards synthesising such bio/digi-polarities. The same technology which is used to construct our biometric 'data-selves' is adopted and applied in a new way; the digital smartphone device is used to generate sound recordings in synchronicity with embodied interventions. Through these performative praxis interventions between the body and the digital device (which are generated by the researcher), sound and the rhythmic realm are used to renegotiate the lived territory of embodied bio/digi-mediated experiences. This research praxis therefore reimagines the 'bio/digi-mediated' body through a theoretical and methodological paradigm of the 'bio/digi-rhythmic' body (further clarified below), by proposing sound 'data-streams' as an alternative mode of embodied data-capture. Rhythm is reconceptualised as a method of bio/digital synthesis, through the repositioning of Lefebvre's theory of 'rhythmanalysis', which is adopted and applied as a research methodology and paradigm to reconsider prevailing biometric models for quantifying the body's movements through digitality (further detailed below). Sound, applied as a method of 'data-capture', is used to record and perform embodied activities as quantifiable data-streams, at the same time as it 'captures' the theoretical paradigm of the body's sensory and experiential materialities (for example, through breath, voice, footsteps,

cadence, rhythm, etc.). Sound performs the materialities of the body and subjective experiences, as data 'processes', in contrast to the positioning of the body as a 'data-product' in biometric frameworks of quantification. The sound 'data-stream' is thus used as a research method to further the development of the theoretical paradigm and to rethink binarised relations between body and digitality through the contemporary self-tracking device, towards a 'bio/digi-rhythmic' synthesis in the performative, conceptual/experiential space of praxis.

It is perhaps important to acknowledge here that the use of sound recordings as an alternative method and process of 'data-capture' in this research, to develop an experiential subjective 'data-set' using sound 'data-streams' which are recorded synchronously with bio/digi-mediated embodied interventions, is just one of many potential alternative applications of the digital device. This praxis utilises the synchronous sonic potentials of bio/digi-mediation through the digital device to circumvent the conventional use of the technology as a 'biometric' recording device, generating sound data-streams which proffer an alternative materiality of the body's physical processes, to dominant biometric discourses of 'body-data'; which this research has suggested reaffirm paradigms of 'visibility' in relation to the body. However, this research recognises that there are a number of other alternative applications of the digital device which could be used to bypass the expected conventions of existing biometric 'self-tracking' practices of bio/digi-mediation; to better 'speak' the alternative perspectives, materialities and potentialities of embodied experience. For example, the artist Miranda Whall extends the conventional use of the digital-wearable *GoPro* 'action camera' in her research and development process for

her ongoing series of 'crawling' projects, entitled '*Crossed Paths*' (2017); simultaneously attaching 14 *GoPro* cameras to different parts of her body, to arguably 'capture' a visual form of 'body-data' as she crawls through the landscape. Whall's experiential embodied performance practice debatably attempts to develop a subjective, empirical understanding of the relation between human/animal corporeality; 'becoming animal' as she documents her moving body's relationship within and through the surrounding landscape. In her performative attempts to experientially emulate and embody the movements of sheep along existing animal tracks (performing 5-mile 'endurance' crawls through the mountainous Welsh landscape, wearing a sheep's fleece in addition to the 14 *GoPro* cameras), Whall's practice arguably extends the potentialities of this visual medium of bio/digi-mediation; generating an alternative 'multi-visual' perspective of what the moving body 'see's' in its proximal relation to the surrounding environment (using multiple digital devices to arguably distribute the 'visual sense' all over the body). While visual methods of bio/digi-mediated 'data-capture' are one potentiality this research praxis could have utilised, for re-imagining alternative subjective 'data-sets' generated from 'self-tracking' performative interventions (for example, using photography or moving-image as methods and processes of 'data-capture' when performing embodied activities such as running), this research has proffered that adopting visual methods would risk reaffirming dominant discourses of 'visibility' towards the body and our embodied experiences. This research also suggests that visual methods of 'data-capture', as qualitative methods, would arguably proliferate a dichotomous, binary relation between the quantitative/qualitative dimensions of bio/digi-mediated experience, that this research is attempting to synthesise using the performative 'third' space of praxis. While visual methods of 'data-capture' could potentially reinforce problematic

qualitative paradigms, which visually aestheticize and objectify bodies in contemporary post-digital culture (in the same way that 'biometric' processes arguably reinforce dominant paradigms for measuring perceptions of embodiment in terms of quantification), this praxis proposes that sound has the potentiality to extend and synthesise bio/digi-mediated embodied experiences, through the sensory-aesthetic registers of rhythm and affect (the 'bio/digi-rhythmic' space). In another example of an alternative use and application of the digital-mobile device which circumvents conventional biometric practices of 'data-capture' (introduced in a *Performative Praxis* case study generated by this research in Chapter 4, entitled *Running in Rome*, 2017), the writer Kenneth Goldsmith's utilisation of the *iPhone* 'Siri' voice-recognition and dictation function, to verbally record his thoughts while he runs, will be critiqued in relation to the methodological processes used by this research praxis.

As a 'praxis', this research attempts to perform the theoretical ideas for synthesising bio/digital polarities through the thesis, which assimilates theory and sound 'data-streams' in the same experiential realm. The sound 'data-streams' generated by this research praxis through embodied performative bio/digi-rhythmic interventions, are thus contextualised and positioned to be experienced in combination with the theoretical material (in an attempt to synchronise mind/body, qualitative/quantitative, dichotomies by merging theory and sound within the performative, experiential space of this thesis). This positioning of a material 'sound experience' for the listener/reader amongst the theoretical argument proffered by this research, attempts to perform a new paradigmatic synthesis for rethinking bio/digi-polarities through the experiential domain of the thesis; as such, the affective dimensions of experience that the sound

'data-streams' (as recorded, material data-processes) proffer the listener/reader, arguably function to engender a rethinking of our perceptions of 'body-data'. Furthermore, this research proffers a new embodied experience for the listener/reader, by potentially facilitating a shift from a 'rethinking' to a 're-experiencing' of embodied data; a space 'between' the quantitative and the qualitative, in the experiential realm, thus synthesising bio/digi-polarities in the performative space of praxis.

In *Affective Methodologies: Developing Cultural Research Strategies for the Study of Affect* (2015), Britta Timm Knudsen and Carsten Stage acknowledge the 'huge challenge', for researchers, posed by 'developing affective methodologies' (Knudsen and Stage 2015: 2):

> How do you identify affective processes and discuss their social consequences through qualitative research strategies if affect is bodily, fleeting and immaterial and always in between entities or nods?
>
> (Knudsen and Stage 2015: 2)

While this praxis recognises the integral potential of affect within the performative research assemblage (a proposition which will be developed further in relation to the bio/digi-rhythmic 'events' presented as case studies in the *Performative Praxis* Chapter 4), 'Affect theory' is not used within this research enquiry as a methodology; rather, affect is considered an intrinsic composite part of the heterogeneous research

assemblage as a whole (which includes embodied interventions, sound 'data-streams', a methodological application of 'rhythmanalysis', etc.). As this research has suggested, the methodological approach of operating within a 'performative research paradigm' using praxis, acknowledges the 'many methodological practices of qualitative research' (Denzin and Lincoln 2008: 5), that Denzin and Lincoln attribute to the qualitative researcher. In this praxis, the abstract theoretical ideas underpinning the research are embodied and pragmatically tested through lived subjective experiential 'bio/digi-mediated' interventions, which are synchronously recorded through the digital device using sound 'data-streams'; in order to perform a new theoretical/experiential paradigm for synthesising the 'bio/digi-rhythmic' body, in the 'third' space of praxis.

In a qualitative research paradigm the synchronous bio/digi-mediated process of recording sound 'data-streams' from embodied performative interventions could be considered a method of autoethnographic data-collection for analysis; proposing an alternative materiality of body-data which is 'captured' in the form of MP3 sound recordings. However, as this research has proffered, the sound 'data-streams' within this praxis perform as part of the research assemblage as a whole, towards developing a theoretical/experiential paradigm for a 'bio/digi-rhythmic' synthesis. For Phillip Auslander, in his text *Reactivations: Essays on Performance and Its Documentation* (2018)*,* the residing document of a performance is a discursive vehicle, exceeding beyond any reductionist or representative iterations as a 'copy', secondary to the primacy and originality of the 'live' event. In Auslander's theorisation, the performance document engenders its very own 'event', through 'the phenomenal relationship

between the spectator who experiences the performance from the document and the document itself' (Auslander 2018). In a previous essay entitled *The Performativity of Performance Documentation* (2006), Auslander challenged established and assumptive contextual frameworks for performance documentation in which, 'The connection between performance and document is thus thought to be ontological, with the event preceding and authorizing its documentation' (Auslander 2006: 1). While Auslander's theorisations around performance documentation are perhaps more relevant to re-thinking performance documentation in terms of re-experiencing performance as an 'art-object' (for example, in the types of practice-led artistic approaches which will be critiqued in the *Contextual Case Studies* in Chapter 3), this research suggests that Auslander's contextual framework is still useful for considering the sound 'data-streams' as performative 'events' in the space of praxis. Positioning the materiality of the sound experience amid the theoretical material in the space of praxis, this research considers the affective and rhythmic potentials of the sound 'data-streams' as bio/digi-rhythmic 'events' for the listener/reader, through this contextual framing; a process to facilitate a shift from a 're-thinking' to a 're-experiencing' of body-data (a proposition which will be explored further in the *Performative Praxis* case studies in Chapter 4, with accompanying sound 'data-streams' available to access through the *SoundCloud* links provided).

Lefebvre's 'Rhythmanalysis'

In *Rhythmanalysis: Space, Time and Everyday Life* (2004), Lefebvre proposes 'rhythmanalysis' as a conceptual tool for 'unwrapping the bundle' (Lefebvre 2004: 9) of integrated biological and social rhythms, towards an understanding of the interrelation between being, space, time, and everyday life. He speculates that oppositional elements such as difference and repetition, in cyclical and linear conceptions of time, 'converge in the central concept of measure' (Lefebvre 2004: 10); that difference is only apparent in its measurable relation to repetition, as in the modalities of cyclical and linear time. For Lefebvre, contrasting organic rhythms, such as the cyclical movements of the sun throughout the day and the linear movements of human activities in urban environments, could be studied through an analysis of these rhythms, or a 'rhythmanalysis' (a term Lefebvre himself appropriated from Portuguese philosopher Lúcio Alberto Pinheiro dos Santos' 1931 text *Ritmanálise*). Rhythms, for Lefebvre, are produced through repetition in time and space, and as they are intrinsically organic, eventually lead to the generation of differences. This research proposes that, as a result of the contemporary socio-cultural paradigm shift towards digitality, the oppositional elements of embodied bio/digital-polarities that we are experiencing through the increased digital mediation of our bodies (for which this research has adopted the neologisms 'bio-rhythms' and 'digi-rhythms', which will be further clarified within this chapter), have become new co-existing binaries in need of renegotiation. This research suggests that as these seemingly polarised dimensions of 'bio/digi-rhythmic' embodied experience converge through their interwoven repetitions and differences in time and space they have the capacity to be better

synthesised through a methodological application of Lefebvre's concept of 'rhythmanalysis'. Like the modalities of cyclical and linear time, whose convergences and differences become apparent to Lefebvre through his theoretical 'rhythmanalytical' technique, this research extends a pragmatic application of Lefebvre's 'rhythmanalysis' to our 'bio/digi-rhythmic' dimensions of embodied experience. 'Rhythmanalysis' is repositioned in this praxis as a research paradigm and methodology, to reconsider the ways in which we quantify the body's movements through digitality; towards renegotiating, better understanding and synthesising our converging 'bio-rhythms' and 'digi-rhythms', in the theoretical/experiential 'bio/digi-rhythmic' space.

> [There can be] No rhythm without repetition in time and in space, without reprises, without returns, in short without measure. But there is no identical absolute repetition, indefinitely.
>
> (Lefebvre 2004: 6)

Lefebvre's use of rhythm as a deconstructionist strategy, through which lived embodied experience of being in the everyday can be better understood, imagines difference as the new, unforeseen element that is both produced from, and introduced into, the repetitive. For Lefebvre, while the organic rhythmic dimensions that organise life require repetition, echoes and reoccurrences, he acknowledges that these repetitions are never identical or absolute. It is this generation of difference which 'cuts' through repetition and underpins Lefebvre's concept of 'rhythmanalysis', as he searches for rhythmic differences in the dialectic contradictions integral to the repetitive organisation and production of everyday space, being and time. The

appearance and presence of rhythmic differences precipitates, for Lefebvre, an 'arrhythmic' illumination; which gives rise to a discontinuity in the socio-cultural paradoxes of homogeneity, stability and repetitive measure which are embedded in the spatio-temporal organisation of the lived everyday.

Bio-rhythms/ Digi-rhythms

This research praxis has adopted the neologisms 'bio-rhythm' and 'digi-rhythm', which will be interwoven throughout the *Performative Praxis* case studies in Chapter 4 and the *Contextual Case Studies* in Chapter 3, in an attempt to elucidate, renegotiate and begin to synthesise existing perceptual 'bio/digital polarities', between our biological bodies (our 'bio-rhythms') and digitally-mediated 'data-bodies' (our 'digi-rhythms'). The digi-rhythmic dimensions of subjective experience are understood, within this research, as the pluralities of a 'non-embodied' abstract, conceptual, extracted, or 'biometrically' quantifiable version of the biological body; the body produced as 'data-product' through processes of bio/digi-mediation, via the digital device. The term 'bio-rhythm' is used and applied as a metaphor for the biologically embodied subject, experiencing the world phenomenologically through the physiological, material and sensory 'data' generated from lived embodied experiences of 'being-in-the-world' (Lefebvre 2004: 44). In conjunction, the term 'digi-rhythm' is used and applied to the digital mediation of our biological bodies through digital devices, and the subsequent translation of the biological body's processes and materialities into 'data-streams'. Where this research works towards fulfilling its

proposal, using the rhythmic register as both metaphor and methodological paradigm for synthesising these two inter-relational 'rhythmic bodies', a conjoining of both terms will be used; emphasising the convergences and inseparability of our interwoven bio-rhythms/ digi-rhythms, in the post-digital age. In the pursuit of 'opening up' and facilitating new 'bio/digi-rhythmic' experientially embodied potentialities, this research uses a heterogeneous performative research assemblage; towards developing a methodological research paradigm that applies affective processes which 'aim to [perform,] create and make rather than simply to critique' (Gibbs 2015: 225).

As digital devices increasingly permeate our lives, the 'bio-rhythms' of our embodied experiences are arguably given less cultural significance and primacy than the 'digi-rhythms'. The *Contextual Literature Review* (Chapter 1) of this research enquiry contended that the 'digi-rhythmic' dimensions of our bio/digi-mediated experiences are currently dominating and determining our subjective understandings of embodied physicality, as well as informing broader biopolitical discourses in a post-digital age. This research proposes that simply recognising both our biological and digital 'data-bodies' as rhythmic, and thus interwoven in spatio-temporal pluralities through their rhythmic and affective potentials, can begin to set in motion a synthesis of the existing polarities between embodied 'bio/digi-rhythmic' experiences; renegotiating the shift towards a more synchronised bio/digi-mediated 'rhythmicity' of lived experiences. This research considers that rhythmic relations alter according to spatio-temporal realities in the lived everyday and, as such, this praxis repurposes Lefebvre's philosophical 'rhythmanalytical' approach as a methodology and research paradigm; for not only 'unwrapping the bundle' (Lefebvre 2004: 9) of our interwoven bio- and digi-rhythms in

a post-digital cultural-paradigm, but for attempting to extend the pragmatic potential of 'rhythmanalysis' for synthesising existing bio/digital polarities.

Bio/Digital Polarities: An 'Arrhythmic' Condition

This research suggests that the dichotomous thinking towards our 'bio-rhythmic' and 'digi-rhythmic' spheres of subjective embodied experience, that existing bio/digital polarities proliferate, perform an 'arrhythmic' disruption which elucidates a need for synthesising biological and digital phenomena. This praxis considers the existing bio/digital polarities, which we arguably perform through our interactions with digital 'self-tracking' devices, as an alternative 'arrhythmic' condition which disrupts potentials for synchronicity between our bio-rhythms and digi-rhythms. While, for Lefebvre, 'linear' rhythms were conceptualised as the external rhythms of human activity, particularly in urban and social environments (rhythms imposed on the cyclical, polyrhythmic environments of our internal biological bodies), this research suggests that the bio/digital polarities that existing 'self-tracking' practices of biometric mediation proliferate, increasingly re-frame our internal 'bio-rhythms' as linear; quantifying the body's material processes into biometric data-sets. In the *Contextual Literature Review* in Chapter 1, this research considered the 'Cartesian reversal' in post-digital culture, through which Ajana contended that 'the (re)turn to the body for the establishment of identity in biometric technology seems almost like an ironic twist vis-à-vis Cartesian dualism' (Ajana 2013: 88). Self-tracking technologies require a performative interaction with an embodied subject as an integral condition of their

functionality, in order to process the body's organic materialities into individualised biometric 'data-sets'. This 'coded body' (Aas 2006: 153), provides subjects with the ontological informational weight necessary, through its biological 'truth claims', to formulate an abstract or conceptual understanding of embodiment from biometrics; from which to alter and negotiate future bodily behaviours. It is therefore, this digital processing of the body's organic materialities into bodily 'codes' (biometric coding practices which are thoroughly interlinked into, 'contemporary [affective and capillary] modes of disembedded global governance', Aas 2006: 155), that this research suggests proliferates bio/digital polarities; abstracting and expanding the 'informational substrate' (Clough 2008: 2) of our bodily matter into alternative bio/digi-mediated forms, thus performing an 'arrhythmic disruption' in the form of dualistic thinking towards our bio- and digi-rhythmic bodies.

> The coded body too, is a product of certain power/knowledge relations. However, the coded body opens up a different realm of truth and knowledge. The power constituting the coded body is 'informational'. It is a power that translates life into information patterns, disembedded and lifted out into new levels of abstraction.

> (Aas 2006: 154)

For Lefebvre, while, 'In arrhythmia, rhythms break apart, alter and bypass synchronisation' (Lefebvre 2004: 67), the 'arrhythmic disruption' performs a critical function, enabling the rhythmanalyst to grasp and analyse otherwise imperceptible rhythms, by temporarily getting outside of them. Arrhythmia, for Lefebvre, opens up a

critical space for rhythmic intervention, with the objective 'to strengthen or re-establish eurhythmia' (Lefebvre 2004: 68). This research praxis suggests that the biometric Cartesian reversal that reductionist digital-processes of 'coding' (Aas 2006: 153) the body initiate, perform an illuminating 'arrhythmic disruption'; as they critically expose the dualities involved in culturally dominant bio/digitally-mediated concepts of embodiment (the proposition explored in depth throughout the *Contextual Literature Review* in Chapter 1). This research therefore contends that such bio/digital polarities are in urgent need of synchronicity, through alternative rhythmically embodied interventions which work towards 'bio/digi-rhythmic' synthesis. While digital devices, as machines, cannot possess rhythmic qualities in themselves (recalling that rhythms, for Lefebvre, are inherently organic, which consequently disregards machinic movements from a 'rhythmanalysis'); it is their reliance on an embodied subject which generates the new potential spheres of embodiment in the post-digital contemporary socio-cultural condition, that this research is proposing could be better synthesised in the paradigmatic 'bio/digi-rhythmic' realm of praxis. This research proposes a subjective renegotiation of the 'bio/digi-mediated' body, using embodied performative interventions and sound 'data-streams' as empirical methods for 'making-sense' of our bio/digi-rhythmic interactions with digital devices, through our lived embodied experiences. In the performative space of praxis, this research suggests that the relationships between our 'bio-rhythms' and 'digi-rhythms' can be explored and better synthesised; beyond the polarities of existing dualistic and reductionist bio/digital perceptions.

'Rhythmanalysis': An Affective Methodology

In *Affective Methodologies: Developing Cultural Research Strategies for the Study of Affect* (2015), Knudsen and Stage define an affective methodology as;

> An innovative strategy for (1) asking research questions and formulating research agendas relating to affective processes, for (2) collecting or producing embodied data and for (3) making sense of this data in order to produce academic knowledge.

> (Knudsen & Stage 2015: 1)

'Rhythmanalysis' is adapted and extended in this research praxis, as a methodological research paradigm and performative strategy for 'thinking through' existing bio/digi-rhythmic polarities; generating embodied 'data' in the form of sound 'data-streams', which aims to 'make-sense' of our bio/digi-rhythmic embodied experiences, towards a process of synthesis. This research proposes that by repositioning Lefebvre's philosophical 'rhythmanalytical' approach as a methodology and research paradigm, the interwoven rhythms between our sensory bodies (our 'bio-rhythmic' imprint) and their mediation and translation through digital devices (our 'digi-rhythmic' imprint) can be better articulated and synthesised. 'Rhythmanalysis', used as a 'method of corporeal attunement to affective rhythms' (Gibbs 2015: 225), offers much scope as an affective research methodology in this praxis, as it is applied pragmatically to embodied, spatial and temporal rhythmic inter-relationalities. For Lefebvre, rhythmanalysis 'integrates itself into that of everyday life', elucidating and deepening

'certain aspects of it' (Lefebvre 2004: 73). Attuning the 'rhythmanalyst' to the affective potentials of embodied, spatio-temporal and inter-relational rhythmic dimensions and encounters, 'rhythmanalysis' arguably functions pluralistically. While it could be applied as a theoretical post-structuralist framework for 'unravelling' the interwoven biological, socio-cultural and spatio-temporal rhythmic complexities felt through the increased digital-mediation of our bodily experiences, in this research praxis the potentialities of 'rhythmanalysis' are extended beyond the limitations of such deconstructionist approaches; described by Gibbs as,

> the analytical disassembling of a machine in order to show how it works, as if this in itself were sufficient to bring about desirable change.
>
> (Gibbs 2015: 225)

Rather, the elucidating capacities of affective methodologies are situated, for Gibbs, in their 'experimental tinkering that makes new connections and new machines that might do new things or do things differently' (Gibbs 2015: 225). For Patricia T. Clough too, in her essay *The Affective Turn: Political Economy, Biomedia and Bodies* (2008), affect indicates 'just as well as post-structuralism and deconstruction do to the subject's discontinuity with itself, a discontinuity of the subject's conscious experience with the non-intentionality of emotion and affect' (Clough 2008: 1). Repositioned as an affective methodology within this praxis, to reconsider existing bio/digi-mediated 'self-tracking' practices which quantify the body's movements biometrically, 'rhythmanalysis' is arguably adapted in this research as such a generative and experimental 'new machine' (Gibbs 2015: 225); a methodology for synthesising our

bio/digi-rhythms in the performative space of praxis, extending the affective potentials

of the rhythmic experiments to the listener/reader using sound 'data-streams'. In this

research, by applying a methodological framework of 'rhythmanalysis' to the

performative bio/digi-rhythmic 'events' (the embodied interventions synchronously

mediated through the digital device using sound 'data-streams', which will be

presented in the *Performative Praxis* case studies in Chapter 4), rhythm is explored

as both metaphor and affective qualitative methodology for renegotiating the impact

of the 'digi-rhythmic imprint' on our embodied experiences. This research proposes

the development of a subjective renegotiation of the 'bio/digi-rhythmic' dimensions of

our embodied experiences, towards developing a theoretical/experiential framework,

through praxis, for how we might better 'speak' our bodies in a post-digital context.

Becoming 'Rhythmanalyst'

> To grasp a rhythm it is necessary to have been grasped by it; one must let
> oneself go, give oneself over, abandon oneself to its duration. Like in music and
> the learning of a language (in which one only really understands the meanings
> and connections when one comes to produce them, which is to say, to produce
> spoken rhythms).

> (Lefebvre 2004: 27)

For Lefebvre, the 'rhythmanalyst' must operate as a neutral and attentive

empirical 'listener', free from the limitations of methodological obligations to external

or institutional bodies; first listening and learning to appreciate the rhythms of

subjective embodiment 'in order consequently to appreciate external rhythms' (Lefebvre 2004: 19). Through his use of 'rhythmanalysis' as a theoretical approach, Lefebvre's analysis of the separate yet complexly-woven rhythmic elements of the biological, social, cultural and spatio-temporal dimensions of lived experience, elucidates an inter-relational rhythmic understanding between bodies, time, space and everyday life. For Lefebvre, 'Everyday life is modelled on abstract, quantitative time, the time of watches and clocks', a 'homogeneous and desacralised time', deeply embedded into the socio-cultural practices of Western capitalist societies, as it supplied 'the measure of the time of work' (Lefebvre 2004: 73). This research has proffered throughout the *Contextual Literature Review* in Chapter 1, that in contemporary globalised and digitised societies, the temporal and cyclical rhythms of subjective embodiment are being further calibrated, regulated and abstracted to fit within linear models of standardising 'biometric' measurements; a socio-cultural phenomenon enabled through the rise in digital 'self-tracking' devices. In the performative embodied interventions developed by this praxis, the method of 'becoming rhythmanalyst' that this research proposes for attempting to renegotiate a synchronicity of bio/digi-mediated embodied activities, is not a process driven to better align the biological body into existing quantitative models of 'striated' spatio-temporal relations, that biometric self-tracking technologies arguably perform. Rather, 'becoming rhythmanalyst', attuning to bio/digital spatio-temporal polarities, enables the researcher to explore a recalibrating subjective 'voice' of embodied experience, which could better 'speak' the body in a post-digital context. In a *Contextual Case Study* in the following Chapter 3, this research will suggest that the artist and choreographer Xavier Le Roy's performance practice developed from him 'becoming rhythmanalytical' to his existing socio-cultural and spatio-temporal context, working

within the field of biomedical research; towards subjectively renegotiating his lived everyday experiences in response to his prior 'arrhythmic' bodily disruptions, through an embodied movement practice. In the context of this research praxis, the process of 'becoming rhythmanalyst' (adopting a paradigmatic 'rhythm-analytical' approach, to the 'bio/digi-rhythmic' embodied interventions and sound 'data-streams') is a subjectively embodied performative application of 'rhythmanalyisis', by the researcher, to renegotiate a space of synthesis between the sensory body and its mediation through the digital interface; a rhythmically embodied methodology through which to begin synthesising these bio/digital polarities in praxis.

> Rhythmanalysis aims to trace the interrelation of the multiple rhythms that compose everyday life by using the body of the researcher as a kind of metronome that attunes to and resonates with the various different rhythms of the social and natural worlds.
>
> (Gibbs 2015: 229)

While Lefebvre endows an attentiveness to subjective embodied rhythms as a primary source of empirical knowledge, he resists reducing his interpretation of embodied rhythms to the limitations of 'measures' or 'beats'; instead implicitly encouraging the 'rhythmanalyst' to 'forget his own rhythm and allow his body to perceive and receive a multiplicity of other rhythms that always remain independent of each other' (Gibbs 2015: 229). 'Rhythmanalysis', repositioned as a research paradigm and methodology in this praxis, thus arguably has the potential to attune the researcher to emerging shifts in temporal and spatial rhythmic relations, indicating or signalling to changes in socio-cultural conditions (for example, existing bio/digi-polarities 'felt' through the body

as 'arrhythmic disruptions'). Applying 'rhythmanalyis' as an embodied and performative methodology for renegotiating existing bio/digital polarities within the contemporary post-digital socio-cultural condition (which this research suggests perform 'arrhythmic disruptions' to our subjective bio/digi-rhythms), this research attempts to extend the work that 'rhythmanalysis' can do in a 'post-digital' world; towards synthesising the bio/digi-rhythms of our embodied experiences, in the 'third' space of praxis. This praxis uses a heterogeneous assemblage of research methods to develop a performative theoretical/experiential paradigm for renegotiating our 'bio/digi-rhythms'; thus arguably aligning with the contemporary methodological intentions for affective methodologies that Knudsen and Stage outline in *Affective Methodologies* (2015), 'to develop new ways of being attentive to empirical material and develop other ways of noticing and attending within our research endeavours' (Knudsen & Stage 2015: 2). As lived embodied experiments in the everyday, affective research methodologies arguably 'involve intensities of the body and as such may enable more intimate ways of understanding how new habits and sensibilities emerge' (Lury & Wakeford 2012: 18). In 'becoming rhythmanalyst' as a performative methodological process, the researcher attempts to develop subjective empirical interventions which renegotiate the 'bio-rhythmic' and sensory 'intensities of the body' (Lury & Wakeford 2012: 18) in synthesis with the 'digi-rhythmic' realm. Through a rhythmic attentiveness to our subjective interventions in the lived everyday, Lefebvre conceptualised the 'rhythmanalyst' as, 'reinstating the sensible in consciousness and in thought' (Lefebvre 2004: 26). This research attempts to apply Lefebvre's philosophy pragmatically, to propose a renegotiation of an embodied 'bio/digi-rhythmic' synthesis.

The Bio/ Digi-Rhythmic 'Event'

> Rhythmic thought might help expose our common view of bodies and machines- widely understood to stretch only as far as our knowledge of them- and of nature- by and large considered as the given articulation of our scientific discourses- to alternative configurations.
>
> (Ikoniadou 2014: 89)

In *The Rhythmic Event* (2014), Ikoniadou disentangles the concept of rhythm from 'physical, musical, and chronological phenomena' to a consideration of rhythmic potential instead as an 'uneven discontinuous cut, running across and reshuffling the continuity of lived duration', thus exposing rhythm as 'a relational quality' (Ikoniadou 2014: 87). Ikoniadou's re-conceptualisation of rhythm, and recognition of the generative potential of 'rhythmic events', is arguably analogous with the concept of 'bio/digi-rhythmic' synthesis proffered by this research praxis; as an affect of existing 'disruptive' bio/digital polarities proliferated by biometric practices of bio/digi-mediation (extended from Lefebvre's conceptual ideations on 'arrhythmic' disruptions). The arrhythmic disruption, for Lefebvre, 'be it through illness or a technique' (Lefebvre 2004: 27), has an elucidating affect as it enables embodied subjects to grasp rhythms by temporarily stepping outside of the habitual, in order to perceive internal rhythms from a position of externality. While Lefebvre's theoretical perception of rhythmic potentiality arguably affirms a concept of the body and of embodiment which, whilst acknowledging rhythmic relationality and affectivity, is somewhat grounded in an 'enclosed' mode of subjectivity that Clough refers to as 'the body-as-organism' (Clough 2008: 2), it is important to emphasise that Lefebvre wrote *Rhythmanalysis*

(2004) before the affects of digital mediation had been fully engendered and integrated into a 'post-digital' globalised culture and society. Therefore, the 'bio/digi-rhythmic' synthesis that this research proposes as a pragmatic extension of Lefebvre's conceptual 'rhythmanalytical' project in the post-digital age (synthesising embodied interventions and sound 'data-streams' in the performative space of praxis), arguably has the potential to reveal the relationality, porosity and synchronicities of our bio/digi-mediated bodily experiences: A bio/digital phenomenon Clough elucidates as the 'forging of a new body', which she terms the 'biomediated body' (Clough 2008: 2); a concept which will be further explored in relation to this research in the *Contextual Case Studies* in Chapter 3, and the *Performative Praxis* case studies in Chapter 4. This research suggests that by applying 'rhythmanalysis' as a methodological tool for exposing how the bio/digi-rhythmic elements of our embodied experiences are intertwined in a mutually affective and dialogical rhythmic-relation, the 'bio/digi-rhythmic' synthesis this research performs is arguably a recalibration of our habitual 'continuity of lived duration' (Ikoniadou 2014: 87) in the everyday. This praxis reimagines the embodied interventions and sound 'data-streams' through the theoretical/experiential paradigm of bio/digi-rhythmic 'events', to further reveal how our embodied experiences oscillate between states of bio/digi-mediation, in post-digital culture.

> A theory of rhythm as the force of the middle breaks with the mathematization of time and its positioning according to units, measurements, and clocks. Rhythm then may be thought of as a tremulous undulation and one that does not actually pass, or proceed in regular movement.

> (Ikoniadou 2014: 13)

Ikoniadou's theory of rhythm as a continuous rhythmic undulation, felt in the affective register 'as belonging to the gap' (Ikoniadou 2014: 13), arguably emancipates rhythm from compression into striated processes of quantification, which reduce rhythmic potential to the simplistic properties of 'measure' or beat. This research's repositioning of 'rhythmanalysis' as a methodological paradigm, renegotiates rhythm as a performative, affective, empirical process which belongs to the experiential threshold and thus arguably expands the bio/digi-rhythmic potential for 'alternative configurations' (Ikoniadou 2014: 89) and synchronicities between our bio/digi-mediated realms of embodied experience. Ikoniadou draws on Deleuze and Guattari's concept of the 'refrain' as a rhythmic operation, or a 'becoming', which perceives of rhythm as 'an "oscillatory constant" that links together active moments and milieus, but is not itself the moment or milieu' (Ikoniadou 2014: 13). The performative bio/digi-rhythmic 'events', which will be introduced as individual yet interrelated case studies in the *Performative Praxis* Chapter 4 of this research enquiry, have developed from the proposition of making-perceptible, affective and 'felt' the 'moments and milieus' where rhythm's synchronous 'bio/digi-rhythmic' potentials materialise and converge.

In a further attempt to expand the perceptual bounds of the bio/digi-rhythmic 'events' developed by this praxis, this research also acknowledges the potentialities of 'prior' sensorial bio/digi-rhythmic affects. Felt as the embodied rhythmic intensities, which for Clough exist as 'pre-individual bodily forces' (Clough 2008: 1), and for Massumi as a 'visceral perception' (Massumi 2002). As 'digitization makes possible a profound technical expansion of the senses' (Clough 2008: 2), it is important within this research

praxis to consider new ways of articulating and attending to the embodied, phenomenological and affective dimensions of 'bio/digi-rhythmic' experience; which are stimulated by the increasing digital mediation of our biological bodies in contemporary culture. Massumi's definition of affect 'in terms of bodily responses, autonomic responses, which are in-excess of conscious states of perception and point instead to a '"visceral perception" preceding perception' (Clough 2008: 3), is recognised here towards foregrounding a culture of thinking for contextualising the affective potentialities of the bio/digi-rhythmic experiments developed in this research praxis, 'in terms of the virtual as the realm of potential' (Clough 2008: 3). Massumi's turn to affect, which Clough argues opens the body 'to its indeterminacy' (Clough 2008: 3), thus necessitating his definition of affect 'in terms of its autonomy from conscious perception and language, as well as emotion' (Clough 2008: 3), is one perspective on affective potential through which the bio/digi-rhythmic 'events' and sound 'data-streams' comprising the *Performative Praxis* case studies in Chapter 4 could be considered. For Deleuze, in his text *Francis Bacon: The Logic of Sensation* (2005), it has been suggested that the philosopher's concept of 'sensation', 'refers to a pre-individual, impersonal plane of intensities' (Marks 2010: 23); thus conceiving of sensation as 'at one and the same time the human subject and also the impersonal event' (Marks 2010: 24). The sensory register, for Deleuze, is therefore arguably resistant to superficial 'clichés of representation' (Marks 2010: 24), as it traverses the affective spaces between subjectivity and externality. The performative bio/dig-rhythmic 'events' developed by this research praxis (introduced within the case studies in the *Performative Praxis* Chapter 4) attempt to renegotiate a non-representational, non-dualistic 'bio/digi-rhythmic' synthesis, in the space of praxis, which performs the theoretical/experiential paradigm for this research, extended to the reader/listener

through the sensory register of sound. This research praxis furthermore suggests that, as our 'bio/digi-rhythmic' thresholds of embodied experience arguably oscillate between sensorial perceptions and bodily affects, rhythmic affect has the potentiality to be used as a performative method of synthesis; for renegotiating the existing binary polarities of our bio/digi-mediated embodied experiences.

Chapter Summary

In summary, this chapter has set out the methodological framework of the 'performative research paradigm' (Haseman 2006: 98), which will be applied to the *Performative Praxis* case studies in Chapter 4, and also to the divergent practices considered in the following *Contextual Case Studies*, Chapter 3. This *Methodologies* chapter has outlined Lefebvre's theoretical concept of *Rhythmanalysis* (2004), and developed a 'performative paradigmatic' framework for renegotiating a subjective application of 'rhythmanalysis' as an embodied methodological autoethnographic approach for synthesising our 'bio/digi-rhythms' using praxis (an application which will be applied in-depth to the *Performative Praxis* case studies in Chapter 4). This research has developed a theoretical/experiential argument for sound, as an alternative method and process for 're-thinking' a synthesis of the bio/digi-rhythmic body in the performative 'third' space of praxis, through a 're-experiencing'. Unlike predominantly visual-cultural paradigms, evident in the everyday methods for 'visualising' the bio/digital body and subjectivity in contemporary post-digital culture (for example, popularised biometric 'self-tracking' practices of data-sharing to socially-

networked platforms), this chapter has suggested that sound proffers an expansive empirical realm for renegotiating existing bio/digital polarities rhythmically, affectively and experientially.

In the following *Contextual Case Studies* in Chapter 3, this research will introduce, contextualise and apply the performative 'bio/digi-rhythmic' paradigm developed within this chapter, in relation to three diverse 'real-world' case studies. In the artistic-cultural practices of Xavier Le Roy and Hito Steyerl, and the social-organisational practices of the Coastal Housing Group (the sponsorship partner for this *KESS 2* research project), this research will apply the 'bio/digi-rhythmic' performative paradigmatic discourse to consider how each of the contextual case studies have attempted to renegotiate emerging biopolitical tensions, inequalities and bio/digi-polarities within the 'digital-cultural' and 'digital-social' realms of lived experience. While the methodological processes for navigating the socio-cultural and biopolitical tensions of lived 'bio/digi-mediated' subjectivity vastly differ between the case studies (in the pragmatics of practice and resulting forms), this research will suggest that each of the practices have appealed to the empirical dimensions of lived, embodied, subjective experiences; as an emancipatory method for renegotiating contemporary biopolitical inequalities, towards a synthesis of bio/digital polarities.

Chapter 3: Contextual Case Studies

Introduction

In this chapter the theoretical enquiry of this research (as outlined in the *Contextual Literature Review* Chapter 1 and *Methodologies* Chapter 2), towards navigating a subjectively embodied performative praxis as a methodological approach for attempting to both synchronise and synthesise existing bio/digital polarities, will be considered in relation to three contextual case studies. The aim of this *Contextual Case Studies* chapter is to further contextualise the conceptual research framework for this praxis, including a contextual application of the methodological approach this research uses (which will be further expanded upon in detail in the *Performative Praxis* case studies, in Chapter 4). These case studies will explore the working practices and processes of two artists and one organisation; all of whom, this research contends, have attempted to navigate the existing and emerging polarities of bio/digi-mediated experience, within post-digital culture. This research suggests that while the individual processes for navigating the tensions of bio/digi-mediated subjectivity are divergent (in their methodological approaches, pragmatics of practice and resulting forms), each of the practices critiqued in this chapter have utilised the empirical processes of lived, embodied, subjective experiences as a method for renegotiating contemporary bio/digital (biopolitical) polarities and inequalities. This research is therefore applying the methodological framework of the 'performative research paradigm' (Haseman 2006: 98) to the practices discussed within this chapter. It is suggested that each of

the case studies has attempted to 'formulate methodologies sympathetic to their fundamental beliefs about the nature and value of research' (Haseman 2006: 98), in relation to navigating a 'third paradigm[atic]' (Haseman 2006: 98) performative space of embodied practice for their theoretical concerns surrounding existing modes of bio/digi-mediation (using the subjective, experiential and affective realms as methods for renegotiating the 'third' space of synchronicity).

This assemblage of case studies furthermore serves to contextualise and situate the research enquiry of this praxis within the broader socio-cultural discourses, concerning how contemporary modes of bio/digital-mediation affect subjectivity in a post-digital age. This research (as demarcated in the *Introduction* to this thesis) is attempting to establish a theoretical paradigm which could potentially destabilise outmoded structures of Cartesian thought, using praxis. The Cartesian mind/body oppositional construct was recounted by this research (in the *Contextual Literature Review*, Chapter 1), as possibly seeing a reversal in post-digital culture (Ajana 2013); as biometric technologies increasingly apply polarising perceptions to our bio- and digi-mediated bodily experiences (arguably affording precedence to the latter). This research is thus attempting to develop a subjectively embodied methodology for 'thinking through' the body as a method and process for critiquing this binary order; a mode of praxis through which to translate the abstract theoretical concern of the research into the pragmatics of lived experience (in turn proffering an alternative experimental, rhythmically-affective, embodied approach to methods of biometric self-tracking, using sound 'data-streams'). As distinguished in the previous *Methodologies* Chapter 2, while this praxis operates within the 'performative research paradigm'

(Haseman 2006: 98) (defined by Haseman as a 'multi-method led by practice', Haseman 2006: 103, which positions practice as a 'method of research', not merely an 'object of study', Haseman 2006: 99), this research is not 'practice-led' in the traditional sense. It is through praxis, as divergent from a 'practice-led' approach, that this research attempts to synthesise existing bio/digi-polarities. Applying the 'performative research paradigm' framework to the contextual case studies critiqued within this chapter, it will be suggested that the divergent yet parallel endeavours to synchronise bio/digi-polarities through the subjective experiential realm (in each of the individual responses to the processual affects of bio/digi-mediation), position these practices in dialogue with this research praxis.

In the first contextual case study, the performative choreographic practice of French artist/choreographer Xavier Le Roy will be explored. This research will apply 'rhythmanalysis' (Lefebvre's theoretical approach which has been adopted by this research praxis as a methodology, as outlined in the *Methodologies* Chapter 2) to contextualise Le Roy's performance practice as a subjectively embodied 'autoethnographic' method and process for renegotiating the dualistic tensions of biomedical reductionism; which he experienced first-hand working as a researcher within the biomedical field. This research will suggest that the 'arrhythmic' bodily affects that Le Roy felt in relation to his subjectivity, identity and lived experiences working directly with polarising technological processes of bio/digital-mediation and quantification (in the biomedical research field), led him to find agency by firstly becoming 'rhythmanalytical' to his embodied experiences. In the *Methodologies* Chapter 2, this research introduced the concept of 'becoming rhythmanalyst' (a

component of the performative research paradigm for this praxis), as a re-conceptualisation and subjective application of 'rhythmanalysis' through an embodied methodological approach. This 'rethinking' is applied using performative methods, through which the researcher's body attunes to rhythmic disruptions, affects, and experiential dimensions in order to renegotiate a synthesis of bio/digi-rhythmic polarities (to 're-establish eurhythmia', Lefebvre 2004: 68). This contextual case study will suggest that by becoming 'rhythmanalytical' to his subjective embodied experiences of 'arrhythmic disruption', Le Roy has developed and generated a body of practice that attempts to question, destabilise and work towards synthesising problematic Cartesian dualities, in relation to embodied subjectivity (a proposition which will be revealed through his works *Self Unfinished*, 1998, *Product of Circumstances*, 1999, and *Retrospective*, 2012). As a result, his movement practice arguably eschews choreographic conventions within the field, instead working towards a subjective, empirical synthesis; which this research will suggest also has the potential to affectively synchronise other bodies in the experiential performative realm. For the *Retrospective* (2012) 'exhibition' of his works, Le Roy's critical choreographic practice 're-performs' a multitude of his durational, subjectively embodied works, in his corporeal absence; instead 'mediated' through the bodies of other performers, and thus arguably shapes a new experiential context which subverts the conventionally linear form of a 'retrospective' gallery exhibition. This case study will suggest that *Retrospective* (2012) generates a rhythmically-affective, collectivised performative space within the established constructs of the gallery space; in which Le Roy's practice renegotiates 'bio-rhythmic synchronicity' between performers/participants, destabilising the conventional experiential binaries, mobilities and spatio-temporalities of experiencing art within a gallery context (thus generating the potential for new

affective spatial-relations which synthesise embodied subjectivities, in the 'third' performative space).

In the second contextual case study the Coastal Housing Group's integration and synchronicity of bio/digital-mobility into the everyday working processes and practices of the organisation will be examined. The Coastal Housing Group, a social housing association located in Swansea, is the partnership organisation for this *KESS 2* sponsored research praxis (as delineated in the *Introduction* to this thesis). This case study will suggest that the Coastal Housing Group have attempted to apply the 'nomadic' potentials of digital-mobility to cultivate a 'bio/digi-rhythmic' organisational culture; renegotiating a bio/digi-mediated shift towards a non-hierarchical, heterogeneous and fluid workspace which arguably destabilises the conventions of 'striated' organisational space. Implementing a 'digital-social' approach to change (effecting staff members' participatory input from research focus groups), the reconfiguration of the Coastal Housing Group's internal office space has thus arguably been generated by, 'negotiating the creation of new, partially shared imaginaries without- and this is crucial- relying on one homogenizing translation into a dominant party's terms' (Lury & Wakeford 2012: 17). Such a methodological, process-led approach to integrating the shift towards digital-mobility within the Coastal Housing Group's organisational culture further reconfigures possibilities for staff members to formulate new affective interrelations and collaborative working practices; affiliations that are not based on conventionally binarised 'spatio-social' segregations within office spaces (for example, those of departments, structural roles, pay-scales, or other existing hierarchies within an organisation). Adopting a qualitative and

autoethnographic research approach, this case study will suggest that the flexible and digitally-mobile heterogeneous 'bio/digi-rhythmic' working culture which has been cultivated by the social housing association, in turn liberates the embodied subjectivities of its staff members and better synchronises existing divisions between workers/tenants. Therefore, arguably expanding the experiential 'digital-social' potentials for individuals, beyond conventional sedentary 'striated' institutional rhythms (which will be elucidated through the methodological application of 'rhythmanalysis'). This research will furthermore contend that by embracing bio/digi-mediation through the synchronicity of bio/digital-mobile technologies and processes, the Coastal Housing Group have endeavoured to re-negotiate a fluid and affective 'bio/digi-rhythmic' workspace environment, one which attempts to synthesise the shifting spatio-temporal mobilities of an increasingly bio/digi-mediated world.

In the concluding contextual case study in this chapter, the artist and cultural theorist Hito Steyerl's interactive and experiential augmented-reality work, *Actual Reality^OS* (2019), will be navigated using an autoethnographic research approach. Sited around the external grounds of the Serpentine Sackler Gallery, in Hyde Park London, *Actual Reality^OS* (2019) forms part of an assemblage of works by Steyerl, including the *Power Plants* (2019) exhibition located inside the internal gallery space, and the socially-engaged participatory project *Power Walks* (2019), from which qualitative data for the exhibition was gathered through experiential ethnographic research. Although the focus of this contextual case study is on *Actual Reality^OS*'s (2019) application of a performative method and process of bio/digi-mediation to engage viewers as participants in an experientially affective 'augmented-reality' work, this praxis contends

that Steyerl's research-led approach to generating and developing these works situates her practice within the 'performative paradigm' (Haseman 2006). This case study will suggest that for *Actual Reality*[OS] (2019), Steyerl adopts a visual and performative 'language of duality', presenting co-existing binaries as a method through which to 'make-visible' and expose the structural inequalities embedded in biopolitical power-dynamics. For example, the internal/external spaces of the gallery, the virtual/actual participatory space of bio/digi-mediation, and the representational languages of qualitative data-subjects/quantitative data-objects. This case study will contend that by adopting an interactive method of bio/digi-mediation, which utilises the digital screen of the individuals mobile device, *Actual Reality*[OS] (2019) arguably invests viewers/participants with the emancipatory potential to experientially renegotiate a 'voice' of subjective inclusion, in the 'third' performative-space of bio/digi-mediation.

Xavier Le Roy's Performative Choreographic Practice

This contextual case study will explore the performative practice of French artist and choreographer Xavier Le Roy, focusing on his subjective 'solo' works *Self Unfinished* (1998) and *Product of Circumstances* (1999), including his experimental methodological treatment of these choreographic compositions in the *Retrospective* (2012) exhibition of his work. It will be contended throughout this case study that Le Roy's performative practice is a subjective attempt to renegotiate an embodied bio/digi-rhythmic synthesis, as an affect of the polarising bio/digital tensions he felt working within the field of biomedical research. This research enquiry suggests that his oeuvre of performance works thus shape a methodological 'performative assemblage' in which Le Roy attempts to assimilate mind/body dualisms through the performing body; a methodology to synthesise the bio/digital dualities of his prior experiences working within a biomedical research domain, which advanced reductionist attitudes towards the body. Le Roy's experimental approach to movement practice, in which he arguably converges theoretical concerns with pragmatic performative processes into an embodied practice, thus conceivably fits within the 'performative research paradigm' (Haseman 2006: 98) framework (outlined in the *Methodologies* Chapter 2 of this research enquiry). In his choreographic endeavours to renegotiate a space of articulation for his 'biorhythmic' body and subjectivity in an increasingly digitally-mediated world, this case study will suggest that Le Roy's practice arguably subverts conventional choreographic approaches and disciplinary boundaries. Through a 'performative assemblage' approach to his embodied movement practice, Le Roy in turn arguably generates heterogeneous, collectivised

performance spaces in which both viewer/participants and performers' bodies become 'affectively spatialised' (Conley 2010: 262) through rhythmic affect (a proposition which will be explored in relation to his treatment of the works in the exhibition *Retrospective*, 2012).

To enable this contextual case study to proffer that Le Roy's movement practice is perhaps better conceived of within the conceptual framework of a 'performative paradigmatic' methodology of practice (divergent from a more conventional or standard oeuvre of individual works within the choreographic field), this research will consider the development of his practice in a chronological timeline; through three compositions spanning over a decade. While the works analysed here are reperformances of Le Roy's 'original' choreographic compositions (as access to 'live' documentation of the initial performances is unavailable), for purposes of clarity for the reader the original dates of performance will be used throughout this case study, including in the documentation images. In the *Methodologies* Chapter 2, this research outlined Auslander's theorisation of performance documentation as generative of a primary experiential 'event' for the viewer, through 'the phenomenal relationship between the spectator who experiences the performance from the document and the document itself' (Auslander 2018). Auslander's framework for conceptualising 'live' performance documentation as a discursive vehicle could thus be considered in relation to Le Roy's choreographic works within this case study; in order to further contextualise the documentation of performative practice as affective and experientially expansive beyond its reductionism to the representational register (a theoretical framework which will be applied to the sound 'data-streams' generated by

this research enquiry from performative bio/digi-rhythmic 'events', in the *Performative Praxis* Chapter 4). Beginning with *Self Unfinished* (1998), one of Le Roy's first seminal 'solo' compositions, this case study will explore how Le Roy makes malleable the materiality of his 'biorhythmic' body, through a wholly embodied, performative, choreographed movement work; in order to deconstruct the representational image and ideation of his corporeal 'self' identity into something other. In *Product of Circumstances* (1999) Le Roy's distrust towards the institutional biomedical Cartesian forms of knowledge and sense-making, which he experienced working with quantitative processes of data-acquisition in the field of scientific enquiry, will be traced to his research background as a molecular and cellular biologist. For *Product of Circumstances* (1999) Le Roy uses a method of 'performance lecture', punctuating his autoethnographic biographical account with choreographic interludes; as a performative process to articulate the dichotomous tensions which arose during his past formative experiences as a biomedical researcher (working within the rigidity of a laboratory environment which isolated cellular microsystems of the body for individual analysis, by removing them from the context of a 'biorhythmically' embodied subject). If *Self Unfinished* (1998) gives precedence to a renegotiation of the 'biorhythmic' dimensions of embodiment, for Le Roy, and *Product of Circumstances* (1999) articulates the tensions of the bio/digital polarities he felt, using a verbal/visual language of mind/body duality (with Le Roy oscillating between speaking Cartesian subject and rhythmically-embodied moving subject), this research suggests that *Retrospective* (2012) attempts to synthesise Le Roy's experiential dualisms, using performativity, rhythm, spatio-temporality and affect. This case study will suggest that for *Retrospective* (2012) Le Roy applies the potential of rhythm as 'a relational quality' (Ikoniadou 2014: 87), mediating his experiential 'solo' works as 'biorhythmic

materialities', which become embodied and expanded through the rhythmic capacities of other performers (and are furthermore affectively extended to spectator/viewers' experiences within the gallery space). The performative methods that Le Roy uses in *Retrospective* (2012), thus arguably harness the potential of rhythmic 'events' to 'reshuffl[e] the continuity of lived duration' (Ikoniadou 2014: 87), a proposal made by this research praxis in the *Methodologies* Chapter 2, which will be demonstrated through the *Performative Praxis* case studies and sound 'data-streams' in Chapter 4. This case study will furthermore suggest that Le Roy's methodological approach in *Retrospective* (2012), arguably generates a 'productive assemblage' (Livesey 2010: 19) in which a plurality of embodied mobilities recalibrate conventional spatio-temporalities within the gallery space through a synchronicity of performance, rhythm and affect. While such methods and processes of synchronicity, using the experiential embodied realms, serve to contextualise Le Roy's performative practice in relation to the proposition of this research enquiry, this research recognises that Le Roy's practice operates in relation to the spatio-temporal constructs of the gallery (and the gallery 'experience'), whereas this praxis functions in the context of lived experience in the everyday.

***Self Unfinished* (1998)**

Figure 1. Xavier Le Roy, *Self Unfinished* (1998)

In his seminal 'solo' work *Self Unfinished* (1998), Le Roy probes what his corporeal body can do. It is an enquiry, this research suggests, not undertaken as a desire to exceed or transgress his perceived bodily limitations or boundaries, through movement, but rather how his subjective body might become something 'other' by embracing his corporeality as a materiality; to undo any semblance of the conventional 'self'. In his performance of *Self Unfinished* (1998) at the Museum of Modern Art's *On Line: Drawing Through the Twentieth Century Performance Exhibition Series* (2011),

Le Roy walks diagonally across the demarcated floor of a sparse white-cube style interior gallery space, to assume his opening position for the performance (Figure 1). His body seated at a chair and desk (two out of three material objects punctuating the otherwise empty expanse of space, the third a cylindrical ghetto-blaster placed transversely across the floor, which remains silent for the duration of the performance), forearms outstretched with palms facing down and resting on the table; his chin tilted downwards so that his inward-gaze appears, in profile, to fall past his fingertips, extending out into the space beyond (Figure 2). Le Roy's performative starting-point in *Self Unfinished* (1998), of an unambiguously discernible subject seated at a desk (though a possibly disillusioned 'self', as his vacant stare alludes to an elsewhere), arguably functions as a destabilising initiation for the viewer into what is to come.
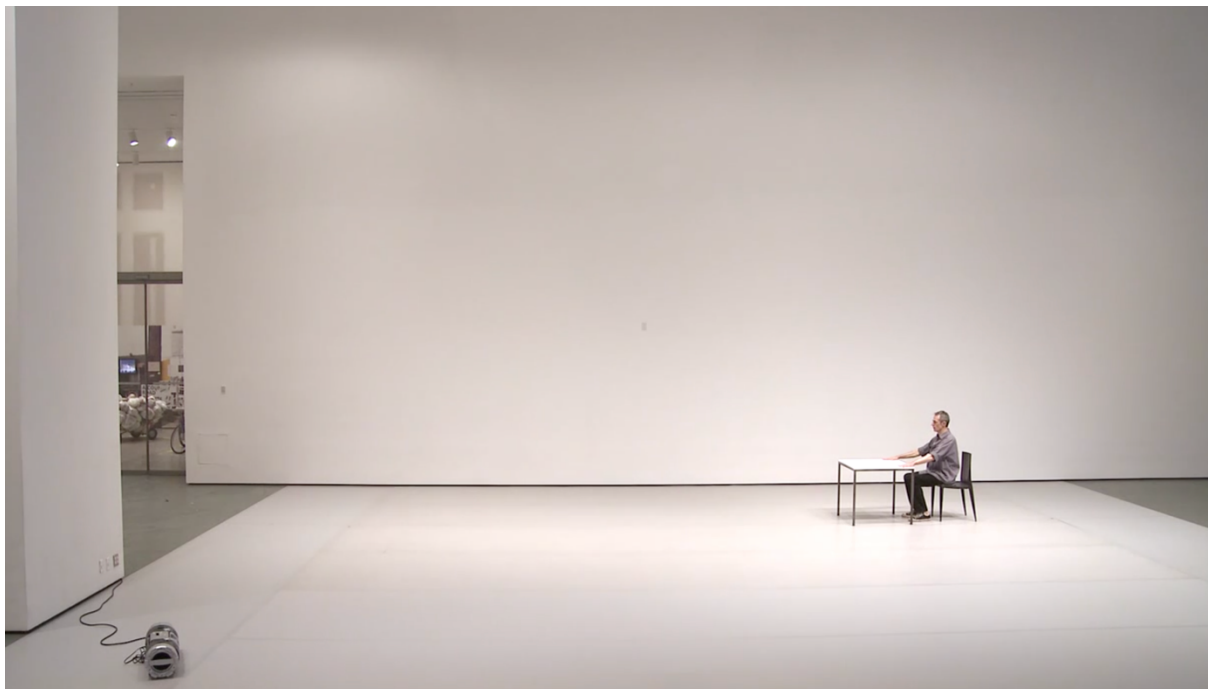
Figure 2. Xavier Le Roy, *Self Unfinished* (1998)

Le Roy's normative identity (casually dressed in a loose shirt, black trousers and baseball shoes), arguably offers the viewer a mundanely identifiable image of a 'biorhythmically' composite self, precisely as the pivot on which his process of undoing this idea of subjectivity and selfhood can begin to unfold. For *Self Unfinished* (1998), Le Roy's aesthetic strategy is the deconstruction of his corporeal image, 'to try to make the body become something else in order to question how we perceive the human body' (Le Roy 2017). In the Introduction to *Dance: Documents of Contemporary Art* (2012), André Lepecki reaffirms the corporeal potentialities of dance and the performing body, to reshape ideas of embodiment and propose alternative subjectivities:

> Dance's inescapable corporeality constantly demonstrates to dancers and audiences alike concrete possibilities for embodying-otherwise- since a dancer's labour is nothing else than to embody, disembody and re-embody, thus refiguring corporeality and proposing improbable subjectivities.

> (Lepecki 2012: 15)

As Le Roy begins his embodied expansion towards 'proposing improbable subjectivities' (Lepecki 2012: 15) through a sensorial assemblage of sounds and gestures, he performatively 'disintegrates' the visually intelligible subjectivity which he has presented as a basis for departure from (the subject viewed in profile, uprightly seated at a desk). In a mechanical sound analogous to a robotic falsetto, resonating from inside Le Roy's body out into the reverberatingly bare gallery space beyond, his chin raises, upper body activating. The disillusioned postmodern subject appears to

be temporarily awakened from his state of inertia, alert and revitalised through his performative transformation of 'the body-as-organism' (Clough 2008: 2) into an arguably hybrid 'machinic-body'. For Clough, autopoietical notions of the 'body-as-organism' as a self-maintaining system which is 'open to energy but informationally closed to the environment, thus engendering its own boundary conditions' (Clough 2008: 2) are challenged by the augmented, affective capacities of concepts of the 'biomediated body' (Clough 2008: 2). In her text *Immaterial Bodies: Affect, Embodiment, Mediation* (2012), Lisa Blackman reaffirms Clough's definition of 'the body-as-organism' (Clough 2008: 2) as an 'enclosed' mode of subjectivity, while further binarising it as 'a concept used to characterize distinctly human bodies (however technically mediated they might be seen to be), from those which introduce a "post-biological threshold" into our theorizing' (Blackman 2012: 5). This research suggests that Le Roy's performative sensory-assemblage of a 'machine-like' biomediated body arguably hints at a 'post-biological threshold' (Blackman 2012: 5) however his mechanism for enacting this is through corporeal intervention. Destabilising the originating image of an enclosed 'body-as-organism' mode of subjectivity that he performs at the beginning of *Self Unfinished* (1998), the augmented, expanded robotic body that Le Roy transforms into is a thoroughly embodied allusion to a bio/digi-mediated 'machinic-man'. As Le Roy's head rotates measuredly to the right and back again, each rigidly mechanical movement-phrase is punctuated by momentary silent caesuras, when he pauses for breath (the body's fundamental biorhythmic materiality which enables all movement, as it sustains life). The 'biomediated body' in *Self Unfinished* (1998) is thus realised corporeally, by Le Roy, through his sensory understanding of 'the relationship between body, movements, and technique' (Le Roy 2003).

Figure 3. Xavier Le Roy, *Self Unfinished* (1998)

> In the beginning section when I do what is often called the robot or the machine part […] I was actually looking for movements during which I would never know if it is the sound which produces the movement or if it is movement which makes me produce this sound? I was looking for a state where I didn't know what decides to produce what.

> (Le Roy 2003)

This research suggests that in *Self Unfinished* (1998), Le Roy mediates his body's malleable biorhythmic materialities according to his own terms; as he attempts to merge, amalgamate and synthesise his bodily sensations into a performative embodied assemblage-body. As *Self Unfinished* (1998) durationally unfolds, the

bio/digi-mediated 'machinic-man' that Le Roy alludes to and embodies at the beginning of the composition (using a performative, biorhythmic sensorial-assemblage to create this robotic 'other') further mutates into other organically-hybrid bodily forms. Le Roy's biomediated subjectivity literally walks in reverse (Figure 4) away from the object-markers of organisational striation from which he has arisen (desk, chair, seated posture), transversely retreating into the 'smooth' expanse of potentiality in the empty gallery space behind. In the *Contextual Literature Review* Chapter 1 this research introduced Deleuze's concept of the 'Body without Organs' as a heterogeneous assemblage-body which simultaneously 'exists within stratified fields of organisation at the same time as it offers an alternative mode of being or experience (becoming)' (Message 2010: 38). The 'Body without Organs' destabilises the homogenous body through a process of becoming, seeking 'a mode of articulation that is free from the binding tropes of subjectification and signification' (Message 2010: 38), whilst at the same time 'maintaining some reference to these systems of stratification, or else risk[ing] obliteration or reterritorialization back into these systems' (Message 2010: 38). This contextual case study thus suggests that Le Roy's performative process in *Self Unfinished* (1998) could be considered a corporeal expression of the concept of the 'Body without Organs'. As he transforms and metamorphoses his body in real-time within the gallery space, Le Roy undoes the image of 'self' ('of subjectification and signification', Message 2010: 38) that he presented at the start of the work, through an embodied process of becoming which unfolds in the spatio-temporality of the gallery. For Deleuze, it has been suggested that the process of becoming serves as an antidote 'to what he considers to be the western tradition's predominant and unjustifiable focus upon being and identity' (Stagoll 2010: 25). In *Self Unfinished* (1998), Le Roy arguably reconceives his 'self'

identity as 'a constantly changing assemblage of forces' (Stagoll 2010: 27), his embodied processual-becoming even alluding to a 'becoming animal' as his body metamorphoses from biped into moving quadruped (Figures 5 and 6); indicating 'the zone of indiscernibility between man and animal' (Marks 2010: 25). In the following section, this case study will suggest that Le Roy's performative expression of 'becoming' in *Self Unfinished* (1998), towards a corporeal and conceptual materialisation of the 'Body without Organs', is a biorhythmic embodied reaction to the biopolitical, technical frameworks of the 'expanded body' found in experimental-modernist dance practices of the 1960's (as well as a response to the Cartesian splitting of the body-subject which he experienced as a biomedical researcher). As Le Roy moves through a plurality of embodied states in *Self Unfinished* (1998), the multiplicities of 'self' and 'other' that his body generates within the performative space arguably extend his bio-rhythmically-mediated body beyond the representational register (into the realm of the 'Body without Organs'). This research thus suggests that Le Roy's performative bodily 'language', in *Self Unfinished* (1998), is a process of becoming in which sapience is derived through movement, sensation and corporeal perception, 'directed towards the sensible rather than the intelligible' (Marks 2010: 24).

> Sensations and perceptions do not simply give the mind material to organise; they are themselves a major organising principle.

> (Le Roy 1999)

Figure 4. Xavier Le Roy, *Self Unfinished* (1998)

Figure 5. Xavier Le Roy, *Self Unfinished* (1998)

Figure 6. Xavier Le Roy, *Self Unfinished* (1998)

The Expanded Body

This research suggests that Le Roy's embodied performative aesthetic process is a corporeal, 'digi-modernist' response to the concept of the 'expanded body' found in the experimental modernist dance forms of the 1960's. This is a proposition reaffirmed by art historian and curator Marcella Lista in her essay *Xavier Le Roy: A Discipline of the Unknown* (2013), who details the technical frameworks of the 'expanded' biomediated body which were experimented within modernist performance practices; 'that is, an interface-body run through and amplified by technology in order to assert space and time as a continuum' (Lista 2013: 29). Lista attributes the pioneers

of experimental modernist dance practice John Cage and Merce Cunningham in their influential works such as *Variations V* (1965), to disrupting the notion of the dancers' body as centralised originator and creator of choreographic composition, image and form. Through the application of new technological innovations, Cage and Cunningham's processes of bio/digi-mediation into their creative collaborations enabling the dancers' bodily movements on stage to affect the production of sound and image outcomes.

> Cage and Cunningham used a variety of sensors to transform the stage into a field of interferences so that the dancers' movements produced information in a non-intentional manner. The paradigm of self-expression and subjectivity was thereby rejected and the choreographic act displaced and delegated to a machine-organism that expanded the corporeal movements into the visual, electromagnetic and acoustic environment.

> (Lista 2013: 29)

This research suggests that such a decentralisation, translation and expansion of the body's corporeal and physical materialities into electromagnetic informational-output (as described by Lista through the experimental-modernist choreographic practices Cage and Cunningham collaborated on during the latter half of the twentieth Century), could be considered a revealing precursor to contemporary practices of bio/digi-mediation. Cage and Cunningham's experimental-modernist choreographic works utilised the performers' bodies as 'bio/digi-rhythmic' interfaces, whose movements triggered sensor technologies in order to affect informational outcomes (Figure 7).

Figure 7. John Cage and Merce Cunningham, *Variations V* (1965)

For Clough such a process exemplifies one of the 'technical frames of the biomediated body' (Clough 2008: 2), enacted through '"new media" where digitization makes possible a profound technical expansion of the senses' (Clough 2008: 2). The concept of the 'biomediated body' for Clough, 'exposes how digital technologies […] attach to and expand the informational substrate of bodily matter' (Clough 2008: 2), introducing a 'postbiological threshold' into everyday life. In concurrence with Clough's theorisations, this research proffers that such processual modalities are arguably exemplified through the forms of bio/digi-mediation that biometric technologies (as wearable digital sensing-devices), enact on and through our bodies in what are arguably 'digi-modernist' times. In the *Contextual Literature Review* Chapter 1, this research introduced the concept of 'digi-modernism' as a contemporary cultural

paradigm which has arguably superseded postmodernism in the post-digital age. Unlike postmodernism's potentials for expansive pluralities, digi-modernism problematises spaces for subjectivities and modes of self-expression, as it defines 'a new paradigm of authority and knowledge formed under the pressure of new technologies and contemporary social forces' (Kirby 2009). For Kirby, the cultural and biopolitical paradigm that digi-modernism signifies is one in which new technologies 'Dismantle the postmodern and reconfigure our culture' (Kirby 2009). Digi-modernism thus potentially revives and reconfigures outdated modernist beliefs for the post-digital age, propagating notions that objective truths can be obtained through digital technologies (such as biometric processes of bio/digi-mediation), while further negating the 'voice' of individual experience, identity and embodied subjectivity. In contemporary post-digital bio/digi-mediated practices, biometric 'self-tracking' technologies arguably dematerialise and delegate the body's physical movements, sensory materialities and subjective experiences to the 'machine-organism' (Lista 2013: 29) of the digital-wearable interface. Expanding and translating the body-subject's experiential and biological matter into the 'informational substrate' (Clough 2008: 2) of biometric quantitative data-streams, which for Clough exposes how digital technologies biomediate our bodies by introducing a 'postbiological threshold' (Clough 2008: 2) into routine everyday life. For Ajana (as outlined in the *Contextual Literature Review* Chapter 1), this contemporary biopolitical paradigm which returns 'to the body for the establishment of identity in biometric technology' (Ajana 2013: 88), facilitates a reversal of Cartesian mind/body polarities; rendering subjects vulnerable to biopolitical injustices, by making-malleable the boundaries of the body-subject's corporeality.

> This ontology of body as information construes the body itself in terms of informational flows and communication patterns, exposing the porous and malleable nature of body boundaries. And when the body is viewed beyond its somatic and material contours, what ensues is a problematisation of the very distinction between materiality and immateriality and, with it, the distinction between the 'material' body and the body as 'information'.
>
> (Ajana 2013: 7)

It is therefore the central proposition of this research praxis to renegotiate the paradigmatic limitations of these emerging bio/digi-polarities, attempting to synchronise the bio/digi-mediated body through the subjectively experiential 'bio/digi-rhythmic' realm. In the next section, which introduces Le Roy's succeeding performative work *Product of Circumstances* (1999), it will be revealed how such a reductionist biomedical splitting of the body into dematerialised biological, molecular and cellular 'data-as-information', had hitherto shaped the disillusionment that led him to terminate his career as a biomedical researcher (after the completion of his PhD thesis in the early nineties) and to pursue a dance and choreographic practice. In *Product of Circumstances* (1999), this case study suggests that Le Roy reclaims 'the paradigm of self-expression and subjectivity' (Lista 2013: 29) which is arguably negated in biometric forms of bio/digi-mediation; adopting a method of 'performance-lecture' as a performative methodology which merges his autobiographical narrative account with interludes of choreographed movement practice. This research therefore proffers that Le Roy's use of embodied practice as a process to renegotiate bio/digital tensions (mediating his subjective experiences according to his own embodied terms), further contextualises the 'bio/digi-rhythmic' performative praxis developed by this research enquiry (which will be presented in the *Performative Praxis* case studies in Chapter 4, along with the accompanying sound 'data-streams').

Product of Circumstances (1999)

In a choreographed 'performance-lecture' entitled _Product of Circumstances_ (1999), Le Roy traces the shift in his biographical journey from PhD researcher in molecular and cellular biology, working to complete his thesis in the late 1980's, to becoming a dancer; a journey which began, he recounts through an autoethnographic narrative account, when he started to take one dance class a week alongside his research studies. For _Product of Circumstances_ (1999), Le Roy adopts the methodological format of a 'performance-lecture', integrating a duality of embodied 'languages', including verbal spoken narrative and non-verbal bodily movements and gestures, to articulate the subjective biorhythmic disruptions he felt working within the field of biomedical research.

Figure 8. Xavier Le Roy, *Product of Circumstances* (1999)

As *Product of Circumstances* (1999) unfolds, Le Roy reveals how it became increasingly evident to him that the reductionist paradigms of biomedical research within an academic canon were more aligned to the biopolitical power dynamics underpinning research frameworks, than evolving a deeper understanding of the human body. Listening to him speaking from a lectern, the audience learns that Le Roy's PhD research required him, in collaboration with computer scientists, to develop a methodological system of bio/digi-mediated quantification which could mechanically detect differences expressed as black dots in potentially cancerous breast-tissue cells (too arduous and time-consuming a task for individual researchers to count manually). During this part of the performance, where he starts to contextualise the restrictions he began to feel undertaking this systematised bio/digi-mediated research, Le Roy

moves away from the speaking-podium towards a lone stacking-chair which has been placed in the centre of the stage. Removing a pillow which lays atop the seat, he climbs onto the chair standing tall, upright, silent and expressionless, and slowly begins circling his right forearm; a movement which is initiated from below the elbow, as the upper part of his arm remains glued to his rigidly vertical torso.

Figure 9. Xavier Le Roy, *Product of Circumstances* (1999)

These anticlockwise, rhythmic forearm rotations gain momentum, speeding up until his right limb becomes a blur (Figure 9), and his left hand, which is also pinned to his side from above the elbow, crosses the body to slap the right wrist to an audible halt.

Le Roy's vertical subjectivity then begins to fold in on himself (Figure 10), chin tucking into chest as his gaze lowers to the floor, his head and trunk slowly threatening to plunge forwards, towards the expanse of floor space beyond the chair's perimeter, as his hips and knees bend to give way to this deliberate nosediving motion.

Figure 10. Xavier Le Roy, *Product of Circumstances* (1999)

Le Roy swiftly dissipates the building tension towards his potentially imminent fall, stepping down from the chair with nonchalant embodied control, to assume a position as an uprightly seated subject this time. His constricted forearm movements continue,

slowly and methodically, as he lifts, lowers and rotates each limb in mechanical gestures, before seeming to discard them, as they flop back down to his sides (Figure 11).

Figure 11. Xavier Le Roy, *Product of Circumstances* (1999)

These lengthy gesticulations gradually build up speed, clenched fists accelerating up and down, forearms, wrists and hands flapping in a blur of motion, before flopping back down to his sides, arms slowing to a standstill again. After a brief pause, the movement sequence culminates with Le Roy's fingertips scouring his face and upper body, in what appears to be a search for signs of familiarity. Before, digits scratching his right shoulder (in a gesture that appears to trigger his subjective 'awakening'), the seated subject stands, resumes his composure and walks back to the podium with

ease. Taking a sip of water and referring to his notes, Le Roy immediately reverts to his role as lecturer/presenter on his return to the lectern after this brief choreographic interlude (Figure 12); describing the system and technologies of bio/digi-mediation required to mechanically count the black cellular dots to his viewers/audience, '[…] a microscope connected to camera and a computer with a software developed specifically for this task' (Le Roy 1999).

Figure 12. Xavier Le Roy, *Product of Circumstances* (1999)

Detailing the processual method of bio/digi-mediation to his viewers/audience in further depth, Le Roy explains how he and the team of other biomedical researchers would select 'a field from the study-tissue section, under the microscope', then,

take a picture from this field with a video camera that is on top of the microscope. This picture then goes into a computer where it is digitised, and the digitised pictures appear on a video monitor where the processing of the counting can be followed.

(Le Roy 1999)

Le Roy elucidates to the viewers/audience that this technique of bio/digi-mediated counting, aided by the computer's digital-processing, enabled the researchers to calculate the number of black dots in one field-sample of cellular tissue under the microscope, in a duration of ten minutes. This proved such a significant temporal improvement, compared to the two hours required for visual, manual counting, that the results of this bio/digi-mediated processing method were published in a scientific research journal. Here, Le Roy's narrative account begins to shift from the objectivity of recounting the biomedical research practices he undertook as part of a collective research team, to a more subjective and self-reflexive autoethnographic, experiential account.

It was the first time that I participated in a scientific publication. At that time, I was taking two or three dance classes a week, trying to learn how to do these kind of exercises […]

(Le Roy 1999)

Figure 13. Xavier Le Roy, *Product of Circumstances* (1999)

Figure 14. Xavier Le Roy, *Product of Circumstances* (1999)

Moving a few meters away from the podium, Le Roy proceeds to run through a demonstrative sequence of classical dance and ballet movements (Figures 13 & 14); flowing through the choreographic composition of embodied poses in a seemingly hurried, perfunctory succession. Sequence over, he strolls back to the lectern, takes another sip of water, and resumes his speaking role. Recounting to the audience that during this period of his biographical journey, whilst learning new dance movements and choreographic practice alongside his PhD research, in his job in the laboratory as a biomedical researcher he was spending,

> a lot of time looking at sections of human tissues under the microscope, trying to learn how to recognise the histological differences between normal and cancer cells and also between the different types of cancer.

> (Le Roy 1999)

Le Roy recalls how 'even for the very experienced researcher, it was sometimes very difficult to make a clear and objective decision to put the observed tissue in one of the numerous existing categories' (Le Roy 1999). This mechanical method of bio/digi-mediated cellular classification that he and the other researchers had developed was increasingly beginning to trouble him; revealing that through his endeavours to remain as objective as possible, 'looking into the microscope I very often had the feeling that I was both observing and transforming what I was observing' (Le Roy 1999). As Le Roy continues to disclose his growing discomfort with this process and system for measuring the body, increasingly feeling that his decisions were 'made under influence' (Le Roy 1999), with each individual cellular decision challenging his

objectivity, he began to question how objective he needed to be to continue practicing biomedical research; subsequently coming to the conclusion that he 'could not be objective' (Le Roy 1999) (a concern, we learn, he temporarily shelved in order to be able to continue his PhD research work in the laboratory). Another intensifying 'subject of discord' (Le Roy 1999) for Le Roy within this biomedical field, we discover, surfaced from disputes with his laboratory director, who wanted to publish research results that Le Roy believed to be too insignificant for publication. Considering the level of expression of the oncogenes he was studying (genes with the potential to cause cancer), so low that it was at the limit-point for bio/digi-mediated detection, and therefore negligible, Le Roy quickly learned that for his laboratory director 'his experience and social position was much more important than any scientific argument I could have' (Le Roy 1999). With intensifying realisations that established scientific research frameworks were steeped in hierarchical power-dynamics, Le Roy began to understand the significant role of research publication in maintaining such systems of biopolitical authority, speculating that 'publishing articles is the scientists best way to create and protect his position in society; […] "publish or perish"' (Le Roy 1999). As he continues to critique the quantitative and qualitative publishing paradigms of scientific research, considering these domains of research analogous to dominant capitalist models of production, Le Roy attests to his viewers/audience that he was 'asked to produce science and not to search' (Le Roy 1999). In the *Contextual Literature Review* Chapter 1, this research problematised the contemporary zeitgeist towards quantitative forms of 'big-data capture' as the prevailing paradigm for knowledge acquisition in the post-digital age. This case study suggests that the intensifying tensions that Le Roy attempts to articulate in relation to his personal subjective experiences within the biomedical research field, through *Product of*

Circumstances (1999), arguably exemplifies such a quantitative paradigm of 'knowing capitalism' (Lupton 2016: 42), whereby technological or scientific innovation produces mass quantities of data as commodifiable forms of knowledge 'production' (as in the biometric 'self-tracking' practices critiqued by this praxis). In *Product of Circumstances* (1999), this research suggests that Le Roy attempts to reintroduce the subjective, autoethnographic 'voice' into this discursive biomedical realm of quantifiable, scientific research; in which mass 'data-capture' arguably serves to suppress the 'voice' of individual subjectivity completely (aggregating data into homogenised outcomes, while simultaneously commodifying the production of knowledge in the qualitative realm, through mechanisms such as research publication). After three years of biomedical research, working towards the presentation of his PhD thesis with the results of the bio/digi-mediated experiments he had been engaged in (Figure 15), Le Roy informs the viewers/audience that he had developed more critical philosophical questions and conclusions, which had arisen from the polarities of his experiences:

Why do we try to give a homogenous picture of the results when they look so heterogeneous? Can we trust statistics? What is the meaning of statistical results?

(Le Roy 1999)
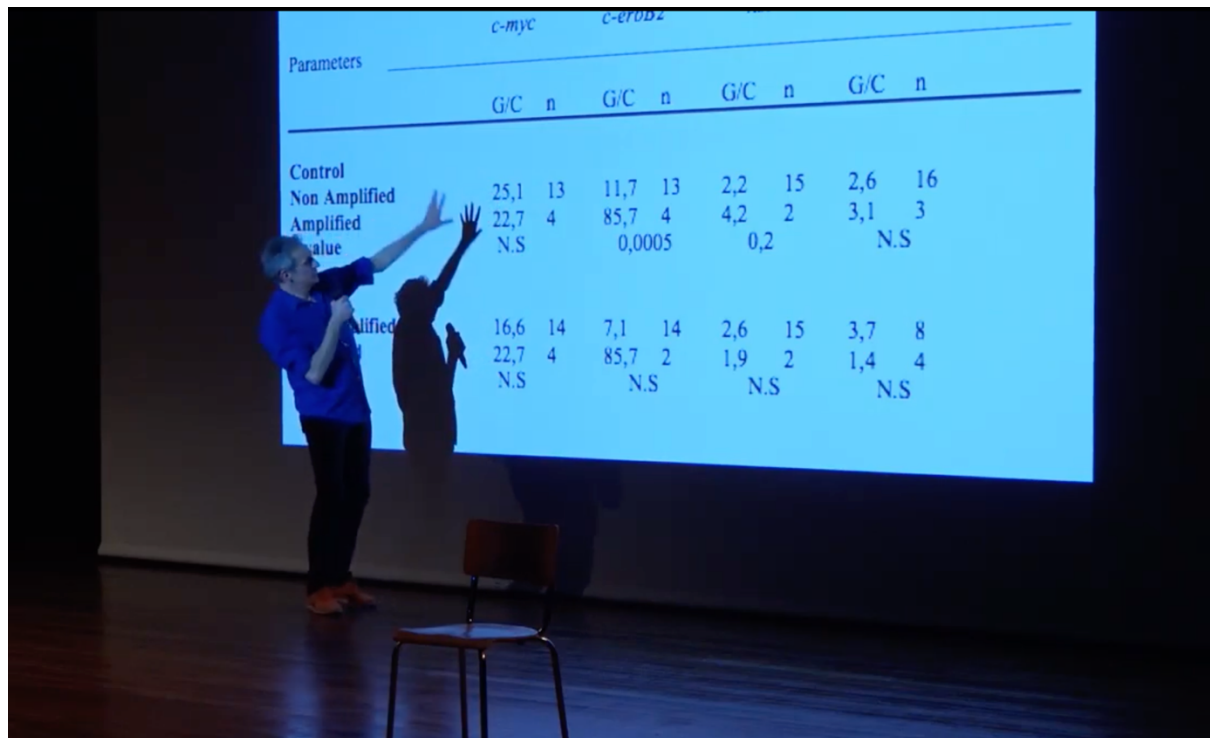
Figure 15. Xavier Le Roy, *Product of Circumstances* (1999)

As *Product of Circumstances* (1999) continues to unfold, it becomes apparent that the

dichotomous tensions Le Roy was increasingly experiencing in his routine working

role as biomedical researcher were beginning to find an alternative expression in his

everyday lived embodied practices (reaffirmed by his ensuing autoethnographic,

narrative account);

> at that time I took at least one dance class a day, I did also some yoga and I
> started to visit an osteopath regularly. These corporeal experiences laid the
> foundation for the necessity of a new corporeality and new theories about the
> human body.

> (Le Roy 1999)

For his preceding performative interlude, Le Roy walks a few meters away from the podium again, pulls up his trousers and adjusts his shirt, before laying down on the floor, with knees bent, feet flat, arms outstretched, palms facing up and eyes closed (Figure 16). He endures to lay still in this posture for nearly a minute, the only movements perceptible in his body coming from deep diaphragmatic breaths, as his lower abdomen rises and falls with his inhalations and exhalations.

Figure 16. Xavier Le Roy, *Product of Circumstances* (1999)

This research suggests that the performance of this static posture signifies Le Roy's attempt at a corporeal, experiential shift towards renegotiating a biorhythmic 'mind/body' synthesis, in his everyday lived embodied practices. The stillness of the supine posture that Le Roy rests in here for a minute, is referential to the yogic

'Savasana' pose (the Sanskrit for 'Corpse Pose'), in which embodying stillness and letting go of physical effort by focusing on the breath is considered a process through which to compose, align and synthesise mind/body dualities. Up to this point of *Product of Circumstances* (1999), Le Roy's choreographed movement-sequences have arguably attempted to perform the tensions, constraints and dichotomies (the 'arrhythmic' disruptions) to his subjective spheres of embodiment that bio/digi-mediated technologies, systems, structures and processes for 'ordering' bodies arguably imposed. This research suggests that Le Roy's restricted bodily movements towards the beginning of the performance-lecture (Figure 9), where he fragmented his body into composite parts, assigning mechanical movements to his individual limbs and extremities (resulting in arguably limited physical or 'biorhythmic' scope) were a performative reference to the bio/digi-mediated systems of fragmentation that he was required to perform towards other bodies, as a biomedical researcher. Furthermore, his use of a chair during this part of the performance-lecture (Figures 10 & 11) arguably serves to constrain and limit his movements to the same material object of sedentary, institutional striation which he used as a signifier at the beginning of *Self Unfinished* (1998); perhaps a point of reference to the often unquestioned everyday practices of 'striated' lived experience, that our bodies yield to within Western societies. This research suggests that Le Roy's pursuit of alternative, corporeally embodied experiential practices, during his time away from the biomedical research laboratory, was his subjective attempt to potentially 're-establish eurhythmia' (Lefebvre 2004: 68) by exploring physical processes which worked towards synthesising mind/body dualities through the body (for example, in the customarily Eastern cultural, embodied practices he undertook, such as yoga).

153

During my practice of science I also asked myself, what is the aim in getting more and more specialised? It seems to me more and more strange to study the human body by isolating microsystems out of their context for an analysis in the laboratory environment.

(Le Roy 1999)

In *Product of Circumstances* (1999), this research suggests that Le Roy uses an embodied 'language of duality', as a performative method of expression to articulate to his viewers/audience the dualistic tensions he was experiencing subjectively, in his everyday lived practices, as he worked towards finishing his PhD in biomedical research. This praxis suggests that Le Roy performs the co-existing binaries of his lived reality at this time (both in the context of, and externally to, the research laboratory), as a method through which to make explicitly visible to his viewers/audience the systemic Cartesian mind/body polarities concealed in the biopolitical power-dynamics that affect our everyday, lived embodied experiences. For *Product of Circumstances* (1999), this research suggests that Le Roy has generated a performative 'third space' (the discursive realm of the 'performance-lecture') in which he attempts to renegotiate, articulate and synchronise 'mind/body' and 'bio/digi'-polarities, through embodied practice. However, Le Roy's performance methods in *Product of Circumstances* (1999) arguably reinforce the binarised systems of thinking towards the body that he had experienced within biomedical research paradigms, and had subsequently set out to destabilise through his embodied practice (as he articulates the quantifiable, deconstructed 'bio/digi-mediated body' in opposition to the qualitative, sensory, empirical, dimensions of embodied subjectivity). This research suggests, conversely, that the 'small' bodily gestures that Le Roy makes in his

transitions (Figure 12), as he oscillates between the arguably dualistic performance methods of verbal 'speaking subject' and non-verbal 'performing subject' (for example, sipping water, shuffling his notes, walking to and from the podium, adjusting his clothing, taking a breath, clearing his throat, etc.) perform a 'minor' embodied language; which perhaps better synchronises a rhythmic space of synthesis for problematic Cartesian mind/body dualities.

> I escaped and I decided to do more dance. Thinking became a corporeal experience, and my body became simultaneously active and productive, object and subject, analyser and analysed, product and producer.
>
> (Le Roy 1999)

Concluding his biomedical research career after the completion of his PhD thesis in 1990, and moving to Paris to further pursue a dance and choreographic practice, Le Roy reveals to his viewers/audience that he encountered similar hierarchical systems and limiting structures in relation to the body; within the conventional constructs and technical frameworks of the established dance and choreographic canons (exemplified in Figures 13 & 14). Le Roy divulges that his repeatedly unsuccessful attempts at auditions, and refusals based on his lack of technical physical prowess, led to feelings of exclusion and disappointment within the sphere of dance; that his tall, slim body was somehow 'resisting the norms of dance' (Le Roy 1999). This research suggests, however, that Le Roy's conflicting embodied experiences, against the narrow binary conventions entrenched in the technical methods and processes of classical, modernist and contemporary dance and choreographic paradigms, led him

to explore the deeper critical questions needed to begin formulating his subjectively experiential movement practice. This research suggests that by pursuing a subjective performance practice outside of established dance and choreographic paradigms (developing a performance practice which arguably mediates his lived, embodied, experiences according to his own subjective terms), Le Roy started to renegotiate a corporeally embodied practice which worked towards synthesising the mind/body dualities of his everyday lived experiences.

> I slowly noticed that the systems for dance production had created a format that influenced, and sometimes to a large degree determined, how a dance piece should be.

> (Le Roy 1999)

In this research praxis, it is suggested that the bio/digi-mediated systems which reproduce embodied activities as 'data-products', through 'self-tracking' practices, have similarly generated quantifiable biometric formats which largely determine the parameters for how empirical, embodied experiences are conceptualised subjectively, in post-digital culture. Towards the conclusion of the *Product of Circumstances* (1999) performance-lecture, verbally articulating the tensions he had begun to experience towards the body as a representational 'product' within the hierarchical canons of established dance and choreographic practices, Le Roy poses a question (which this research suggests shapes the theoretical and methodological 'performative paradigm' for his future *Retrospective*, 2012, exhibition);

can the production of a dance piece become the process and the production in itself, without becoming a 'product' in terms of making a performance or a representation? […] What is performance, what is representation? […] Is the human body an extension of the environment or/ and the environment an extension of the body?'

(Le Roy 1999)

For the ensuing, closing performative interlude to *Product of Circumstances* (1999) (in what could be considered a cyclical, self-referential 'loop' to his subjectively experiential 'autoethnographic' narrative and practice), Le Roy transforms into the mechanical, robotic 'bio/digi-mediated' man, which served as his opening choreographic motif in *Self Unfinished* (1998). This time however, Le Roy's embodied transformation happens at the lectern, his corporeal shift immediately supplanting the end of his speech, as he arguably attempts to close the binary gap between the dichotomous performance spaces he created, through a spatially embodied synchronicity. In the following section, this case study will conclude the contextual critique of Le Roy's performative practice through an exploration of his *Retrospective* (2012) exhibition. This research suggests that while in *Product of Circumstances* (1999) Le Roy has arguably generated a performative space through which to re-navigate his subjective 'voice' of embodied inclusion (using a self-reflexive 'autoethnographic' performance method to problematise and perform the dualities of the imbalanced biopolitical and socio-cultural power-dynamics he experienced), in *Retrospective* (2012) he extends the 'voice' of subjective inclusion to other embodied subjects, in a collectivised non-hierarchical performance space. In this praxis a similar research proposition is being navigated, towards renegotiating a synchronicity of bio/digital polarities using performative embodied methods and processes (which will

be presented in the *Performative Praxis* case studies and accompanying sound works in Chapter 4). This research renegotiates the bio/digi-mediation of our subjective bodies through established 'self-tracking' practices, using an alternative application of the digital device to record methods of embodied movement practice using sound 'data-streams'. In an attempt to shift representational perceptions of the bio/digi-mediated body as a 'data-product', this praxis works towards synchronising the quantifiable biometric data-body through the experiential, sensory, empirical dimensions of embodied 'process' (using praxis as the performative space of synthesis).

Retrospective (2012)

For *Retrospective* (2012), Le Roy was invited by the *Fundació Antoni Tàpies Gallery* (Barcelona), to conceptualise a retrospective exhibition of his 'solo' performance works, spanning nearly two decades. This research considers that Le Roy's aesthetic and processual approach to *Retrospective* (2012) arguably reconfigures the conventional spatio-temporal perception of the 'artist retrospective'; as a linear and cumulative consideration of an individual artist's oeuvre of works-to-date (an established exhibition format which customarily shows an amassed body of preconceived works to a viewing public, operating within the conventions of an art gallery context). This case study proffers that for *Retrospective* (2012) Le Roy has reimagined the traditional concept of the 'artist retrospective' as a method and process of production which reorganises the spatio-temporal gallery experience; generating

new, affective, lived embodied experiences for both the visitors, and the performers involved in the formulation of *Retrospective* (2012), as a 'live' durational performative work. For Le Roy, the *Retrospective* (2012) exhibition serves to address established hierarchies within the gallery/museum space by using 'actions, speeches, movements that are performed by artists' (Le Roy 2018) in a 'live' manner within the space. This performance method and process, for Le Roy, necessitates the visiting public to 'deal with a subject and a content which is alive' (Le Roy 2018), in relation to the institutional constructs and existing spatio-temporalities of the internal gallery/museum space.

Figure 17. Xavier Le Roy, *Retrospective* (2012)

In the conceptualisation of *Retrospective* (2012) Le Roy's intention was to subvert the conventional constructs and expectations surrounding the presentation of durational performances, in the context of established cultural institutional spaces. For example, in the traditional performance paradigms and temporal-spatial constructs of theatre, museum and gallery spaces, performance is typically staged as a 'spectacular event', to be passively viewed by a public audience at a predetermined date, time and location. In these conventional settings, the viewer/audience's subjective experience of the performance work is arguably pre-organised by the experiential parameters surrounding the work, as 'fixed' to its spatio-temporal location and duration; a framework for performance which, for Le Roy, reaffirms the problematic, inequitable power-dynamics of established binary structures, which he attempts to destabilise through his practice. Similarly in this research, the performative space of praxis is used to renegotiate the conventional presentation of 'data-sets' in established qualitative/quantitative research paradigms, whereby the reader's subjective experience of the 'data-set' is arguably a standardised and generic one; predetermined by the existing qualitative/quantitative research framework through which it is presented. In the *Performative Praxis* case studies in Chapter 4, this research attempts to formulate a new theoretical paradigm for experiencing a subjective 'data-set' through the performative space of praxis, presenting bio/digi-mediated sound 'data-streams' which are recorded from embodied performance interventions, in synchronicity with the theoretical research proposition. This praxis therefore attempts to disrupt homogenous paradigms which externalise biometric forms of 'body-data', by renegotiating a subjective experiential synthesis of existing bio/digital, mind/body, qualitative/quantitative dichotomies in the performative 'bio/digi-rhythmic' space; in the same way that Le Roy's performance process, in *Retrospective*

(2012), arguably disrupts the homogenous cultural-institutional systems which limit the affective, subjective, experiential potentials for performance work.

> What we tried to do with this work is that we used the condition of time and space of the museum [gallery], which allows the public to come in at any time, to stay the duration that they want to stay, and to move in the space, which is not the conditions that you have in the theatre.
>
> (Le Roy 2018)

This research suggests that *Retrospective* (2012) works to emancipate viewers by synchronising existing experiential dualisms through the affective and rhythmic registers (which are introduced by 'live' embodied subjectivities performing in the space); therefore renegotiating a heterogeneous, pluralistic, collectivised performance space within the conventional spatio-temporal constructs of the gallery. In the *Performative Praxis* case studies in Chapter 4, this research similarly attempts to emancipate and expand the reader/listener's embodied experience of a bio/digi-mediated 'data-set', through a synthesis of bio/digi-polarities using sound, rhythm and affect in the space of praxis. For *Retrospective* (2012), Le Roy's methodological choreographic process has arguably generated an experiential work which interweaves multiple temporal axes into a synchronised space of performative discourse within the gallery. *Retrospective* (2012) is methodically choreographed by Le Roy in three distinct composite parts, which are performed by three or more individual performers for the duration of the exhibition's opening hours on any given day. For each of the separate choreographed components which shape *Retrospective* (2012) as a whole, three different types of performative activities based on Le Roy's

'solo' compositions unfold by the performing subjectivities, in specific predetermined performance 'spots' (which function inter-relationally within the gallery space). For the 'loops' section, an individual performer cycles through performing between six to seven different fragments from Le Roy's 'solo' works, in repeated, synthesised, cyclical 'loops' (for example, an excerpt from '*Self Unfinished*', 1998, Figure 17). The beginning and ending of each 'loop' segment is choreographed to be the same, to enable the performers' body to seamlessly shift from the 'end' of one performance-loop into the 'beginning' of the next, without embodied disruption (thus reconfiguring the performative cycle of 'start-finish-start' biorhythmically, fluidly 'looping' the multiplicity of performative fragments into a synthesised whole). This research suggests that this performance process is perhaps referential to the digital processing systems which increasingly impact our routine lived experiences, with Le Roy asking us to reconsider our repetitions through the body; as corporeal outputs are 'recycled' through this cyclical method of reperformance. For the 'immobilities' section, an individual performer attempts to become immobile in 'real-time' within the gallery space, holding a static embodied posture as a representational choreographic image or 'motif', from one of Le Roy's solo works (for example, Figures 18 & 19). Le Roy's performative method, for the 'immobilities' section, arguably questions existing dichotomous perceptions of the 'performer's body' as sculptural and representational in established dance and choreographic frameworks; re-corporealising the choreographic 'body-image' through a living, breathing, performing subject sustaining a static embodied position in the 'real-time' spatio-temporal duration of the gallery. For the 'individual retrospective' section, the third element of Le Roy's choreographic performative-assemblage for *Retrospective* (2012), an individual performer begins by reciting an excerpt from one of Le Roy's influential solo works to the viewing public,

directly engaging the viewer in a spoken discourse as a basis from which to interweave their 'autoethnographic' subjective narrative into the reperformance of the work. This performative approach, which attempts to introduce the 'voice' of individual subjectivity into an existing homogenising system (which in *Retrospective*, 2012, is the relation of the individual to established paradigms in the context of the gallery), therefore holds parallels to the proposition of this research praxis; which attempts to renegotiate the subjective dimensions of bio/digi-mediated experience beyond homogenising biometric systems of 'data-capture'. The 'individual retrospective' performer thus subsumes Le Roy's practice into the autobiographical narrative of their individual lived experiences, often offering anecdotal exchanges to the viewers as a 'way in', to affectively and experientially engage visitors into the performative discourse from their personal self-reflective perspective (for example, Figures 20, 21 & 22).

Figure 18. Xavier Le Roy, *Retrospective* (2012)

Figure 19. Xavier Le Roy, *Retrospective* (2012)

Figure 20. Xavier Le Roy, *Retrospective* (2012)

Figure 21. Xavier Le Roy, *Retrospective* (2012)

Figure 22. Xavier Le Roy, *Retrospective* (2012)

Every time a new viewer or group of visitors enters the *Retrospective* (2012) exhibition space, a predetermined choreographic 'performative system' is triggered and enacted synchronously by the all of the individual performers operating within the gallery space. The performers collectively 'reset' the spatio-temporal conditions of the space to 'receive' each new visitor, pausing their individual embodied actions to simultaneously reperform Le Roy's robotic 'bio/digi-mediated' subject (his choreographic 'motif' from the beginning of *Self Unfinished*, 1998) in-sync, mechanically turning to make eye contact with the incoming visitors in a resoundingly high-pitched chorus; before running out towards the different exit-points of the room in a synchronised performative action, crawling back in on all fours, encircling the new visitors, and individually reciting the title and date of the particular 'solo' works they will be performing (Figures 23, 24, 25 & 26). This systematic, cyclical choreographic process arguably performs a dualistic function, with the performers directly addressing and engaging new visitors to the space through this synchronised performative 'bio/digi-mediated' action (by 'reperforming' Le Roy's digitally-mediated mode of 'mechanical' subjectivity from *Self Unfinished*, 1998); while simultaneously enacting an 'arrhythmic' disruption which affects a discontinuous 'cut' to the subjective biorhythmic spatio-temporal experiences of the existing viewers already occupying the space. In the same way, this research suggests, that bio/digi-mediated devices disrupt the biorhythmic spatio-temporalities of our subjective experiences, in post-digital culture. However, this research considers that similarly to this praxis, in *Retrospective* (2012) Le Roy is attempting to generate a performative 'third' space of synchronicity in which to renegotiate these subjective experiential polarities; using the mediation of his solo works as corporeal materialities to 'affectively spatialise' (Conley 2010: 262) embodied subjects within the gallery (through the inter-relational qualities of rhythm and affect).

Figure 23. Xavier Le Roy, *Retrospective* (2012)
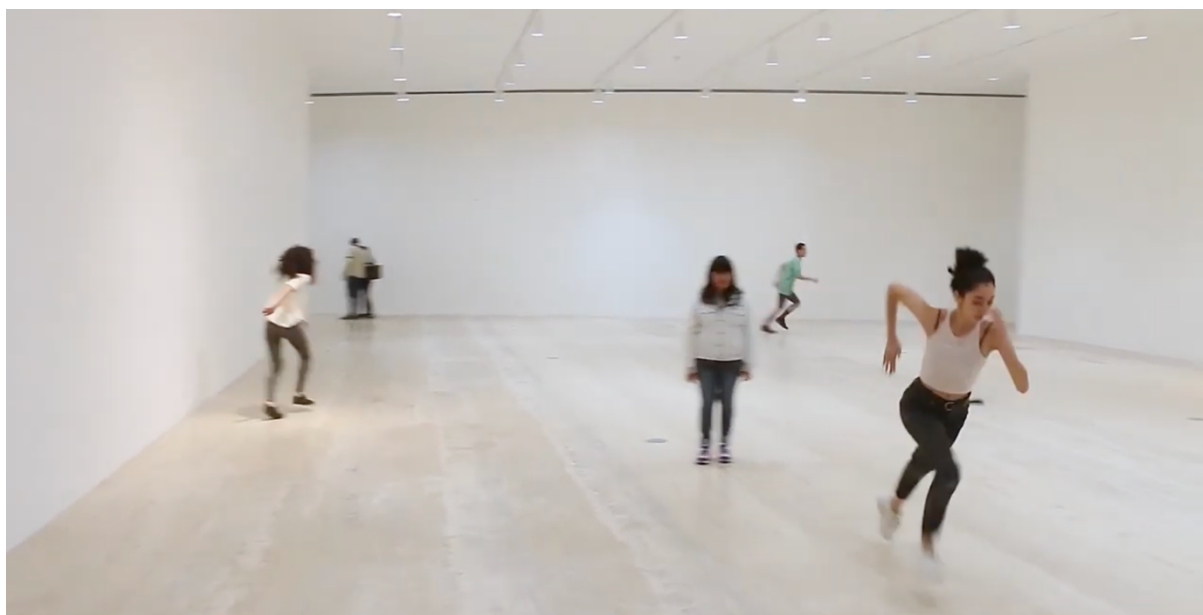
Figure 24. Xavier Le Roy, *Retrospective* (2012)

Figure 25. Xavier Le Roy, *Retrospective* (2012)

Figure 26. Xavier Le Roy, *Retrospective* (2012)

In this praxis, Lefebvre's theory of *Rhythmanalysis* (2004) is applied as a methodology and research paradigm, for reimagining the bio/digi-mediated body beyond current

limiting binary parameters (towards a synthesised understanding of the 'bio/digi-rhythmic' body). 'Rhythmanalysis' was conceptualised by Lefebvre as a sociological method for better understanding how the spatio-temporalities of our lived everyday experiences and interrelations are constructed from the enmeshed tensions and power-dynamics between the cyclical and linear 'production' of social and cultural time and space (for example, how the linear spatio-temporal rhythms of capitalism affect the cyclical rhythms of circadian time). This research suggests that *Retrospective* (2012) is a 'rhythmanalytical' work, which has been conceived from Le Roy's subjective, embodied, empirical perceptions of his lived, experiential 'biorhythmic' temporalities, in relation to the spatio-temporal and socio-cultural contexts surrounding him. For Lefebvre, 'rhythmanalysis' was conceived as an emancipatory strategy, through which a subjective 'analysis of the experience of everyday rhythms' could better elucidate how everyday lived socio-cultural practices 'are constituted rhythmically, in terms of a relationship between repetition and difference' (Alhadeff-Jones 2017). This research considers the phenomenon of digital technology and processes of bio/digi-mediation in contemporary post-digital culture, socio-cultural practices which impact upon the circadian rhythms of our biological bodies (our 'biorhythms'). In *Retrospective* (2012), this research suggests that Le Roy applies his understanding of how lived experiential interactions are rhythmically and affectively constituted (through the co-existing realms of differences and repetitions), to his choreographic process; producing a work which 'envision[s] how individual and collective rhythms may relate with each other' (Alhadeff-Jones 2017), in the context of the gallery space. The performative, collectivised and heterogeneous 'third' space of synchronicity that *Retrospective* (2012) arguably generates within the gallery, renegotiates the embodied subjective roles of both visitors and performers in relation

to an existing cultural institutional space. Through the inter-relational experiential realms of rhythm and affect, different subjectively embodied 'biorhythmic' experiences emerge for both the viewers and performers alike, which arguably synchronise with the cyclical choreographic repetitions in the performative space. For example, the daily routine of 'reperforming' the work for the duration of the exhibition in line with the underlying choreographic framework is interjected with a plurality of differences, as the individual performers interpret, narrate, perceive and reperform Le Roy's 'embodied materialities' as their own, in direct relation to visiting subjects. For Le Roy, the *Retrospective* (2012) exhibition is not 'interactive but it transforms with the visitors' (Le Roy 2012), emancipating the viewers to 'act on' the space equally, affecting how the work is produced and therefore functions in relation to the space at any given time. The plurality of heterogeneous bodies with agency in a collectivised space thus affectively shifts the movements, responses, atmospheres, actions and discourses within the gallery, making the experience of the work different every time; as *Retrospective* (2012) is 'always also transformed by who is there' (Le Roy 2012). For example, through the affective and rhythmic differences generated by the lived embodiment of individual viewing subjects, small family groups, or larger groups of school children, each 'activating' and shaping the performative space in different ways (as exemplified in Figure 27).

> The result of a productive assemblage is a new means of expression, a new territorial/spatial organisation, a new institution, a new behaviour, or a new realisation. The assemblage is destined to produce a new reality, by making numerous, often unexpected, connections.

> (Livesey 2010: 19)

This research suggests that Le Roy's choreographic 'performative assemblage' approach, method and process in *Retrospective* (2012), enacted by a plurality of individual performing subjectivities (and in turn, further 'acted on' by the visiting public), generates a 'productive assemblage' (Livesey 2010: 19), and re-territorialises the spatio-temporal, experiential and inter-relational dimensions of the gallery space through rhythmic affect (exemplified in Figure 28).

Figure 27. Xavier Le Roy, *Retrospective* (2012)

Figure 28. Xavier Le Roy, *Retrospective* (2012)

This research considers that Le Roy's 'performative paradigmatic' approach to his choreographic practice, in relation to the treatment of his 'solo' compositions in *Retrospective* (2012), arguably works towards emancipating him from the conventions of 'authorial ownership' over his works, and other hierarchies embedded in established dance and choreographic paradigms. In this praxis, the 'performative paradigm' is similarly utilised to 'disrupt' existing dualistic systems of thought which polarise bio/digi-mediated, mind/body, qualitative/quantitative dimensions of embodied experience, attempting to perform a 'bio/digi-rhythmic' synthesis through sound 'data-streams', which use the body's affective and rhythmic materialities (such as 'breath') to link the theoretical proposition back to the subjective body of the reader/listener.

This research proffers that in *Retrospective* (2012), Le Roy's body of 'solo' works are mediated as the performative 'embodied materialities' which are reperformed and used subjectively as discursive vehicles by the plurality of individual performers. This research therefore suggests that the performative choreographic process Le Roy enacts in *Retrospective* (2012), mediating his 'solo' works through a method of distribution and interpretation by other performing subjectivities, is referential to digital 'self-tracking' practices of bio/digi-mediation in the post-digital age whereby we knowingly (and unknowingly) distribute our 'identities', to be interpreted as 'data-products' through a multiplicity of different digital devices, channels and platforms. Although *Retrospective* (2012) uses a choreographic framework as a foundation to shape how the exhibition functions within the context of the gallery space, this research suggests that Le Roy's 'performative paradigmatic' method of practice also becomes an emancipatory process for the performers involved; as the works are left open and malleable to their individual, subjective embodied 'shaping'. As such, the work arguably has greater affective and rhythmic potentials to synchronise subjectivities 'biorhythmically' in the performative 'third' space (the lived spatio-temporal experiences within the gallery space), than a conventional choreographic reproduction of performance (a 'reperformance'), in pre-established cultural contexts.

> as a system of command, choreographic scoring reveals the formation of obedient, disciplined and (pre) formatted bodies – technically and subjectively fit to produce and (more importantly perhaps) to reproduce certain staged images conveyed by an authorial will; […] choreography as a technology of scoring does have inevitable political reverberations across contemporary art practices, since choreography, once enacted, displays disciplined bodies operating in a regime of obedience for the sake of bringing an art piece into the world.
>
> (Lepecki 2012: 15)

This research suggests that the homogenising systems embedded in established choreographic paradigms which work towards conditioning bodies (using a 'technology of scoring', Lepecki 2012: 15), that Le Roy attempts to disrupt through his practice, hold parallels with the biopolitical health frameworks which arguably serve to discipline and format bodies using 'technologies of the self'. In this research, such homogenising systems of 'data-capture' which arguably 'score' our embodied experiences into generic biometric 'data-products', through the bio/digi-mediated processes embedded in digital devices, are renegotiated in the performative space of praxis. This contextual case study has suggested that Le Roy's 'performative paradigmatic' approach towards choreography, which can be traced chronologically through his debatably 'autoethnographic' performance practice (for example in the works *Self Unfinished*, 1998, and *Product of Circumstances*, 1999), is his corporeal attempt to establish an emancipatory 'voice' of embodied subjectivity through the performative realm. This research has proffered that Le Roy's distrust of inequitable binarised systems of knowledge-making and technological apparatuses of control (for example, research frameworks which 'split' mind/body, qualitative/quantitative dimensions of embodiment), from his past experiences of biopolitical tensions in the biomedical field, influentially and affectively shaped his formulation of a performance practice which resists disciplinary choreographic conventions, such as 'scoring'. Although Le Roy's performative methodological approach to choreographing his 'solo' works, in *Retrospective* (2012), applies a foundational framework for 'reperforming' the works, his practice arguably avoids applying systems of discipline, obedience, or control towards the performers' bodies; eschewing such problematic authorial

choreographic technologies of 'scoring' and 'staging', in favour of stimulating subjective agency and inter-relationality among the performers. This research therefore suggests that in *Retrospective* (2012) Le Roy is attempting to introduce a hybrid multiplicity of embodied subjective 'voices', affective rhythmic inter-relations, and alternative spatio-temporal differences/repetitions into the existing institutional 'striated' body of the gallery to renegotiate inequitable biopolitical power-dynamics by generating an emancipatory, 'smooth', collectivised, non-hierarchical performance space. This research therefore considers that while the work renegotiates the existing spatio-temporalities of experiencing 'live' durational performance work in relation to the established cultural-institutional constructs of the gallery space (in order to destabilise and deconstruct such existing constructs), *Retrospective* (2012) is not performed as an 'art object' in a conventional sense, but alternatively proffers new, affective, lived embodied experiences for both the viewers and performers involved, working towards a 'bio/digi-rhythmic' synchronicity.

In this research praxis biometric 'self-tracking' paradigms for quantifying the body through the digital device could be considered methods and technologies of 'scoring' our embodied experiences, as we increasingly discipline and 'format' our bodies in relation to biopolitical health parameters, using self-tracking practices to produce data-versions of ourselves, which are perhaps misleadingly 'conveyed by [our] authorial will' (Lepecki 2012: 15). This research uses the space of praxis to renegotiate a performative 'third' space of bio/digi-rhythmic synthesis, using sound 'data-streams' to potentially emancipate and better articulate the subjective 'voice' of bio/digi-mediated embodied experiences. In turn, the sound 'data-streams' attempt to generate a new

affectively embodied experience for the listener/reader through the performative space of praxis, interpreted through their subjective relation to lived embodied bio/digi-mediated practices.

In the following contextual case study, this research will explore The Coastal Housing Group's renegotiation of its existing organisational office-space, suggesting that the social housing association's integration of processes of 'digital-mobility' into the workplace generates a synthesised 'bio/digi-rhythmic' organisational culture, which arguably liberates workers with the 'nomadic' agency to establish alternative embodied mobilities and spatio-temporalities within the routine context of the everyday workplace.

The Coastal Housing Group: Cultivating a 'Bio/Digi-Rhythmic' Organisational Culture

This contextual case study will explore the Coastal Housing Group's modifications of their internal office headquarters, at 220 High Street Swansea, into a digitised, heterogeneous 'mobile-working' space (see Appendix, Figure v.). It will be contended that the Coastal Housing association's implementation of bio/digi-mediation into their organisational work culture synchronously cultivates subjective autonomy through the pragmatics of digital-mobility, at the same time as it generates a conceptually collectivised 'bio/digi-rhythmic' space; which embodies the socialist ethos of the company. As a not-for-profit social housing association, the Coastal Housing Group endeavours to empower its tenants to develop the interpersonal skills needed to cultivate independence and self-sufficiency in everyday life. This includes adapting to a changing digital culture, which this research observes the Coastal Housing Group are ensuring through their integration of digital communications, extending digital-mobility to residents through dedicated 'Digital Inclusion' projects delivered by designated members of staff (Coastal Housing Group 2017). This research praxis will apply Lefebvre's theory of 'rhythmanalysis' as a methodological approach to suggest that the Coastal Housing Group's assimilation of digital-mobility (into the subjective working practices, inter-relational communications, and everyday functionality of the social housing association), arguably destabilises the 'material architectures, habitual behaviours, and organizational technologies' (McCormack 2013: 2) of traditional 'top-down' hierarchical organisational structures. This case study adopts a qualitative methodological approach, which includes subjective

autoethnographic explorations of the Coastal Housing Group's headquarters at 220 High Street, by the researcher; in addition to discussions conducted within the Coastal Housing Group's workspace on 11th July 2019, with two of the primary staff members directly involved in both the interior spatial transformation and the larger digitisation process.

'Digital Nomadicism': Re-Thinking Organisational Space

> Smooth space, as the space of nomadicism, displays opposite tendencies to those of striated space. However [for Deleuze & Guattari in *A Thousand Plateaus*, 1987], space is always a mixture of the smooth and striated, and a given space (or territory) can reverse its dominant tendencies or qualities.

(Livesey 2010: 263)

In conversation with Coastal Housing staff members at the 220 High Street Swansea office headquarters, on 11th July 2019, it became apparent that the Coastal Housing Group's relocation from its previous site (on Wind Street, Swansea), incentivised the drive towards re-thinking spatial and digital integration within the organisation. Detailing how the previous office site was spatially segregated, with different teams distributed over separate floors of the building, staff recounted how this binarised spatial arrangement became increasingly disruptive to organisational efficiency, making communications problematic and generating disparities among workers. The move to the 220 High Street location initiated new potentialities for merging organisational operations in more fluid, flexible, heterogeneous ways,

towards mobile-working and the effective implementation of a 'cloud-based' digital infrastructure. For example, synchronising secure cloud-technology into the social housing association's everyday operational processes has enabled confidential data and information to be stored and accessed on an internal cloud-system via an internet connection, physically liberating workers from the imposition of deskbound duties (an immobilising technique inherent in conventional organisational structures, which store data on individually located computer hard-drives). Coastal Housing Group staff members are issued with mobile digital-devices, ensuring that necessary information is instantly accessible when working on location with residents, externally to the office headquarters site. These synchronisations of digital-mobility into the organisational culture have, in turn, enabled 'hot-desk' areas to be introduced into the spatial configuration of the internal office space, with a 'clear desk' policy meaning that desk spaces remain unclaimed, unrestricted and useable for all. Mobile headsets are also provided within the internal office space, empowering members of staff who are engaged in confidential calls with tenants, with the unrestricted embodied mobility to seek extended levels of privacy; in one of the private sound-proofed booths or 'phone-booth' style cubicles which have been incorporated around the perimeter of the decentralised, collectivised co-working space.

This research suggests that the flexibility extended to people by the potentials of digital-mobility in post-digital culture (enacted through processes of bio/digi-mediation), has enabled the assimilation of 'nomadic' style working methods and practices, into established organisational cultures, as exemplified through the Coastal Housing Group's digital transfigurations. This praxis proffers that the digital-mobility

facilitated by cloud-based technologies, in the example of Coastal Housing Group, has invested staff members with the nomadic agency to integrate and affect a 'Smooth space, as the space of nomadicism' (Livesey 2010: 263) into the conventional 'striated' space of structural office life. In the context of the Coastal Housing Group, the synchronisation of this digital 'smooth space' into the existing organisational culture, has arguably facilitated a renegotiation of the 'dominant tendencies' (Livesey 2010: 263) towards striated space; exemplified in the Coastal Housing Group's previous spatially-segregated office configuration and evidenced by the staff members' comments. For Deleuze and Guattari in *A Thousand Plateaus* (1987), nomadic space can be considered 'smooth' as it is space which does not have 'intrinsic properties that then determine relations […], but as a space with extrinsic properties; the space is produced from the movements that then give that space its peculiar quality' (Colebrook 2010: 187). Nomadic space is 'produced through its distribution' (Colebrook 2010: 187), whereas space which is already determined and delineated, as in the striated qualities of conventional office-settings, could be considered 'sedentary space; the space remains what it is and is then divided and distributed' (Colebrook 2010: 187). However, Deleuze and Guattari avoid setting up the 'smooth' and 'striated' qualities of space as oppositional, understanding that 'space is always a mixture of the smooth and striated, and a given space (or territory) can reverse its dominant tendencies or qualities' (Livesey 2010: 263). This research suggests that the digital-mobility enabled by cloud-technology has been utilised by the Coastal Housing Group to decentralise and de-territorialise the routine striations of organisational life within their working office space, emancipating staff members from a fixed work-station and therefore enabling expanded embodied 'bio/digi-rhythmic' experiences of spatio-temporality and mobility, within the context of the working day, to emerge. In the previous

Methodologies Chapter 2, this research proffered the application of Lefebvre's theory of 'rhythmanalysis' as a methodological framework through which to make perceptible and re-negotiate the spatial, temporal and rhythmic affects of bio/digital-mediation on subjective embodied experience, in post-digital culture. Extending Lefebvre's concept of an 'arrhythmic disruption', for its potentials to open up a critical space for rhythmic intervention ('to strengthen or re-establish eurhythmia', Lefebvre 2004: 68), this research suggests that the bio-rhythmic disruptions felt subjectively by staff members as an affect of the former spatially-binarised organisational structure, opened a space for the 'striated' office configuration to be de-territorialised, through 'bio/digi-rhythmic' intervention.

> In Deleuze's lexicon that pertains to space and place, deterritorialisation and reterritorialization are at the basis of most biological and philosophical activity. In this respect the nomad is the person or thinker who constantly creates space by moving from place to place.

> (Conley 2010: 262)

This research suggests that the Coastal Housing Group's integration and synchronicity of bio/digital modalities has given way to new, emerging formations of inter-relational subjectivities, spatio-temporalities and mobilities within the workplace, cultivating a 'bio/digi-rhythmic' synthesis from prior existing organisational polarities. Integrating digital-mobility into a collectivised, co-working space arguably re-imagines the workplace as a self-regulating space, comprised of individual 'nomadic' workers who co-produce the meaning of the space through their distributed mobilities, spatio-temporalities, rhythms and movements. This cultivation of a bio/digi-rhythmic

organisational culture, as a collectivised assemblage space in which a multiplicity of digitally-nomadic workers operate, arguably functions as a digital-social intervention; extending and embodying the larger socialist ethos of the housing association. For example, by freeing staff members from spatio-temporal constraints, using bio/digital mobilisation, in order to better facilitate inter-relational exchanges with tenants. Concurrently, this collectivised digitally-mobile and socially 'nomadic' space arguably destabilises popular cultural discourses and perceptions of the 'digital nomad', as an autonomous, entrepreneurial-self, who has been liberated from the fixed, sedentary spatio-temporal structures of routine organisational work-life. In such discourses, the concept of the 'digital nomad' is portrayed as a seemingly oppositional subjective resistance, through boundless embodied mobility, to the institutional 'structures of modern power' (Sharma 2014: 106) that global-capitalism endorses. However, this research suggests that such polarised perceptions only serve to uphold the very systemic structures they profess to resist. For Sharma, 'It is important to consider how the cultivation of temporal dispositions is a form of biopolitical investment by the structures of modern power' (Sharma 2014: 106); her concern with organisational interventions which homogenise the spatio-temporalities of subjective workers' bodies, in order to capitalise on workplace productivity for economic ends. Critiquing the concept of 'Work-life balance [as] an idea about the time of work and the time of life that sees no alternative temporal order beyond the corporate control of bodies' (Sharma 2014: 106), for Sharma 'work-life balance' is an already delimited construct, 'a time claim that further institutionalises the space and time of work as being fundamental to a person's identity' (Sharma 2014: 106). Such contemporary biopolitical techniques of spatio-temporalisation, aimed at 'Recalibrating the sedentary worker' (Sharma 2014: 81), are further exemplified for Sharma through workplace

well-being initiatives such as 'Yoga in the office' (Sharma 2014: 92). Sharma aligns the role of the 'mobile yoga instructor' with popularised notions of the 'digital-nomad', a subject whose internal/external relation to organisational space is 'independently invested in corporate life' (Sharma 2014: 90). Referencing Deleuze's essay *Postscript on the Societies of Control* (1992) such subjective positions, for Sharma, are subsequently 'emblematic of Gilles Deleuze's theorizing of the diffusion of control and discipline away from centralized or hierarchical organisations of power' (Sharma 2014: 90). For Sharma, these seemingly mobile, liberated subjectivities are systematically dependent on the striated structures of conventional organisational life, against which they merely 'appear' to perform an oppositional embodied resistance through alternative mobilities and spatio-temporalities. However, the dualistic language of institutional sedentary culture, in particular that of the 'disembodied' sedentary worker territorialised to the desk under the panoptical surveillance of the organisation, 'is central to their practice' (Sharma 2014: 91).

This research suggests that these dichotomous tensions between concepts of the 'sedentary' worker and the 'mobile' worker, further polarise embodied mobilities and spatio-temporalities, in relation to ideas of contemporary working practices in post-digital societies. Such biopolitical discourses arguably exemplify the 'capillary' modes of biopower that Foucault theorised through 'technologies of the self'; an inversion of the panoptical archetype of hierarchical institutional forms of power, whereby control and regulation are exerted subjectively through productive modes of stimulation (as outlined to contextualise this research praxis, in the *Contextual Literature Review* Chapter 1). For Rose, contemporary biopolitical techniques of 'self-regulation' produce

fixed and constraining spatio-temporal conditions around work, in which 'the individual is not to be emancipated from work, perceived as merely a task or a means to an end, but to be fulfilled *in* work, now construed as an activity through which we produce, discover, and experience ourselves' (Rose 1999: 103). The mobile yoga instructor and other flexible, external working entities re-enter 'the field of corporate relations as experts and authorities on self-responsibility and work to instruct subjects to choose wisely, sit properly, and assemble their daily choices accordingly in order to better endure the sedentary life' (Sharma 2014: 91). However, as Sharma contests, these seemingly emancipated mobile individuals have 'hardly taken leave' of the homogenising distributed 'networks of power' (Sharma 2014: 91) that biopolitics and global-capitalism propagate, instead having simply 'changed positions within the same structures of corporate capital' (Sharma 2014: 91). In the example of the 'digital nomad', whose mobile self-entrepreneurialism is wholly facilitated by, and thus entangled in, decentralised free-market capitalism, this 'flexible' mode of working which exists externally to the spatio-temporalities of conventional organisational structures, is subsequently precarious, untenable and often only evident in low-paid work. For Deleuze, like Foucault, the distributed and decentralised networks of power in control societies have engendered a 'progressive and dispersed installation of a new system of domination' (Deleuze 1992: 7) administered through biopolitical modalities. Deleuze critiques such mechanisms through which 'control societies dismantle the individual' (Marks 2010: 56), dividing the individual into the 'dividual', a numerical 'segment of coded matter to be controlled' (Marks 2010: 56), whilst reconfiguring the mass 'in terms of data, samples and markets' (Marks 2010: 56). For Deleuze, such biopolitical methods reduce the individual 'into an object that has no resistance' (Marks 2010: 56) to withstand the 'ultrarapid forms of free-floating control'

(Deleuze 1992: 4) that have replaced the 'closed' spatio-temporal systems of centralised institutional power.

This research suggests that the Coastal Housing Group, as a not-for-profit social housing association, has attempted to cultivate a bio/digi-rhythmic organisational culture which converges bio/digital polarities towards a synthesised 'digital-social' working environment. While biopolitical 'self-regulating' practices arguably stimulate oppressive subjective affects through behavioural modifications (exemplified in both Foucault and Deleuze's critiques on contemporary distributed modes of power), this research suggests that the collectivised 'self-regulating' bio/digi-rhythmic assemblage-space at the Coastal Housing Group's headquarters, enables a fluid multiplicity of digitally-mobile subjects to become 'affectively spatialised' (Conley 2010: 262) within this non-hierarchical, 'smooth' and 'nomadic' space. As a result, this research contends that the integrated synchronicity of digital-mobility into everyday working practices at Coastal Housing Group, has facilitated staff members with the unrestricted embodied, spatio-temporal mobility to exercise their own agency within the workplace. Furthermore, engendering a shared subjective 'bio/digi-rhythmic' synthesis as an alternative to the homogenising techniques of panoptical control; towards emancipatory, ethical and socialist ends (in line with the larger objectives of the social housing association).

A Bio/Digi-Rhythmic Assemblage Space

> Assemblages, as conceived of by Deleuze and Guattari, are complex constellations of objects, bodies, expressions, qualities, and territories that come together for varying periods of time to ideally create new ways of functioning.
>
> (Livesey 2010: 18)

In the 'bio/digi-rhythmic' organisational re-configuration, that this research suggests the Coastal Housing Group have synthesised into their everyday working culture, the fluidity of spatio-temporal mobilities enabled by bio/digi-mediation has arguably facilitated the formation of a heterogeneous 'assemblage-space'. A space which re-negotiates bio/digital affect through the inter-relational embodied subjectivities of its staff members and tenants. Inside the decentralised assemblage-space at Coastal Housing Group's headquarters, the conventional spatial striations of office life are largely dissolved into a non-hierarchical smooth plane, facilitated by a synchronised infrastructure of bio/digital mobility and a deconstructed power structure which ensures that all staff members, regardless of role or position, embody the same fluid 'bio/digi-rhythmic' space (for example, the dynamically communal open-kitchen area, which functions as a nucleus of inter-relational communications and activity, encouraging a flow of movements around the space). This spatial, organisational re-configuration of 'openness' nurtures a culture of trust among staff members, which is further cultivated through unfixed working hours and values of 'self-organisation'; embedded in the ethos of the social housing association. These extended autonomies have furthermore empowered staff members with the embodied mobility and spatio-

temporal fluidity to self-organise collective wellbeing groups, such as yoga and meditation; collectivised embodied experiences which arguably subvert the biopolitical power-dynamics of repressive workplace wellbeing initiatives, as critiqued by Sharma. For Deleuze, 'space is rich in potentiality because it makes possible the realisation of events' (Conley 2010: 261), and as such, this case study suggests that the assimilation of a bio/digi-rhythmic synthesis into the organisational culture at Coastal Housing Group has 'affectively spatialised' (Conley 2010: 262) the embodied subjectivities of staff members and tenants, through bio/digital affect.

In the *Contextual Literature Review* Chapter 1, this research proffered that the increasing incorporation of biometric digital self-tracking technologies into everyday life, facilitates the re-calibration and re-territorialisation of the spatio-temporalities and mobilities of our subjective bodies; in line with the homogenising values of biopolitical goals, in global-capitalist societies. In contrast to such biopolitical techniques (which arguably 'striate' and polarise the biorhythms of our biological bodies into quantifiable biometric 'data-products'), this case study suggests that the integration of digital-mobile devices into the Coastal Housing Group's organisational culture, has cultivated a collectivised space of bio/digi-rhythmic synthesis; as an affect of the previous spatial and bio/digital-polarities within the company. The bio/digi-rhythmic 'flows' of a multiplicity of self-regulating individuals, within the collectivised bio/digi-mediated working environment, arguably co-produce a non-hierarchical assemblage space ('Through its multiplicity an assemblage is shaped by and acts on a wide range of flows', Livesey 2010: 18); synchronising 'smooth', haptic and 'nomadic' bio/digital experiences, spatio-temporalities and mobilities into the previously 'striated' structures

of organisational life. This research therefore considers that the cultivation of a 'bio/digi-rhythmic' organisational culture, within the Coastal Housing Group, facilitates expanded embodied experiences for staff members and tenants alike (the latter of whom are inclusively welcomed within the interior workspace at 220 High Street). Dissipating the conventional meanings of the office space as striated, private, homogeneous and fixed, the 'bio/digi-rhythmic' organisational culture fostered within the Coastal Housing Group association has arguably enabled the heterogeneous potentialities of bio/digital-mobility to emerge in a collectivised 'shared-space'. In the next contextual case study, which explores the artist Hito Steyerl's bio/digi-mediated interactive augmented-reality installation, *Actual Reality*[OS] (2019), parallel perceptions towards emancipatory 'digital-social' ends will be considered.

Hito Steyerl's *Actual Reality*^{OS} (2019), Serpentine Gallery London

This concluding contextual case study will explore the artist and cultural theorist Hito Steyerl's *Actual Reality*^{OS} (11 April 2019- 31 January 2020), an interactive and experiential augmented-reality work located on the external grounds of the Serpentine Sackler Gallery, in Hyde Park London. *Actual Reality*^{OS} is a work which extends beyond the duration of Steyerl's exhibition *Power Plants* (11 April 2019- 6 May 2019) inside the internal gallery space, formulating part of the collective body of work (which further includes the *Power Walks* project), and an independent installation. In this contextual case study *Actual Reality*^{OS} (2019) will be considered for its symbiotic application of a performative, interactive modality of bio/digi-mediation to affectively engage viewers/participants, whilst acknowledging the role of the work as part of the exhibition assemblage.

For *Actual Reality*^{OS} (2019), Steyerl collaborated with 'AR' ('augmented-reality') designers and developers, together with local research partners, to create an experiential data-visualisation app., from data and testimonies gathered in relation to pressing socio-political inequalities within the geographic locale. For Steyerl, the Serpentine Gallery's spatial and cultural location in Hyde Park (thus situated within London's Royal Borough of Kensington and Chelsea), distinctly shaped the socio-political context for the exhibition, 'to do a show that both reacts to the park itself, but also to its geographical location in one of the most unequal boroughs in Europe' (Steyerl 2019). In collaboration with local research bodies including *Architects for*

Social Housing, *The Voice of Domestic Workers*, *Disabled People Against Cuts*, *Unite the Union Hotel Workers' Branch*, and *Reclaiming Our Futures Alliance*, the *Actual Reality^OS* app. aggregates both macro-statistics and micro-datasets with subjective testimonies (the 'voice of individuals'), to formulate 'a nuanced, human-centred approach to data and the way that it is collected and used' (Steyerl 2019: 45). This research thus suggests that *Actual Reality^OS* (2019) is a bio/digi-rhythmic work which utilises the performativity of bio/digital-mediation (using the digital screen and app-interface), to renegotiate a subjective, embodied space of synthesis in relation to the virtual/actual dimensions of biopolitical experience. For Steyerl, making perceptible the relationship between technology and power is critical to her work; in an increasingly digitally-mediated world, in which perceptions of data as a 'neutral means of assessment' (Steyerl 2019: 45) often serve, as this research also attests, to conceal the larger biopolitical agendas and 'inherent biases of societal power structures' (Steyerl 2019: 45) at play. In *Actual Reality^OS*, abstract statistical data is made visible and re-perceptualised for viewer/participants in real-time, through a sensory assemblage of data aggregates; mapped, sonified and visualised as a 'composite of virtual imagery against their physical environment' (Steyerl 2019: 45) and mediated through the digital screen app-interface.

> The so-called 'Actual Reality' app. is an augmented reality app. which enables you [the viewer] to see 'actual reality', as we call it. It gives you a view of the Serpentine Gallery's building, distorted in relation to local inequality data. For example, data relating to wealth inequality, to housing and other social issues are being mapped onto the gallery in real-time, to give you an impression, a visualisation of what the social reality in this area really looks like.
>
> (Steyerl 2019)

The *Actual Reality*^{OS} bio/digi-mediated experience is activated by downloading and opening the app., on a mobile digital-device, and locating and scanning one of three QR-style coded concrete 'sigils', sited around the external perimeter of the Serpentine Sackler Gallery.

Figure 29. Hito Steyerl, *Actual Reality*^{OS} (2019), QR-style coded 'sigil'

The design of the QR-style 'sigil' codes draws direct influence from the emblematic form and supposed performative function of 'magic sigils', as symbolic graphic representations of a future desired outcome. For Steyerl, the symbolism of the sigils, as secret coded encryptions, perform as a 'means of summoning a preferred future' (Steyerl 2019: 48), unlocking and exposing the 'actual reality' of unseen biopolitical power structures, through the augmented-reality 'portal' of the viewers digital device.

Figure 30. Hito Steyerl, *Actual Reality*[OS] (2019), QR-style coded 'sigil'

Steyerl invests the viewer with the subjective powers of embodied perception, empowering the viewer with the participatory potential to 'activate' the work, decoding and exposing the 'actual reality' of structural inequalities through performative, bio/digi-mediated interaction with the *Actual Reality*[OS] interface. On scanning the concrete sigil, the viewers 'real-time' embodied experience of exploring the external surroundings of the Serpentine Sackler Gallery is immediately augmented through the digital interface. The view of *Actual Reality*[OS] through the digital screen, is one which mutates the gallery's external architecture and its surrounding space into a hybrid assemblage of data-visualisation, through data-mapping and sonification processes.

> The architecture of the Serpentine Sackler Gallery becomes the base metric onto which the data is mapped to the external façade of the building by overlaying, in augmented reality, a warped virtual simulacra that charts the stark reality of inequality at 1:1 scale.
>
> (Steyerl 2019: 45)

The external façade of the gallery morphs into a simulated, statistical three-dimensional graph, structurally displaying the peaks and troughs of inequality data, as the skeleton outlines of 'virtual sigils float in space and allow access to the data used to sculpt the architecture of the gallery' (Steyerl 2019: 48). The perimeter of the building is surrounded by digital, typographic personal testimonies, verbal statements embodying the lived experiences of the abstract data-subjects, given subjective voice and suspended in the air like speech.

Figure 31. Hito Steyerl, *Actual Reality^{OS}* (2019), Screenshot

The bio/digi-mediated 'data-reality' perceptualised through the *Actual Reality*[OS] app., makes visible the often imperceptible inequities of economic, social, working and housing conditions that large demographics of the population endure; as an effect of global-capitalist, biopolitical, temporal and spatial injustices of the overworked and the underpaid. This research suggests that Steyerl's achievement with *Actual Reality*[OS] is that it renders abstract data-information affective through a subjectively embodied 'bio/digi-rhythmic' experience for the viewer/participant, by utilising a performative, interactive method of bio/digi-mediation. In addition to re-corporealising quantitative data-statistics, by translating them into more perceptible qualitative realms, *Actual Reality*[OS] becomes an experientially affective 'reality' for the viewer/participant in real-time, synchronising the embodied experience through bio/digi-mediation. In parallel to the proposition of this research praxis (to navigate a critical space of synthesis for integrating bio/digital polarities), *Actual Reality*[OS] utilises the performative, interactive potentials of bio/digi-mediation (enacted through the digital device), as a method to re-negotiate abstract, statistical, quantitative inequality data; beyond fixed representations, into the dynamically experiential, subjective realm. By integrating the data in a symbiotic bio/digi-mediated relationship with the experiential, sensory and phenomenological dimensions of embodied perception, this research suggests that the work thus generates a 'third space' of subjective 'bio/digi-rhythmic' negotiation. *Actual Reality*[OS] arguably merges the seemingly disparate 'realities' of both viewer/participant subjects, and the data-subjects presented in the work, into a heterogeneous 'bio/digi-rhythmic' space of synthesis. Participants are invited to navigate a 'virtual/actual' mediatory space in which the spatio-temporalities and power dynamics that homogenise and disproportionately constrain subjective experience, under global-capitalist agendas, are made perceptible. In another emancipatory

subversion to established biopolitical data-collection practices, while the *Actual Reality*[OS] app. requires the use of the device's camera and location to activate the full augmented-reality experience, it does not collect or store the user's data after use.

> The emancipatory aim of rhythmanalysis came therefore from the possibility to interpret how space and time are socially produced; it had to unveil how they become a source of alienation.
>
> (Alhadeff-Jones 2017)

In this research praxis, Lefebvre's theory of 'rhythmanalysis' is proposed as a methodology which operates within the performative research paradigm (as a 'third-space' of mediation), to concurrently reveal how bio/digital-polarities have emerged in order to reconceptualise a synthesis of such divergences; through the performative, embodied and rhythmic realms. This research suggests that Steyerl's *Actual Reality*[OS] (2019) could be considered a 'rhythmanalytical' project (which works towards a bio/digi-rhythmic synthesis), as the work concurrently unveils and re-perceptualises the power structures through which inequitable spatial and temporal biopolitics are produced (in specificity to the geographical location of the Serpentine Gallery in Hyde Park, London). For example, in the narrative testimony of the hotel workers visualised in Figure. 3, 'SOME OF US RAN AWAY' (Steyerl 2019), the detrimental affects of structural workplace imbalances, on the embodied capacities of the subjects involved, are rendered both explicit and performative. By re-corporealising the physically embodied affects of poor working conditions, through a process of bio/digi-mediation which visualises these 'speech-acts' as large-scale, typographic testimonies, this

research suggests that Steyerl merges the lived experiences of the 'data-subjects' into a performative, intimate and proximal interplay with the embodied experience of viewer/participants.

> Until you know that '53,000 HOUSEHOLDS WITH 78,000 CHILDREN ARE HOMELESS AND LIVING IN TEMPORARY ACCOMMODATION' in London alone, the subsequent steps of outrage, action and resolution will remain decidedly out of grasp.

> (Watkins 2019)

In the *Methodologies* Chapter 2, this research introduced the concept of the 'bio/digi-rhythmic' as a theoretical approach, through praxis, to reimagine expanded potentials for our bio/digi-mediated dimensions of lived embodied experiences, in an increasingly digitally mediated culture. This research has proposed 'bio/digi-rhythmic' embodied interventions (detailed in the *Performative Praxis* case studies in Chapter 4), as a process through which to begin synthesising the polarities of bio/digital experience, in post-digital culture (critiquing established biometric practices of mediation, for their reductionist representations of subjective experience as abstract, quantitative 'data-products'). The 'bio/digi-rhythmic' intervention that *Actual Reality^OS* (2019) arguably performs is a similar subversion to the biopolitical, paradigmatic drive towards an abstract, informational 'coded body' (Aas 2006: 153); a body which 'speaks' for itself through data-sets, and 'translates life into information patterns, disembedded and lifted out into new levels of abstraction' (Aas 2006: 154). In *Actual Reality^OS*, informational, coded 'data-bodies' are subjectively re-materialised into speaking subjects, through testimony.

the move to make information available- particularly across demographic boundaries, and in the context of visual art which is fashionably more concerned with ideas than lived reality- seems a deceptively radical first step.

(Watkins 2019)

The 'performative research paradigm' (Haseman 2006: 98) which was proposed to contextualise this praxis in the *Methodologies* Chapter 2, is proffered as an approach to synchronise the dominant, polarised discourses of quantitative/qualitative methods of data-collection (a 'third space' of synthesis). This research suggests that Steyerl's *Actual Reality*^{OS} (2019) utilises a performative process of bio/digi-mediation which engages subjectivity and affect to 'reengage the promise of qualitative research as a form of radical democratic practice' (Denzin and Lincoln 2008: viii), towards a synthesis of quantitative/qualitative realms in the 'virtual/actual' bio/digi-rhythmic space. In a post-digital age of information-overload, to re-perceptualise data-visualisation as an embodied, sensory experience, which engages viewer/participants 'lived reality' by synchronising a subjective encounter with a heterogeneous assemblage of biopolitical data (using the interactivity of the digital device), arguably renders the data much more difficult to disregard. Data becomes embodied, through alternative physiological and phenomenological fields of perception, extending beyond the conventions of the visual and the intellectual, as privileged forms of 'knowing'. Engaging viewers/participants in a performative, embodied bio/digi-mediated experience, the process used by Steyerl in *Actual Reality*^{OS} (2019), seemingly embodies the 'generative potential of artistic research' (Bolt 2016); symbiotically

merging the realms of quantitative abstract data-collection, with the emancipatory

potentials of a qualitative arts practice in the bio/digi-rhythmic space of synthesis.

Figure 32. Hito Steyerl, *Actual Reality^OS* (2019), Screenshot

While *Actual Reality^OS* generates a discursive bio/digi-mediatory space which merges the data-languages of both the quantitative and qualitative dimensions of inequitable subjective experiences, in contrast to the performative praxis developed by this research (which will be detailed in depth through the case studies, in the *Performative Praxis* Chapter 4) it arguably does so by maintaining a separation of these bio/digital polarities, within the 'virtual/actual' space. For *Actual Reality^OS*, this research suggests that Steyerl has adopted a methodological approach that incorporates the language of duality; making visible the binary between data statistics and data-subjectivities (for example, by including subjective narrative testimony), in order to deconstruct it. The 'virtual simulacra' (Steyerl 2019: 45) of data-representation mapped over the 'base metric' (Steyerl 2019: 45) external façade of the Serpentine Sackler Gallery, renders the structural architecture of the gallery a virtual 'data-body'; a centralised data-object, quantified, located and fixed within 'Striated space […] where lines and points designate itineraries and trajectories' (Conley 2010: 262). In contrast, the perimeter of the gallery arguably becomes the qualitative, discursive 'smooth' space of subjective experiential encounter, a de-territorialised space activated by the virtual testimonies and embodied movements of viewers/participants, against the backdrop of the structural institutional 'data-body'. Individuals moving around the grounds of the gallery, a 'Smooth space […] perceived in and through striated space' (Conley 2010: 262), in turn become 'affectively spatialised' (Conley 2010: 262) through this bio/digi-rhythmic experience.

> Space is a discursive practice of a place. A place is a given area, named and mapped, that can be measured in terms of surface or volume. It becomes space only when it becomes a site of existential engagement among living agents who mark it with their activities or affiliate with dialogue and active perception.

> (Conley 2010: 261)

This research suggests that for Steyerl, the language of duality embedded in *Actual Reality*[OS], which oscillates between the virtual/actual dimensions of bio/digi-mediated 'smooth' and 'striated' space, is integral to the affective potentials of the work. *Actual Reality*[OS] represents data, making it perceptible through a combination of digitally-mediated visualisation and sonification processes, in order to visibly expose the inequitable socio-cultural, socio-economic and biopolitical power structures which polarise divergent bodies in societies. In turn, *Actual Reality*[OS] generates a subjectively embodied, bio/digi-rhythmic experience for viewers/participants in the 'virtual/actual' space of mediation. Although the installation of *Actual Reality*[OS] is located around the external perimeter of the Serpentine Sackler Gallery (operating exteriorly to Steyerl's *Power Plants* exhibition within, both in terms of its spatiality, and its temporality which extends beyond the duration of the exhibition), the work also indisputably functions within the construct of the gallery context, engaging viewer/participants in accordance with the established parameters and conventions for participatory contemporary arts practice, embedded in that system.

In this research praxis it is the body which has arguably been rendered 'the base metric onto which [biometric] data is mapped' (Steyerl 2019: 45) through digitally-mediated 'self-tracking' practices which quantify embodied activities into a virtual data-

simulacrum. However, instead of adopting the language of duality that Steyerl uses in *Actual Reality*[OS] (making-visible the quantitative biometric 'data-simulacra' of the digitally-mediated body through methods of data-representation), this research praxis attempts to create a space of synthesis for bio/digi-polarities to merge; disrupting the language of binarism. In this research the 'data-body' is re-negotiated subjectively, using performative methods which attempt to embody biometric data through the experiential, phenomenological, rhythmic and sonic realms. This praxis attempts to generate a discursive space of 'bio/digi-rhythmic' synthesis, through the potentially emancipatory 'digital-social' field of lived experiences (in the context of everyday life); re-negotiating the 'data-products' of the biometric data-body, through the empirical, sensory materialities of rhythm and sound 'data-streams'. The conceptual scope of 'rhythmanalysis' is reimagined as a methodology and performative research paradigm; a new, affective way of experiencing embodied 'data-streams', which works towards synthesising our 'bio/digi-rhythms'. This proposition will be further explored through the methodological application of Lefebvre's theory of 'rhythmanalysis' to the *Performative Praxis* case studies in the forthcoming Chapter 4.

Chapter Summary

The contextual case studies critiqued within this chapter have attempted to establish a synthesised discourse in relation to this research, through which to navigate a 'performative research paradigm' (Haseman 2006: 98) for rethinking a bio/digi-rhythmic synthesis through praxis. This research has suggested that the

practices, methods and processes presented within these case studies have each responded to contemporary 'digital-social' or 'digital-cultural' problems, which are arising from the increasing pervasiveness of bio/digi-mediation into the fabric of our everyday, lived socio-cultural experiences. The biopolitical implications entangled in contemporary processes of bio/digi-mediation (such as the 'self-tracking' practices of biometric 'data-capture' critiqued within this praxis), are emergent and therefore it is important to locate this research within a critical contextual discourse, with other relational practices. This chapter has attempted to synthesise a paradigmatic response from existing knowledge, perspectives and practices, which are currently navigating the diverse affects of processes of bio/digi-mediation on our subjective, lived embodied experiences, in a contemporary post-digital culture (a performative research paradigm through 'praxis', which will be elaborated on in the next chapter). This research has proposed that the parallels of the seemingly divergent practices considered within this chapter can be perceived through their shared pragmatic attempts towards renegotiating spaces in which the subjective, embodied, emancipatory potentials of 'bio/digi-mediated' experience can emerge. As such, this research has suggested that the practices critiqued within this chapter have each generated performative, heterogeneous and collectivised 'third' spaces which work towards a 'bio/digi-rhythmic' synthesis; utilising the affective and rhythmic registers of 'bio/digi-mediated' experience to renegotiate inequitable bio/digi-polarities and facilitate subjective agency (in specific relation to cultural and organisational lived experiences).

In the contextual critiques of the artists Xavier Le Roy and Hito Steyerl's performative art-practices, the experiential conventions, power-dynamics and spatio-temporalities of the 'art encounter' in relation to the cultural-institutional context of the gallery (the 'digital-cultural' experience) have been renegotiated through the emancipatory realms of embodied subjectivity, rhythm and affect; with 'viewers' becoming active participants in the works, empowered with embodied agency through the 'bio/digi-rhythmic' performative space of synthesis. Conversely, in the case study on the Coastal Housing Group's integration of bio/digi-mediated processes of 'digital-mobility' into the existing 'striated' organisational culture, the 'digital-social' realm of lived embodied everyday working-practices within a social housing organisation was reimagined, beyond existing bio/digi-polarities. This research has suggested that, in a similar manner to Le Roy and Steyerl's democratisation of the subjective experience in relation to the cultural-institutional context, the Coastal Housing Group have facilitated staff members with the 'nomadic' agency to reterritorialise the subjective experience of the working-day, renegotiating alternative spatio-temporalities and mobilities within a more synthesised 'bio/digi-rhythmic' organisational culture.

In the following *Performative Praxis* Chapter 4, this research will present three case studies which attempt to develop a subjectively embodied methodology for 'thinking through' the body, using praxis as a method and process for critiquing existing bio/digi-polarities, in relation to biometric 'self-tracking' practices (the subjective sphere of bio/digi-mediated lived, embodied experience that this research is attempting to renegotiate). The case studies in the *Performative Praxis* chapter are accompanied by sound 'data-streams', which are to be experienced by the listener/reader in

combination with the theoretical proposition of this research. Sound 'data-streams', as recorded documents of embodied performative, 'bio/digi-mediated', experiential practices, are used within this praxis as one potential method, materiality and process for 'rethinking' existing bio/digital-polarities; attempting to synchronise prevailing mind/body, qualitative/quantitative, bio/digi-mediated dichotomies by merging theory and sound within the performative, experiential 'third' space of praxis. Furthermore, the sound 'data-streams' proffer a subjectively embodied bio/digi-rhythmic 'sound experience' for the listener/reader, potentially synthesising dichotomous tensions in relation to the 'bio/digi-mediated body' by reshaping our perceptions of what 'body-data' can be.

Chapter 4: Performative Praxis

Introduction

This *Performative Praxis* chapter proffers a closely critiqued analysis of the empirical 'body-data' gathered from three experiential 'bio/digi-rhythmic' embodied interventions, which will be discussed within these praxis case studies as three separate, yet conceptually interrelated, 'events'. The performative 'bio/digi-rhythmic' interventions considered in this chapter each have accompanying sound 'data-streams', which can be accessed by the listener/reader via the *SoundCloud* links embedded in the body of the text. This praxis operates within a 'performative research paradigm' (Haseman 2006: 98), as outlined in the *Methodologies* Chapter 2, as it attempts to synthesise existing bio/digital, qualitative/quantitative, mind/body, theoretical/experiential and virtual/actual dichotomies, towards generating a fluid 'bio/digi-rhythmic' space of synthesis using sound. These performative praxis interventions shape the development of a subjective, empirical renegotiation of bio/digitally-mediated health tracking practices; attempting to extend existing quantitative methods of biometric body 'data-capture' to include the sensory dimensions of embodied experience. Using sound as a material and processual method of 'data-capture', these performative praxis interventions circumvent the conventional use of digital data-tracking devices, as quantitative 'technologies of the self' which reproduce the body's physiological materialities as biometric 'data-products'. This research proposes that sound, alongside a practical methodological

application of Lefebvre's theory of *Rhythmanalysis* (2004), enables our subjectively experiential, spatio-temporal, rhythmic and affective lived inter-relations of 'being-in-the-world' (Lefebvre 2004: 44), to be 'made audible' and thus elucidated. For Lefebvre, oppositional concepts such as 'repetition and difference; mechanical and organic; […] cyclical and linear; continuous and discontinuous; quantitative and qualitative' (Lefebvre 2004: 9) are 'indispensable' for applying the theory of 'rhythmanalysis' as they 'converge in the central concept of measure [rhythm]' (Lefebvre 2004: 10). This research attempts to extend a pragmatic application of 'rhythmanalysis' to existing polarisations between our 'bio' and 'digital' experiences; towards a theoretical/experiential convergence of our 'bio/digi-rhythms' using the sound data-streams. Praxis enables this research enquiry to perform the theoretical proposition towards synthesising our 'bio-rhythms' and 'digi-rhythms', by extending an empirical 're-experiencing' of the researcher's bio/digi-mediated embodied interventions to the listener/reader; whose own 'bio/digi-rhythms' are processually engaged through the subjective act of listening. The bio/digi-rhythmic embodied 'events', re-experienced by the listener/reader in the space of praxis through the sound-streams, are thus proffered as a bio/digi-mediated process of 'becoming' with the potential to collapse theoretical/experiential, virtual/actual, bio/digital distinctions; where the inter-relational spatio-temporalities of our lived embodied rhythms are 'made-audible' at the same time as they become synthesised through sensorial affect. For Deleuze, 'becoming "moves through" every event' (Stagoll 2010: 26), as he considers 'every event […] a unique instant of production in a continual flow of changes' (Stagoll 2010: 26). Becoming 'is the very dynamism of change, situated between heterogeneous terms and tending towards no particular goal or end-state' (Stagoll 2010: 26), the fluid process of movement, multiplicity and change in flux which produces new 'events'.

This research proposes, through these praxis case studies, that re-imagining bio/digitally-mediated embodied health practices as experiential data-processes using sound, counteracts prevailing quantifiable discourses and practices around the bio/digital body, as 'tending towards [the biometric] goal or end-state' (Stagoll 2010: 26) of the numeric 'data-product'. The performative interventions and accompanying sound works considered in these 'bio/digi-rhythmic events', attempt to give 'voice' to the subjectively embodied experiential bio/digi-mediated process of 'data-capture' in flux; utilising the empirical, rhythmic and affective materialities of sound to articulate the convergence and inseparability between our 'bio/digi-rhythms'.

In the first praxis case study *Speaking the Data* (2017), the researcher performs an embodied 'bio/digi-rhythmic' intervention whilst cycling on a stationary 'smart-bike' machine, in the context of an indoor public gym environment. As her moving, cycling body produces a quantifiable biometric data-stream in 'real-time' on the device's screen-interface, the researcher synchronously 'speaks' the numeric data that her physical, cyclical movements are generating; whilst 'capturing' this bio/digi-mediated embodied intervention through the sound 'data-stream'. The researcher's attempt to subjectively regulate and habituate her physiological biorhythms in synchronicity with the digital device, whilst simultaneously renegotiating her body's representational biometric 'data-products' by giving 'voice' to the digits, will be considered through a methodological application of Lefebvre's 'rhythmanalysis'; in particular, his concept of 'Dressage' (Lefebvre 2004: 38).

In the second praxis case study *Running in Rome* (2017), the researcher/runner attempts to extend the theoretical/experiential potentials for thinking and performing the 'bio/digi-rhythmic' running body 'beyond the feet' (Lyon 2019: 47), as she runs through the Villa Borghese Gardens, a large public park in the urban city centre of Rome. Utilising the digital smartphone device's audio-recording function to synchronously mediate her embodied movements through the sound data-stream, the bio/digi-rhythmic 'event' is extended to the listener/reader in the space of praxis. As the researcher/runner becomes 'rhythmanalyst', the extent to which her moving running 'bio/digi-mediated' body performs a 'metronome' (Lefebvre 2004: 19), recalibrating to the affective spatio-temporal rhythms unfolding in the urban public park in 'real time', will be considered through the empirical materiality of the sound data-stream. The sound-stream thus proffers an extension of the role of 'rhythmanalyst' to the listener/reader in the praxis space, through a sensorial 're-experiencing' of the researcher's biorhythmic body running through the park in Rome; at the same time proposing a theoretical/experiential 'bio/digi-rhythmic' synthesis.

In the third praxis case study *01000101 01111000 01101000 01101001 01100010 01101001 01110100 01101001 01101111 01101110* (*Exhibition*, Hughes and Allen 2018), this research will consider the performative 'bio/digi-rhythmic' potentials of a collaborative temporary site-specific exhibition and 'live' performance 'event', sited at the interface of a gallery space on a busy urban pedestrian street at 211 High Street, Swansea. The interactive exhibition, which engaged members of the public as participants in a bio/digi-mediated interplay in which they were invited to perform the role of 'data-processor' to decode binary language using their digital smartphone

device, will be considered in relation to the 'bio/digi-rhythmic' live 'event' performed by the researchers and recorded using the sound data-stream. This case study will proffer that the use of sound as an empirical processual method of 'data-capture' enables the 'polyrhythmic complexity and interconnections' (Lyon 2019: 95) of the multiplicity of spatio-temporal rhythmic relations unfolding in flux on the busy urban city street, to be 'made-audible' for the listener/reader; thus affectively synthesising 'virtual/actual', theoretical/experiential, bio/digital binaries through the material sound space.

Speaking the Data (2017)

Introduction

This performative bio/digi-rhythmic 'event', which extends its rhythmic and affective capacities through the sound 'data-stream', was performed in the Swansea University Sports Centre's student and public gym facilities (see Appendix, Figure vi.), in Spring 2017. The Swansea University Sports Centre, an indoor health and fitness facility including a gym, large sports hall, and various fitness courts and studios, forms part of the larger 'International Sports Village' sited adjacently to the university's Singleton Park campus and Swansea's Singleton Hospital grounds. Additional facilities include a number of outdoor field and athletics tracks and pitches (see Appendix, Figures vii. & viii.), and the Wales National Pool Swansea (see Appendix, Figure ix.), an Olympic size 50-metre swimming pool which is used for both public recreational health pursuits and competition sporting 'events'. For the embodied performative intervention *Speaking the Data* (2017) which is the focus of this praxis case study, the researcher attempted to verbally articulate the biometric data-stream that her body was producing in 'real-time' as she tried to maintain a 'bio/digi-rhythmic' cadence of 100RPM ('revolutions per minute') for an extended duration, on a *Wattbike* (see Appendix, Figure x.). The *Wattbike* is a digitised stationary 'smart-bike' designed to replicate the embodied physiological 'feel' of outdoor road cycling; posited on the company's website as an 'indoor cycling experience' which is endorsed by the British Cycling governing body, and used by elite athletes for training purposes, as it

proclaims to generate 'the world's most accurate power, technique and performance data' (Wattbike.com 2020) in relation to the cycling body. The 'body-data' generated by the *Wattbike* is 'shaped' in different ways, recording an individual's cadence, speed and pedalling technique, to deliver 'actionable insights to riders in real time' (Wattbike.com 2020). The cyclist's ability to 'see' the quantifiable biometric data-stream that their body is producing in 'real-time', which unfolds through the changeable data-metrics displayed on the *Wattbike's* interactive digital screen-interface, enables the rider to adjust their embodied movements, towards personalised health and fitness goals. This research suggests that the presence of the *Wattbike* 'smart' cycling machines in the context of a public gym environment (see Appendix, Figure xi.), signifies the extent to which once 'elite' data-tracking technologies (used to optimise and condition the bodies of athletes), have increasingly become incorporated and adopted into our everyday lived practices in contemporary culture, as 'technologies of the self'.

For *Speaking the Data* (2017), the researcher/cyclist 'speaks' the biometric data that her biorhythmic bodily movements are generating (visible to her on the *Wattbike's* facing digital screen, which is positioned in the centre of the smart-bike's handlebars) (see Appendix, Figure xii.); in an attempt to 'make sense' of both the process of bio/digi-mediation as it unfolds in 'real-time', and the resulting 'data-products' that her body is producing. The researcher/cyclist synchronously recorded this bio/digi-rhythmic embodied 'event' through sound as she performed it; using the audio-recording 'Voice Memos' function on her digital smartphone device to produce a sound 'data-stream' whilst simultaneously cycling and 'speaking' the data. The sound 'data-

stream' is proposed by this research as an alternative empirical, material process of 'bio/digi-mediation', which attempts to better 'capture' the subjective embodied sensory experience of engaging in bio/digitally-mediated activities. The ability of sound to capture the processual 'unfolding' of the performative embodied 'event' in flux, as well as its rhythmic and affective material properties, is why sound is proffered by this research as a method to synthesise our 'bio-' and 'digi-' rhythmic dimensions of lived experience. While the *Wattbike's* digital screen-interface reveals the oscillating biometric 'RPM' cadence data as a processual 'actionable insight […] in real time' (Wattbike.com 2020) (along with other body-metrics, which include calories burned, distance 'travelled', and the body's power output measured in watts), the resulting data-metrics from each 'ride' are averaged and presented to the 'rider' as a 'data-product' on screen at the end of the indoor cycling experience. This research proffers that, as a numeric structural system, the quantifiable biometric data paradigm is inadequate for 'voicing' the embodied phenomenological 'bio/digi-rhythmic' experience of cycling indoors on a digital smart-bike.

Instruction: Play Sound Data-Stream

https://soundcloud.com/user-658364094/speaking-the-data

Lefebvre suggests that the task of the rhythmanalyst is to identify social arrhythmia and transform the way it impacts social life. The approach also carries an aesthetic function; to feel, perceive and be moved by rhythms, the rhythmanalyst must also focus on the sensible values of rhythms.

(Alhadeff-Jones 2017)

In *Speaking the Data* (2017), the biometric language that the researcher/cyclist's body is generating in a 'real-time' dialogue with the digital 'smart-bike' device, is given a subjective 'voice'; the cadence data-metrics spoken out loud by the researcher, in an attempt to subjectively process and renegotiate the data-language as 'sensible' (Lefebvre 2004: 25). As the embodied bio/digi-rhythmic 'event' unfolds through the sound data-stream, the multiplicity of 'sensing' (Lefebvre's use of the polysemous term 'sensible' denotes the sensory registers of embodied experience) at play in the researcher/cyclist's performative interrelation with the *Wattbike* machine is arguably elucidated; The digital 'sensing' process required to translate the body's movements into a coherent biometric data-stream on the device's screen interface, the researcher's physiological biorhythmic sensory-system (breath, heartbeat, movement, etc.), and the cognitive process required for 'making-sense' of the unfolding numeric 'body-data' language, by the researcher. The 'white noise' of the cyclical 'spin' revolutions produced by the researcher/cyclist's pedalling motions, forms a steady and constant rhythmic backdrop to the quickening vocal cadence of her speech. As the researcher/cyclist strives to 'keep up' her verbal response to the shifting digits on the screen, whilst regulating her physical embodied movements in her endeavour to maintain a stable pace of 100RPM, the arrhythmic tension between the 'bio-rhythms' and 'digi-rhythms' of the body arguably begin to materialise through the sound data-stream. In *Speaking the Data* (2017), the researcher/cyclist performs the polarity between existing binary perceptions of the 'bio/digi-mediated' body, as the instability of her attempts to perform an unchanging biometric language between body and machine in 'real-time' (to maintain a stable rhythmic cadence of 100RPM) are revealed through the sound data-stream. As the quantifiable biometrics, that the

researcher/cyclist's body is simultaneously generating and verbally articulating, audibly oscillate between '98, 100, 98, 100…' (Hughes 2017), the temporal pauses between numbers quickly decrease. Interjected with short, sharp inhalations and exhalations of breath, the rhythmic cadence of her speech audibly accelerates at moments where the spoken digits are rapidly strung together, sometimes exhaled out 'through' the breath. Conversely, when the researcher/cyclist pauses 'speaking' and takes extended breaths, there is the suggestion of her temporary embodied 'bio/digi-rhythmic' difference with the digital machine; as the brief absence of speech indicates how 'rhythm is noticed through the difference its absence makes' (Lyon 2019: 80). In the *Methodologies* Chapter 2, this research suggested that the current polarities between our bio/digi-mediated dimensions of subjective experience perform an 'arrhythmic' disruption to our sense of embodiment, which is in need of renegotiation. In *Speaking the Data* (2017), the researcher/cyclist becomes 'rhythmanalyst', identifying the 'social arrhythmia' inherent in our existing bio/digi-mediated interactions (which she performs by 'speaking the data'), at the same time as she allows her body 'to feel, perceive and be moved by [bio/digi-] rhythms' (Alhadeff-Jones 2017). The incongruousness of the numeric data-stream, spoken in exertion by the researcher/cyclist as she strives to sustain a steady rhythmic cadence whilst synchronously regulating her breathing, arguably denotes how our biometric 'body-data' are rendered illogical outside of the quantifiable structural systems of 'data-capture' which uphold their value and significance. In *Speaking the Data* (2017), by re-materialising the biometric data-stream into verbal language to 'perform' the data, the researcher/cyclist arguably interjects the spoken 'voice' of subjective difference into the prevailing homogenising processes of biometric 'data-capture'.

Instruction: Play Sound Data-Stream

https://soundcloud.com/user-658364094/speaking-the-data

differences as novel deviations, cuts, or breaks running across actual spatiotemporal experience. Numbers, digits, code hold no absolute, precise, and predetermined truth, and are open to contagion.

(Ikoniadou 2014: 86)

In *Rhythmanalysis* (2004), Lefebvre applies his 'rhythmanalytical' theoretical approach

to contextualise a deeper understanding of how our embodied actions are affectively

conditioned in relation to our societies and cultures, through the concept of 'Dressage'

(Lefebvre 2004: 38). 'Dressage', for Lefebvre, denotes the practices and conditions

through which our embodied behaviours are 'moulded' and habituated to fit prevailing

socio-cultural value systems; a process of 'training', or 'bodily entrainment' (Lyon

2019: 27), which becomes absorbed through 'repetitive gestures' (Lefebvre 2004: 43)

over time. While Lefebvre's concept of 'dressage' shares much commonality with

Foucault's theorisations on disciplinary practices of biopower and the production of

'docile bodies' (considered by this research in the *Contextual Literature Review* in

Chapter 1), Dawn Lyon, in *What is Rhythmanalysis?* (2019), posits that Lefebvre was

'critical of Foucault's emphasis on "systematized knowledge […] at the expense of the

experiential"' (Lyon 2019: 27). This research suggests, however, that Foucault's later

theorisations around 'technologies of the self' and practices of 'self-surveillance'

(which this research praxis has applied to contextualise contemporary digital 'self-

tracking' behaviours), acknowledges the subjective, experiential dimensions of enacting such techniques. The High-'rpm' (revolutions per minute) indoor spin-cycling method that the researcher/cyclist is attempting to perform in *Speaking the Data* (2017) is a physical training process used to condition the cyclist's body to sustain a constant durational cadence of over 100RPM; whilst developing an efficient cycling technique of 'spinning' both pedals in identical circles. This is a physiological indoor training method popularised in contemporary culture, as it enables cyclist's to maintain their year-round health and fitness pursuits, despite the potential obstacles of the inclement cyclical seasonal rhythms of the weather. While indoor 'spin-cycling' is often included in cyclists' training-programmes, as a safe and useful injury-preventing alternative to outdoor cycling, the rise in popularity of road cycling as a recreational sporting activity, including its prevalent role in popular triathlon 'multi-sport' events, has extended this embodied practice into the 'bio/digi-mediated' realm in post-digital culture. The socially-networked *Strava* application, for example, which uses GPS tracking-data to 'connect' cyclists and runners through its online platforms, facilitates bio/digi-mediated 'virtual' races, in which individuals 'compete' through the biometric data 'results' of their physical activities, which are uploaded to online leader-boards. Similarly, the increasingly popular socially-networked indoor cycling application *Zwift* converges the 'virtual/actual' experiential worlds of cycling using game-design (see Appendix, Figures xiii. & xiv.); offering indoor cyclists elaborate virtual landscape environments where 'Weekend athletes now race each other virtually' (Neff and Nafus 2016: 1), their 'races' streamed through a digital screen-interface for a monthly subscription fee. This research suggests, however, that these popular digitally-mediated fitness platforms reinforce problematic virtual/actual, bio/digital, qualitative/quantitative and cyclical/linear dichotomies towards our subjective

embodied experiences. Using techniques of 'gamification' to motivate users to participate in the strenuous physical endurance activity of spin-cycling by experientially mediating the cyclist's body between the 'virtual/actual' realms, this research proffers that the biometric data-tracking language remains prevalent. As indoor cyclists are actively 'nudged' (Thaler and Sunstein 2008) to striate their biorhythms to the linear time of the clock, cadence speed and GPS data-metrics, their virtual avatars compete to 'win' visual representations of embodied biometric achievements; for example 'badges', 'medals', points, and top leader-board positions such as '"King of the Mountain", for the quickest time cycling up a particular hill' (Till 2014: 451). In *Speaking the Data* (2017), the researcher/cyclist attempts to articulate how such data-tracking processes serve to 'striate' our biorhythms, recalibrating the tempo of the subjective body and bodily experience within a limiting paradigmatic context; which Sharma refers to as 'mobile immobility' (Sharma 2014: 132). Through the performative bio/digi-rhythmic 'event', the researcher/cyclist synchronously endeavours to regulate and condition her physiological biorhythms to the '100RPM' training recommendation; whilst emancipating her bio/digi-mediated body from the impractical rigidity of this biometric system by 'speaking' the processual unfolding of the numeric data-stream on screen. This research praxis uses the sound 'data-stream' as an alternative empirical processual method of embodied 'data-capture'; for renegotiating dominant biometric models which 'visualise' our bio/digital bodies using quantifiable and representational data paradigms. In *Speaking the Data* (2017), the researcher/cyclist verbally performs the tension arising from her endeavours to 'striate' the body in this way through the subjective intervention of the performative speech act, towards a synthesis of the 'bio/digi-rhythmic' body. As she synchronously moves and speaks, the 'Rational, numerical, quantitative and qualitative rhythms' which

Lefebvre posited 'superimpose themselves on the multiple natural rhythms of the body' (Lefebvre 2004: 9) can be heard audibly changing and altering the researcher/cyclist's bio/digi-rhythms, through the sound data-stream. This bio/digi-rhythmic embodied 'event' thus reveals the mutually affective dialogic interplay between our bodies and digital devices in contemporary culture, collapsing notions of 'bio/digital' or 'virtual/actual' polarity through a rhythmic synthesis, which is extended to the listener/reader in the 'sound-space' of praxis. This research proposes that the sound data-stream elucidates the body's movements in flux, the dynamic embodied effort and process that goes into generating and producing the data; whereas biometric paradigms arguably present the resulting, representational 'data-product' as an end goal.

Instruction: Play Sound Data-Stream

https://soundcloud.com/user-658364094/speaking-the-data

> Against the Western habit of yearning to measure and calculate everything, time appears as ethereal, inexpressible, impossible to quantify or treat numerically. Time acquires a rhythmic quality that tests the edges of perception and pushes experience into an abstract zone made for slow and small events. In this zone, time as we know it collapses, one's sense of self is lost, and the [experience] opens up to the contingency of its own materials.

> (Ikoniadou 2014: 84)

The embodied 'virtual/actual' bio/digi-mediated practice of spin-cycling indoors on a static machine is a very different sensory experience to road-cycling outdoors, in the

context of the external environment. Though cycling is an embodied rhythmic practice which habituates the body's rhythms through the cyclical, repetitive movements of the legs (regardless of the cyclist's relational situatedness to indoor/outdoor settings), this research proffers that indoor cycling requires the body to acclimatise to a different set of corporeal sensory capacities. For example, the body's heightened visual sense-perceptions and physiological reactions which are stimulated to keep the road cyclist safe from unpredictable external environmental factors (such as oncoming traffic, bad weather or changes in the landscape and topography), are not needed for the indoor cycling experience. As a result, when we engage in indoor exercise activities on stationary machines, our cognitive spatio-temporal perceptions can be 'slowed down'; as the attentional focus required for outdoor efforts is not stimulated as intensely within the body's nervous system (perhaps evident in the popularity of virtually experiential 'gamified' digital platforms like *Zwift*, which stimulate the visual sensory register in indoor contexts). This research proposes that the indoor cycling experience is shaped through other sensory, affective, rhythmic differences in the body, 'felt in the micro-level rhythms of each ride' (Lyon 2019: 53). In *Speaking the Data* (2017), becoming a 'bio/digi-mediated' cyclist in rhythmic interrelation with the *Wattbike* machine requires the researcher to renegotiate the multiplicity of on-going, different processual rhythms which are unfolding synchronously; as she works towards synthesising her internal/external bio/digi-rhythms between the body, machine and digital screen. The researcher/cyclist's performing 'bio/digi-rhythmic' body is also arguably synchronised in 'real-time' to the external embodied rhythms of the other gym users; whose movements can be discerned through the occasional 'clanging' sound of barbells which punctuate the sound 'data-stream'. Through *Speaking the Data* (2017) the subjective 'renegotiation' of bio/digi-mediated experience which the researcher/cyclist

attempts to perform (extended to the listener/reader through the sound 'data-stream'), arguably positions her sensory body as the affective rhythmic interface between 'self', environment and digital device.

Instruction: Play Sound Data-Stream

https://soundcloud.com/user-658364094/speaking-the-data

All becoming irregular […] of rhythms produces antagonistic effects. It throws out of order and disrupts; it is symptomatic of a disruption that is generally profound, lesional and no longer functional. It can also produce a lacuna, a hole in time, to be filled in by an invention, a creation.

(Lefebvre 2004: 44)

For Lefebvre, while 'Dressage […] bases itself on repetition' (Lefebvre 2004: 39), repetition 'gives birth' to and produces differences; 'Sooner or later it [repetition] encounters the event that arrives or rather arises in relation to the sequence or series produced repetitively. In other words: difference' (Lefebvre 2004: 7). In the bio/digi-rhythmic 'event' *Speaking the Data* (2017), as the researcher/cyclist performs this contemporary form of 'dressage' to her body, she simultaneously attempts to introduce the subjective 'voice' of difference into the existing bio/digital data-tracking polarity, between the physically moving body and the technological biometric device. Lefebvre acknowledges, in his writing on 'dressage' and how we articulate our subjective selves through a multiplicity of embodied 'gestures', that 'Each segment of the body has its rhythm. These rhythms are in accord and discord with one another' (Lefebvre 2004:

221

38). This research suggests that Lefebvre was not trying to establish a binary separation between our multiplicity of embodied biorhythms, rather elucidate that our internal/external, qualitative/quantitative, different/repetitive, theoretical/experiential registers of experience are always operating in affective interrelation to our subjective 'being-in-the-world' (Lefebvre 2004: 44). In Lefebvre's understanding of the multi-layered inner rhythmic environments of our 'biorhythmic' bodies, our inter-relational physiological functions perform in 'polyrhythmic' synchronicity; with different internally constituted rhythms interacting at the same time to coproduce and maintain a balanced state of 'eurhythmia' (for example, our heartbeat, digestion, neurological rhythms, and breath). Our embodied bio/digi-mediated interactions with biometric 'self-tracking' devices require us to move our physical bodies repeatedly for a particular duration, to enable the digital sensing device to produce a data-set. In *Speaking the Data* (2017), the researcher's attempt to articulate the numeric cadence that her physical bodily movements are producing in 'real-time', to 'make-sense' of the data that her body is generating in synchronicity with the machine, reveals the embodied effort necessary for sustaining a stable 'bio/digi-rhythmic' tempo. 'Speaking' the quantified differences in cadence as the digits visibly oscillate in 'real-time' on the device's screen interface, the researcher's breath shortens and speech quickens, as she tries to maintain a steady, repetitive embodied pace. The rhythmic tempos of breath, biometrics and speech rise and fall in and out of sync, as the rest of the body works to maintain a steady cadence (audible in the continuous, repetitive ambient 'white noise' of the cyclical machinic revolutions). The researcher/cyclist performs the physiological difficulty of maintaining a consistent biometric cadence, whilst her oxygen intake and respirations of breath are simultaneously being used to 'speak'. The 'polyrhythmic' multiplicity of these competing embodied bio/digi-rhythmic

temporalities are 'made-audible' and extended to the listener/reader through the sound 'data-stream'. Where this processual and performative embodied 'becoming' (which, for Deleuze, is 'the real time in which changes occur, and in which all changes unfold', Stagoll 2010: 27) is arguably 're-materialised' through the sensory, 'bio/digi-rhythmic' affective properties of sound; proffering a new embodied experience for the listener/reader in the theoretical/experiential space of praxis.

In the following case study *Running In Rome* (2017), the researcher's bio/digi-mediated embodied intervention of running through a large public park in the urban city centre of Rome will be considered. As her running body's processual, sensorial biorhythms of breath, footsteps and movement synchronously unfold and entangle with the external rhythms of the park, her moving 'bio/digi-mediated' body's subjectively experiential rhythmic relationality within this particular spatio-temporal context will be elucidated and extended to the listener/reader, through the 'bio/digi-rhythmic' sound event.

Running in Rome, July 2017

Introduction

This performative bio/digi-rhythmic 'event', which extends its 'liveliness' (Palmer and Jones 2014: 225) through the sound 'data-stream', was performed in and around the Villa Borghese Gardens, Rome in July 2017. The Villa Borghese Gardens is the third largest public park in Rome (historically a vineyard within the paradise 'Gardens of Lucullus' in the late Roman republic, and later transformed into extensive landscape gardens in the 19th Century inspired by the 'English-style'). In a city with an estimated population of nearly 3 million inhabitants, it is one of few recreational public green spaces, within the city limits of the sprawling urban metropolis of Italy's capital. In December 2017, at an international conference entitled *Health in The Cities* (WHO Europe 2017) convened in Rome by the World Health Organisation for Europe, the *Urban Health Rome Declaration* (2017) was adopted and signed by the Italian Minister of Health, Beatrice Lorenzin, and President of the National Association of Italian Municipalities, Antonio Decaro. The declaration outlines a multi-sectoral, holistic approach for improving the health parameters in and around the urban environment of Rome, as aligned to World Health Organisation recommendations; which recognise the concept of health beyond 'physical survival' and 'absence of disease', to include psychological, environmental, social, cultural, natural, climatic and economic aspects of life in the city.

In the *Contextual Case Studies* in Chapter 3, this research considered the Coastal Housing Group's integration of 'digital-mobility' into their organisational working processes and culture, suggesting that the social housing association have adopted a diverse, heterogeneous and pragmatic approach towards implementing changes for positively affecting the health and wellbeing prospects for both staff members and tenants. While in the context of this research praxis the case study focused its enquiry on the Coastal Housing Group's cultivation of a 'bio/digi-rhythmic' organisational culture within the everyday working environment, as they responded to the shifting spatio-temporalities and mobilities of post-digital culture by fostering a fluid and mobile 'digital-social' space, it is perhaps significant to recognise the social housing association's other holistic adaptations, in relation to lived experience within urban city life in Swansea. For example, through additional emancipatory gestures such as the integration of a communal 'green space' on the roof of their organisation's headquarters at 220 High Street Swansea, as well as designing their social housing developments with internal 'green' courtyard spaces for collective social use and individual private balconies with external living space, this research suggests that the Coastal Housing Group is expanding their considerations for affective, holistic approaches to lived experience in the context of the urban city environment, beyond the pragmatics of the conventional working space. This research suggests that these spatio-social reconfigurations encourage an enhancement of physical and psychological health benefits for staff members and tenants alike. As they endeavour to synthesise communal/individual, internal/external, urban/natural, bio/digi-rhythmic elements of lived embodied experience in the urban context of Swansea city centre, the Coastal Housing Group is arguably operating in synchronicity with the World

Health Organisation recommendations and the *Urban Health Rome Declaration* (2017) detailed above. Towards reconceptualising and extending the parameters for an inclusively holistic consideration of 'health' and 'wellbeing', in relation to everyday life in contemporary urban cities.

For the performative embodied intervention, *Running in Rome* (2017), the researcher attempted to renegotiate an alternative bio/digi-mediated method of autoethnographic 'data collection' that 'captured' the phenomenological, embodied, experiential and environmental 'bio/digi-rhythmic' dimensions of running through the park, whilst the body's movements were synchronously mediated through a digital device. To perform this, the researcher utilised the audio recording 'Voice Memos' function on a smartphone, to record the activity as it unfolded through a sound 'data-stream'; towards renegotiating a synthesis of the bio/digi-rhythmic spatio-temporal interrelation between the moving body, a digital device and the environment, using sound. While popularised 'self-tracking' fitness devices and smart watches with integrated biometric-sensing functions which are designed to quantify our bodily movements digitally in 'real time' (for example *Fitbit*, *Garmin*, and *Apple Watch*), arguably 'merge with the body' (Heitger 2018), becoming wearable extensions which can track 'your pulse, your every step, your sleeping cycle' (Heitger 2018) (see Appendix, Figure xv.); this research proffers that smartphones too have become extensions of the body, in contemporary post-digital culture. Embedded with functional sound, speech and linguistic applications such as audio recording, note taking, voice recognition and dictation, this research suggests that smartphones enable alternative qualitative processes of bio/digital-mediation to emerge, alongside quantitative biometric

methods. In this performative bio/digi-rhythmic 'event', holding a smartphone whilst running through the public park in Rome on a summer morning, the researcher's body undertakes an autoethnographic role; as an embodied, performing subject moving through this particular spatio-temporality, with the body's movements mediated sonically in 'real-time' through the digital device. The researcher's body becomes a kind of qualitative, rhythmic metronome, recalibrating the 'bio-rhythms' of body through the embodied, rhythmic activity of running; as those rhythms are synchronously digitally-mediated through sound in an attempt to engender a 'bio/digi-rhythmic' process of synthesis.

Instruction: Play Sound Data-Stream

https://soundcloud.com/user-658364094/running-rome

> [The rhythmanalyst] listens- and first to his body; he learns rhythm from it, in order consequently to appreciate external rhythms. His body serves him as a metronome.

(Lefebvre 2004: 19)

In *Running in Rome* (2017), the researcher/runner becomes 'rhythmanalyst' through the embodied performance of running, producing a subjective spatio-temporal mobility as her body moves through the park. The body's interwoven bio-rhythms of footsteps, breath, cadence and stride become regulated through the linear repetitions of movement, setting an embodied tempo and pace. The pragmatic rhythmic materiality of the body in motion as it is mediated sonically in 'real-time' through the digital device,

is discernible in the 'wind noise' produced by the swinging movements of the researcher/runner's arms, as she holds the digital recording device in her hand to run. The synthesising potentials for the bio/digi-mediated body using the sound 'data-stream' thus emerge and materialise audibly and are heard in the intermingling 'bio/digi-rhythms' which unfold through this performative embodied 'event'. The cyclical, seasonal 'white noise' of cicadas arguably locates the researcher/runner's body in the particular warm climatic temporality of summer. This dominant ambient background noise forms part of the parks distinctive polyrhythmic chorus, which is interjected by intermittent intervals of bird call, the mechanical high-pitched whirring sound of recreational electric-powered pedal cars and 'Segway' scooters whooshing by, and the occasional rhythmic vocal cadences heard in the conversational snippets of people passing by.

In the previous praxis case study, this research considered the bio/digi-rhythmic event *Speaking the Data* (2017) an embodied performative attempt by the researcher to introduce the 'voice' of subjectivity into the oppositional biometric discourse unfolding between the moving body and the machine. The case study discussed the 'white noise' produced by the cyclical machinic repetitions generated from the researcher's physically embodied rhythmic interaction with the stationary technological device. Performed in the context of an indoor public gym environment, this research acknowledged that *Speaking the Data* (2017) could be considered a performative critique of the homogenising digital health practices moulded by current biopolitical health agendas, which arguably shape our leisure activities and construct our lived experiences in contemporary global-capitalist societies. The increased popularity and

accessibility of commercial gyms in urban towns and cities, which is perhaps indicative

of the decline in urban outdoor green space, arguably denotes our complicity in

subjectively adopting 'technologies of the self' in post-digital culture; as we striate and

condition our embodied biorhythmic activities using biometric devices and stationary

exercise machines. In Foucault's influential text *Discipline and Punish: The Birth of the*

Prison (1977), the philosopher notably described the socio-cultural history of the

'treadmill' as a disciplinary mechanism of punishment and control, used to harness the

labour power of inmates in 19th Century penal systems, 'a disciplinary mechanization

of the inmates, with no end product […] The making of machine-men, but also of

proletarians' (Foucault 1977: 242). This research introduced Foucauldian philosophy

in the *Contextual Literature Review* in Chapter 1 to establish a contemporary discourse

on the shape-shifting mechanisms of biopower in the post-digital age; aligning digital

health tracking practices (popularised in socially-networked cultural movements such

as the *Strava* platform and the *Quantified Self*) to panoptical techniques of self-

surveillance, which also entangle our digitally-mediated bodies into systems of 'big-

data' capture. As such, this research suggests that the ubiquitous processes of

bio/digi-mediation enabled by wearable digital-tracking devices, also render our

outdoor recreational activities and embodied active pursuits equally subject to the

homogenising processes of data-capture and quantification that were perhaps

previously only measurable in the constructed realms of sports, health and fitness

contexts. The GPS tracking systems that are embedded in our smartphones (through

the Global Navigation Satellite System network) now render our subjective embodied

movements geographically and spatio-temporally locatable across the globe. In

Running in Rome (2017), while the researcher/runner attempts to generate an

empirical subjective data-set using the sound 'data-stream' as an emancipatory

gesture towards 'freeing' the body from quantifiable biometric data-tracking systems, this research recognises that the moving 'bio/digi-mediated' body becomes entangled into networked surveillance-tracking systems through the embodied act of carrying a digital smartphone device. Furthermore, this research proffers that the intensified homogeneity of our experiential worlds extends to ecological concerns in global-capitalist societies; arguably audible in the 'white noise' of the cicadas which prevails throughout the entirety of the sound 'data-stream'. In an article entitled *The Sound of Life: What Is a Soundscape?* (2017), Marinna Guzy contends that 'an ecosystem dominated by a single sound source, such as the buzz of the cicada, illustrates a potential lack of diversity and resilience' (Guzy 2017). Guzy's article, considers how our sonic environments 'define communities- their boundaries, their actors, their geographic intricacies, and industries. [Soundscapes] arise through the interactions between external and internal forces within a community' (Guzy 2017). Guzy posits that the soundscape 'helps us understand the acoustic ecology of a place' (Guzy 2017). In a similar way, this research suggests that the sound 'data-stream' *Running in Rome* (2017), as an empirical material process which 'captures' the moving body in flux, both renegotiates the subjective bio/digi-mediated experience at the same time as it articulates the embodied subject's affective relation to the particular environmental spatio-temporal context. The experientially subjective 'acoustic ecology', namely the researcher's bio/digi-mediated body running through the Villa Borghese park in Rome, is 'captured' and extended to the reader/listener through the sound 'data-stream'. This research proffers that sound enables the internal/external, virtual/actual spatio-temporal relations to be collapsed in the 'bio/digi-rhythmic' sonic space of praxis, through the 'force of sensory experience' (Voegelin 2010: 12). Applying Lefebvre's 'rhythmanalytic terms', this research suggests that the sound

'data-stream' proposes a processual synthesis to the 'struggle between measured, imposed, external time and a more endogenous time' (Lefebvre 2004: 99); proffering a 're-experiencing' of the body-data for the listener/reader in the praxis space.

Instruction: Play Sound Data-Stream

https://soundcloud.com/user-658364094/running-rome

Rhythm, for Lefebvre, is something inseparable from understandings of time, in particular repetition. It is found in the workings of our towns and cities, in urban life and movement through space. Equally, in the collision of natural biological and social timescales, the rhythms of our bodies and society, the analysis of rhythms provides a privileged insight into the question of everyday life.

(Elden 2004: viii)

As conventional concepts of space, time, geographical location, movement and mobility are compressed through processes of bio/digi-mediation, we can cognitively and experientially 'transport' ourselves between virtual/actual, bio/digital and theoretical/experiential realms, at the click of a button or the swipe of a screen. This research has considered how we are required to subjectively adjust to 'multitemporal realit[ies]' (Parikka 2016: 9) in contemporary life, as practices of bio/digi-mediation enact different spatio-temporal and geographical perceptions synchronously across digital platforms; which become entangled with the cyclical and linear rhythms of our lived daily experiences, thus reshaping them. This research has suggested that the

existing biometric 'self-tracking' practices we incorporate into our everyday lives facilitate the re-calibration and re-territorialisation of the spatio-temporalities and mobilities of our subjective bodies, through quantifiable methods. Digital 'technologies of the self' which polarise our bio/digital experiences by striating our physiological rhythms according to homogenising biopolitical structural systems of 'data-capture' in global-capitalist societies, arguably reduce our 'bio' and 'digital' experiences to binary oppositional terms; 'fixing' the bio/digi-mediated body as a 'data-product'. In *Rhythmanalysis* (2004), Lefebvre distinguishes the difference between reductive forms of structural analysis which focus on binary oppositional terms, for example time and space, and dialectical methods of analysis which he proposes as 'three terms in interaction: conflicts or alliances' (Lefebvre 2004: 12). For Lefebvre using dialectical analysis, the oppositional terms 'time-space' become 'the triad "time-space-energy" [which] links three terms that it leaves distinct, without fusing them in a synthesis (which would be the third term)' (Lefebvre 2004: 12). Furthermore, Lefebvre formed his concept of 'rhythmanalysis' around this dialectical relation, proclaiming that 'Everywhere where there is interaction between a place, a time and an expenditure of energy, there is rhythm' (Lefebvre 2004: 15). In this praxis, the methodological application of 'rhythmanalysis' to the embodied bio/digi-rhythmic 'events', using sound 'data-streams', is used to extend a dialectical, material understanding of our bio/digital experiences as convergent. In *Running in Rome* (2017), the researcher/runner's moving body produces subjective spatio-temporal rhythms through an embodied 'expenditure of energy' (Lefebvre 2004: 15); 'made audible' for the listener/reader by the bio/digi-mediation of this embodied 'event', using the sound 'data-stream'. This research thus considers the bio/digi-rhythmic sound 'event' to be a 'third' space of

synthesis, where the 'energy' and spatio-temporalities of our bio-rhythms and our digi-rhythms converge, through sound and rhythmic affect.

The dichotomous tensions of bio/digi-mediated subjectivity, in relation to the urban runner's body moving through the city holding a digital data-tracking device, are explored through the writer Kenneth Goldsmith's practice in the following section; where this praxis further foregrounds the research proposition for a 'bio/digi-rhythmic' synthesis using sound.

Instruction: Play Sound Data-Stream

https://soundcloud.com/user-658364094/running-rome

This research has considered how we increasingly integrate wearable and easily transportable mobile digital devices into the 'peri-personal' (Di Pellegrino and Làdavas 2014) spaces of our bodies; practices of bio/digi-mediation which were critiqued in relation to the concept of the 'body schema' in the *Contextual Literature Review* in Chapter 1. Goldsmith contends that any clear delineations between embodied experiential states of 'being online and off' (Goldsmith 2016: 68) are no longer divisible in post-digital life, thus producing a 'sense of being in-between- being at once digital and physical' (Goldsmith 2016: 68). For Goldsmith, former dualistic cultural and subjective conceptions between dimensions of 'reality' and 'virtual reality' have merged in contemporary culture, as 'wearable computing, mobile media, and

augmented reality have re-inscribed our bodies back into our physical settings, while we remain at the same time, online' (Goldsmith 2016: 69). This research proffers, however, that Goldsmith's speculative suggestion of such a bio/digital synthesis is overzealous and subsequently disingenuous, as problematic polarities between bio/digital dimensions of our subjective experiences still abound. As this research considered throughout the *Contextual Literature Review* in Chapter 1, wearable biometric devices and mobile technologies arguably perform a reversal of the Cartesian mind/body divide, privileging the quantifiable 'data-products' our bodies produce, thus polarising the bio/digital body as oppositional within cultural and health discourses.

> There was a time when the divide between being online and off was clear. It used to be that when I was online, I was sitting at my desk, tied to a computer. During that time, I was clearly online. When I was done, I'd shut down my computer and take a walk around the block, being clearly offline. Today, I don't leave my house without a device; I'm still online when I take my walk around the block, smartphone in hand, at once straddling the physical and the virtual.

(Goldsmith 2016: 68)

This research suggests that while Goldsmith acknowledges the merging bio/digital synchronicities of our contemporary 'bio/digi-mediated' lived embodied experiences, he arguably reaffirms mind/body, bio/digital, qualitative/quantitative dichotomies through his performative writing practice. Writing auto-ethnographically about his subjective 'bio/digi-mediated' experience of going for a run, it becomes apparent that Goldsmith's performative account of his running experience (mediated in 'real time' using his personal smartphone device), produces a traditional Cartesian splitting

between his physical, corporeal moving body and his thought process. As the 'bio-rhythms' of running and 'digi-rhythms' of music streaming through his digital device begin to synchronise and enmesh for Goldsmith, he describes how they trigger creative thoughts for an upcoming project, prompting him to rupture and pause what this research suggests is an otherwise immersive embodied 'bio/digi-rhythmic' synthesis, with intermissions of verbal dictation spoken into the 'Siri' digital voice recognition function. For Goldsmith, full immersion in the bio/digi-mediated activity of running arguably means overlooking the potential of his physically embodied 'bio/digi-rhythmic' experience as one of synthesis, instead affording precedence to the functions and processes of the digital device which enable him to action an expansion of his cognitive realm.

> As I start to feel the rhythm of the music and the rhythm of the run, good thoughts about the structure of a book I'm working on start to emerge. Wanting to catch them during my run, I take my iPhone out of my pocket, open up the notes app, click on Siri's voice recognition, and begin to dictate.

> (Goldsmith 2016: 53)

In Goldsmith's bio/digi-mediated thinking process he enacts a treatment of body and mind as separate entities, utilising the qualitative functions of 'data capture' that his smartphone device enables (in this example voice recognition, dictation and transcription), to perform the split. Goldsmith thus arguably undermines his preceding theoretical position, which strongly suggested a synthesis of the bio/digital dimensions of our contemporary lived everyday experiences. This research suggests that Goldsmith plays into the problematic bio/digital, mind/body, qualitative/quantitative

dichotomies that this praxis is attempting to address through a rhythmic synthesis, using sound 'data-streams'. As he digitally-mediates his 'thinking self' through the smartphone whilst he runs, performing a corporeal interruption in order to 'catch' his thoughts rather than yielding to the emerging empirical synthesis of the bio/digi-rhythmic embodied experience. In the *Contextual Literature Review* in Chapter 1, this research applied Foucault's concept of 'technologies of the self' to the behaviours of self-optimisation embedded in biometric 'self-tracking' practices of bodily quantification and enacted through the use of digital-wearable devices. While Goldsmith avoids biometric practices of bio/digi-mediation, proclaiming that he doesn't 'wear a smartwatch or a fitness band' (Goldsmith 2016: 54) to run (though acknowledging that the in-built GPS tracking systems in our digital devices ubiquitously track our subjective movements through spatio-temporal 'location' data-metrics), this research suggests that he reaffirms qualitative/quantitative, mind/body, theoretical/experiential dualities in relation to his embodied subjective activity. This praxis considers that his use of the digital device habituates, regulates and subjugates the rhythmic repetitions of his physically moving, running body into a submissive relation to that of his 'creative' cognitive thought process, arguably reaffirming biopolitical narratives in which subjective 'bio-value' (Shilling 2016) is attached to notions of productivity, multitasking, self-enhancement and the performative extension and distribution of the 'self' to online networked cultures. Furthermore, Goldsmith's description and subjective perception of his 'creative' bio/digi-mediated process, in which he interrupts the biorhythmic flow of his running body with the 'digi-rhythmic disruption' of having to stop to enact each particular digital interaction, is typical of how we use and interact with digital devices in the post-digital age.

In addition to the rhythms of the city, my run is determined by my interactions with technology. Every time I click voice recognition, [the music] is paused. I change the way I speak to accommodate Siri […] I happily adjust my speech to the constraints of the machine, which is now enmeshed with my heavy breathing and the system of traffic lights on Manhattan's grid.

(Goldsmith 2016: 53)

This research is attempting to synthesise such habitually held polarised perceptions of our interactions with digital devices, which may be considered 'disruptive' to the biorhythmic flow of our bodies. Using the sound data-stream as an alternative processual and empirical method of 'data-capture', this research proposes a non-hierarchical 'bio/digi-rhythmic' space of flux, which converges theoretical/experiential considerations of our bio/digital experiences in the space of praxis; facilitating a shift from a 're-thinking' to a 're-experiencing' for the listener/reader. While Goldsmith's autoethnographic linguistic account of urban running in the bio/digi-mediated age arguably becomes, for him, a cognitive extension of his writing practice, in *Running in Rome* (2017) the researcher/runner uses the sound 'data-stream' to perform a phenomenological 'bio/digi-rhythmic' synthesis. Where Goldsmith's performative practice highlights a separation, difference and division between the running, speaking subject and the digital device, this research praxis performs a synthesis between the researcher/runner's embodied actions (her 'biorhythms') and the bio/digi-mediation of her experience (her 'digi-rhythms'), through the sound 'data-stream'. Goldsmith's subjective autoethnographic account of his entangled relationship with his digital smartphone device arguably articulates an 'external locus of control' (Li, Lepp and Barkley, 2015); an acquiescence with existing digital-tracking practices which this

237

research suggests many people experience as an affect of increased bio/digi-mediation in post-digital life. This research proffers that our intensified affective interactions with digital interfaces, for which neologisms such as 'ambient intimacy' (Reichelt 2007) have emerged, could be considered a contemporary expression of 'what continually transpires in the rhythms and ruptures of a body's [any-body-whatever] capacities to affect and to be affected by the moving wedge of the in-between' (Seigworth 2018: xii). This praxis uses the processual method of 'data-capture' through the sound 'data-stream' as an attempt to expand the rhythmic capacities for the bio/digi-mediated body to 'affect and to be affected' (Seigworth 2018: xii), in the performative 'bio/digi-rhythmic' space of praxis.

Instruction: Play Sound Data-Stream

https://soundcloud.com/user-658364094/running-rome

> If rhythmanalysis is something of a work in progress, it might be further enhanced by more situated accounts of the rhythmanalyst's body, not in the sense of autobiographical revelation for its own sake but to reflexively explore the different levels at which rhythms register for different bodies and what this means for understanding the polyrhythmic complexity of social life.

> (Lyon 2019: 58)

The cultural geographer Tim Edensor has undertaken a series of 'rhythmanalytical' projects which explore the mobilities of moving bodies in relation to place-making, through the rhythmically embodied, experiential dimensions of subjectivity; adopting and applying Lefebvre's theory of 'rhythmanalysis' as a practical methodological

research approach. In Edensor's 'rhythmanalytical' practices of exploration into how 'place' is produced through the multiplicity of collective inter-relational embodied routines of everyday life (for example through walking, running, driving, cycling, dancing, etc.), 'the body is central to doing rhythmanalysis and is deployed as a key tool in the research process' (Lyon 2019: 45); arguably a parallel approach to the embodied interventions used by this research praxis. However, in contrast to the methods and processes used by this praxis, Edensor, like Goldsmith, employs an autoethnographic writing practice and other qualitative research methods (for example visual methods such as moving image and photography), to apply his interpretation of rhythmanalysis 'as a means to analyse mobility and place-making' (Lyon 2019: 76). For Dawn Lyon, in *What is Rhythmanalysis?* (2019), Edensor and his research colleagues' approach to 'rhythmanalysis', which deploys the body and sensory experience 'in conjunction with other instruments of data collection' (Lyon 2019: 76), raises questions about 'whose body registers which rhythms and what this means for the production of knowledge' (Lyon 2019: 76). Lyon contends that while the body is centralised as a 'tool' of 'rhythmanalytical research' in Edensor's research practices, 'the linkages between the actual flesh and blood, breathing and feeling body of the researcher and the experience of being in the field are often only faintly drawn' (Lyon 2019: 81). Furthermore, Lyon considers that while research methodologies within the social sciences have given rise to empirical and embodied methods of enquiry in recent years, which foreground 'embodied practices, process and materiality' (Lyon 2019: 81) as a way of thinking, existing research paradigms continue 'to privilege the cerebral despite [...] acknowledgment of the corporeal' (Lyon 2019: 81). This praxis, operating within a performative paradigm, uses embodied intervention and the sound 'data-stream' to extend the subjective corporeal experience of the researcher/runner's

'breathing and feeling body' (Lyon 2019: 81) captured 'in the field' through the digital device, to the listener/reader. In this research, the process of bio/digi-mediation afforded by the sound 'data-stream' enables 'a reflexive consideration of the researcher's body doing research' (Lyon 2019: 81) to be performed in the same affective, inter-relational, bio/digi-rhythmic register as the listener/reader's body. Thus, proposing a non-hierarchical research assemblage which renegotiates a theoretical/experiential understanding of the embodied 'bio/digi-rhythmic' running experience through praxis.

> Assemblages, as conceived of by Deleuze and Guattari, are complex constellations of objects, bodies, expressions, qualities, and territories that come together for varying periods of time to ideally create new ways of functioning.
>
> (Livesey 2010: 18)

In the 'bio/digi-rhythmic' praxis space, the researcher/runner's subjective embodied expression of her moving, running body, and the listener/reader's sensorial body are temporarily, rhythmically synthesised; by the durational, physical action of 'playing' the sound data-stream. The space of praxis becomes an affective assemblage space; 'affectively spatialis[ing]' (Conley 2010: 262) the listener/reader's body with the multi-rhythmic spatio-temporalities and mobilities unfolding in the park in Rome, through the act of listening to the bio/digi-rhythmic sound 'event'. In the *Introduction* to this thesis, this research suggested that as our contemporary 'bio/digi-mediated' bodies increasingly become entangled into complex ontologies of performative networked subjectivities, identities and embodied affects experienced in 'multitemporal realit[ies]'

(Parikka 2016: 9), we are required to 'adjust to a complex sense of perception of time that constitutes the contemporary' (Parikka 2016: 9). This research proffers that the sound 'data-stream', performing in the virtual/actual 'third' space of praxis, reminds us that bio/digi-mediated 'time is not merely a passing of events, but a milieu of multiple ways of accounting for it in the midst of human and non-human agents' (Parikka 2016: 13).

Instruction: Play Sound Data-Stream

https://soundcloud.com/user-658364094/running-rome

We know that a rhythm is slow or lively only in relation to other rhythms (often our own: those of our walking, our breathing, our heart). This is the case even though each rhythm has its own and specific measure: speed, frequency, consistency. Spontaneously, each of us has our preferences, references, frequencies; each must appreciate rhythms by referring them to oneself, one's heart or breathing, but also to one's hours of work, of rest, of waking and of sleep.

(Lefebvre 2004: 10)

In the introduction to *Rhythmanalysis: Space, Time and Everyday Life* (2004), Stuart Elden suggests that Lefebvre believed that the role of the 'rhythmanalyst' was not simply to reduce or scrutinise the body and its internal/external spatio-temporal rhythmic relations as the subject for objective analysis; but to use 'the body as the first point of analysis, the tool for subsequent investigations' (Elden 2004: xii). In Lefebvre's theorising around the role of the 'rhythmanalyst', the methodological processing of rhythms through the body and the extent to which the 'body serves us as a metronome'

(Elden 2004: xii) were defining empirical elements of undertaking or performing 'rhythmanalysis'. In *Running in Rome* (2017), the researcher/runner's body becomes the metronome, as running regulates the endogenous biorhythmic cadence of embodiment through the heartbeat, breath, footsteps and movement. Lyon recognises that by employing 'rhythmanalysis' as a research methodology, there is 'a sense in which the rhythmanalyst becomes rhythm as the body's own rhythms combine with the ebbs and flows of other people's actions and interactions and the liveliness of the material world in which they are immersed' (Lyon 2019: 80). In *Running in Rome* (2017), running habituates the researcher/runner's biorhythmic body to the unfolding lived everyday rhythms of the park, in mutual affectivity with the multiplicity of existing spatio-temporalities and mobilities in flux, in the public recreational space. The bio/digi-mediation of this embodied 'event' through sound facilitates this rhythmic multiplicity to be heard and shared with the listener/reader; for example, when the researcher's running body stops at an intersection to allow for a bicycle to pass, and thus 'rhythm is noticed through the difference its absence makes' (Lyon 2019: 80). Similarly, when the researcher's running body moves towards a street musician playing a *Beethoven* song on the pavement, nearing the end of the sound 'data-stream', the melodic rhythms of music temporarily intermingle with and surpass the audible 'biorhythms' of embodiment, as the researcher moves 'through' musical sound. This research proposes that the sound data-stream, unlike other qualitative methods of applying 'rhythmanalysis' which privilege the cognitive, reflective process (discussed within this case study through Goldsmith and Edensor's practices), is a rhythmically affective process in 'real-time'; extending an empirical, material and sensory 're-experiencing' of the embodied 'event' to the listener/reader. This research therefore suggests that the sound data-stream proffers an emancipatory response to

Lyon's inquiry as to 'whose body registers which rhythms and what this means for the production of knowledge' (Lyon 2019: 76), facilitating a 'bio/digi-rhythmic' synthesis which collapses bio/digital, virtual/actual, and theoretical/experiential binaries in the performative space of praxis.

In the following praxis case study, this research will consider a collaborative exhibition and 'live' performance event sited at the interface of a gallery space at 211 High Street Swansea, entitled *01000101 01111000 01101000 01101001 01100010 01101001 01110100 01101001 01101111 01101110* (*Exhibition*, Hughes and Allen, 2018). The performative exhibition and 'live' event, which was synchronously 'captured' in 'real-time' through the sound data-stream, will be considered for its potentials to extend and affectively synthesise a 'bio/digi-rhythmic' embodied experience for the multiplicity of subjectivities involved (the participants/passers-by, the researchers/performers, and the listener/reader); in contextual relation to the plurality of rhythmic temporalities unfolding in flux on the busy urban city street.

01000101 01111000 01101000 01101001 01100010 01101001 01110100 01101001

01101111 01101110 (Exhibition, 2018):

A Collaborative Exhibition and 'Live' Bio/Digi-Rhythmic Event,

Sited at 211 High Street Swansea, June 2018

Introduction

In this praxis case study it will be revealed how the theoretical proposition underpinning this research, towards re-imagining a 'third' space where a 'bio/digi-rhythmic' synthesis of embodiment could emerge through praxis, simultaneously informed and generated *01000101 01111000 01101000 01101001 01100010 01101001 01110100 01101001 01101111 01101110* (*Exhibition*, Hughes and Allen, 2018): A temporary collaborative exhibition and 'live' performative event, sited at 211 High Street Swansea in June 2018. This research will suggest that the site-specific exhibition and live performance 'event' (which are considered within this praxis case study as composite parts of the overall assemblage of the experimental bio/digi-rhythmic 'event'), arguably become a generative and productive 'force' (Stagoll 2010: 111), extending their affective and rhythmic potentials to the listener/reader through the sound 'data-stream'. The sound 'data-stream' *0/1* (Hughes and Allen, 2018), was 'captured' in processual synchronicity with Hughes and Allen's 'live' unfolding verbal performance, staged on a busy urban pavement outside the 211 High Street exhibition

site, using the digital smartphone device's in-built audio-recording 'Voice Memos' function. As such, this research will proffer that through the 're-performance' of the bio/digi-rhythmic 'sound-event' in the space of praxis, the rhythmic materialities and intensities of the 'live' performance sited on a busy city street, are extended beyond the embodied subjectivities and spatio-temporalities of the researchers/performers. The sound 'data-stream' is considered in this praxis case study for its potentialities to proffer an affective re-experiencing of the 'live' bio/digi-rhythmic embodied 'event' to the listener/reader. By proposing a material, sensory 'sound experience' which arguably augments a subjective, experiential layer of rhythmic affectivity for the listener/reader, whose own bio-rhythms become interwoven in the audible, and 'inaudible', digital-mediation of this 'rhythmic event' (Ikoniadou 2014). This research suggests that the sound data-stream thus engages the reader/listener in a 'bio/digi-rhythmic' synthesis in the performative space of praxis, through the embodied act of listening. In addition, the sound data-stream is used in this study to untangle the 'polyrhythmic complexity and interconnections' (Lyon 2019: 95) involved in staging a 'live' performative bio/digi-rhythmic event amidst the unfolding spatio-temporal rhythmic differences, repetitions and intersections of a busy urban streetscape.

Instruction: Play Sound Data-Stream

https://soundcloud.com/user-658364094/01a

an event is not either real or imaginary, a body is not exclusively human, and a machine is never purely technological.

(Ikoniadou 2014: 88)

The bio/digi-rhythmic event, *01000101 01111000 01101000 01101001 01100010 01101001 01110100 01101001 01101111 01101110* (*Exhibition*, 2018), was formulated from a conceptualisation by the researchers to utilise the window space of an art gallery on a busy pedestrian street (an existing mediating space, or 'screen', between the public), as an allegorical interface for the digital screen. In contemporary culture, digital screens, as interfaces between the virtual/actual dimensions of our lived embodied bio/digital experiences, have become the mediatory spaces through which we perform our 'bio/digi-rhythmic' interactions. As such, this research suggests that digital interfaces have become the portals through which binary distinctions between our 'bio-rhythmic' and 'digi-rhythmic' spheres of embodiment are gradually being collapsed. In the previous praxis case study *Running In Rome* (2017), this research contextualised the bio/digi-mediated embodied interventions and sound 'data-streams' used by this performative praxis, in comparison to Goldsmith's application of bio/digital 'voice recording' using his smartphone device, as a cognitive recording process. As this research suggested through the consideration of Goldsmith's practice, while current distinctions between our subjective 'bio/digi' interactions with our digital devices are not fully collapsed but interruptive of each other, there is an implication that such polarities between our 'bio' and 'digital' dimensions of embodied experience will be less distinguishable in the future. In the exhibition sited at 211 High Street, the researchers sought to activate the window space, as a 'digital interface', to engage passers-by in an interplay through which existing bio/digital polarities of embodied experience could be renegotiated subjectively (Figures 33 & 34).

Figure 33. Hughes and Allen, *01000101 01111000 01101000 01101001 01100010 01101001 01110100 01101001 01101111 01101110 (Exhibition,* 2018)

For *01000101 01111000 01101000 01101001 01100010 01101001 01110100 01101001 01101111 01101110* (*Exhibition*, Hughes and Allen 2018), the researchers attempted to expand the affective potentials of the interface at the threshold of the 211 High Street gallery: By activating the window space as a discursive performative site, through which a playful 'bio/digi-rhythmic' interaction could be encouraged for individuals to perform through their digital smartphone device. The researchers selected three quotations from Lisa Blackman's text *Immaterial Bodies: Affect, Embodiment, Mediation* (2012), chosen for their contextual reflections on processes

of 'biomediation', affectivity and perceptions around the permeability of our bodily boundaries in a post-digital context; then used an online binary-code translator to convert each text quotation from readable linguistic lettering, into the algorithmic binary-coded digits of 0 and 1. As the text was rendered into data-information, with each 'quotation' displayed on the three parallel glass window panels of the 211 High Street interface (Figure 33), the striated rows and repetitions of the binary digits became indecipherable beyond the slightly nuanced differences in the numeric sequences. The illegibility of the words concealed in binary-coded form thus shaped a new 'visual language' of 0's and 1's. The audience were invited, through a performative directive (Figure 34), to 'enact the role of data processor in order to decode the nuances of the text' (Hughes and Allen, 2018), using the inter-connectivity of their digital smartphone device.

```
01010100 01101000 01100101 00100000 01100010 01101001 01101111
01101101 01100101 01100100 01101001 01100001 01110100 01100101
01100100 00100000 01100010 01101111 01100100 01111001 00100000
01101001 01110011 00100000 01101110 01100101 01110110 01100101
01110010 00100000 01100100 01101001 01110011 01110100 01101001
01101110 01100011 01110100 01101100 01111001 00100000 01101000
01110101 01101101 01100001 01101110
```

(Blackman 2012: 5)

Instruction: The Quotation Can Be Decoded By Copying and Pasting the Digits into an Online Binary Code Translator
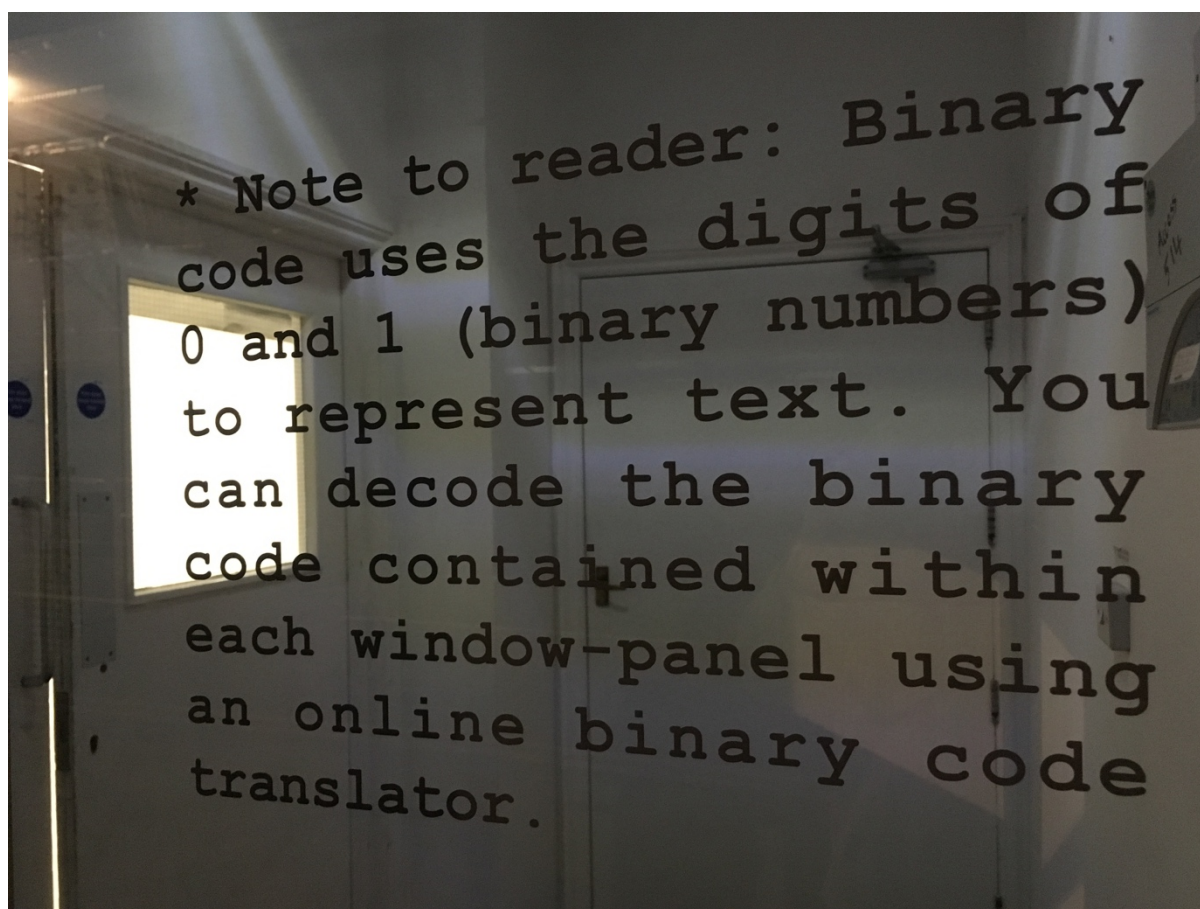
https://www.rapidtables.com/convert/number/binary-to-ascii.html

Figure 34. Hughes and Allen, *01000101 01111000 01101000 01101001 01100010 01101001 01110100 01101001 01101111 01101110* (*Exhibition*, 2018)

In *01000101 01111000 01101000 01101001 01100010 01101001 01110100 01101001 01101111 01101110* (*Exhibition*, 2018), the researchers 'use of binary code as a visual language creates a form of [non]sense which has to be negotiated' (Hughes and Allen, 2018); seeking to challenge the immediacy of processes of bio/digi-mediation that our digital technologies promise. For Steyerl, in her article *A Sea of Data: Apophenia and Pattern (Mis-)Recognition* (2016), in a digital age where 'information is passed on as a set of signals that cannot be picked up by human senses' (Steyerl 2016), the dominance of vision as a primary mode of perception 'loses

importance and is replaced by filtering, decrypting, and pattern recognition' (Steyerl 2016). Steyerl emphasises the 'human inability to perceive technical signals unless they are processed and translated accordingly' (Steyerl 2016). This is a theorisation of sensory perception in relation to bio/digitally-mediated processes of communication and cognition which is resonated by Nicholas Mirzoeff, for whom an expertise of the 'data-filled screens' of our many digital interfaces 'is required even to make sense of the screen' (Mirzoeff 2015: 156). In the exhibition at 211 High Street, Hughes and Allen's performative bio/digi-mediated intervention invited the viewers/passers-by encountering the gallery's interface to perform Mirzoeff's proposition 'to make sense of the [window] screen' (Mirzoeff 2015: 156), using a digital smartphone device. While Steyerl suggests that in contemporary digital culture, 'Not seeing anything intelligible is the new normal' (Steyerl 2016), Mirzoeff theorises a more synthesised, and subjectively experiential approach to bio/digital-mediation, in line with this research praxis; 'If this is total noise, it is not unintelligible. Rather, it requires people to become more open to the unexpected and to anticipate differently' (Mirzoeff 2015: 156). In the 'bio/digi-rhythmic' experiment sited at the interface of 211 High Street, the researchers sought to reverse the bio/digi-mediated 'data-processing' role; revealing the method for decoding the binary language to viewers/passers-by, who were directed to perform the process of translation by means of the performative directive (Figure 34). By providing the means of translation to participants, the work arguably performs an emancipatory gesture, giving viewers access to a method of perception for decoding the 'technical signals' (Steyerl 2016) of algorithmic language, thus transforming the hidden 'data-processing' act into a sensory, corporeal, physical embodied process. This research further suggests that the 'bio/digi-rhythmic' intervention at 211 High Street, entangled participants' lived, everyday subjective 'biorhythmic' embodied

experiences of walking down the street, into an alternative affective 'bio/digi-rhythmic' spatio-temporal inter-relation. The temporary pausing and stillness of the participants' embodied subjectivities, as they stood on the busy pedestrian street to negotiate between the virtual/actual, bio/digital, qualitative/quantitative, algorithmic/linguistic processual realms using a digital smartphone device, also performed a 'bio/digi-rhythmic' intervention to the linear 'routines and conventions of walking' (Lyon 2019: 57) for others moving along the street. As the participant's stationary bodies created a 'temporary obstacle in the street' (Lyon 2019: 56), through their engagement with the performative bio/digital intervention, the normal rhythms of the city street were affectively reshaped, as 'the body's own rhythms combine with the ebbs and flows of other people's actions and interactions and the liveliness of the material world in which they are immersed' (Lyon 2019: 80).

```
01100010 01101111 01100100 01101001 01100101 01110011 00100000
01110101 01101110 01100100 01100101 01110010 01110011 01110100
01101111 01101111 01100100 00100000 01101101 01101111 01110010
01100101 00100000 01100001 01110011 00100000 01100011 01101111
01101101 01101101 01110101 01101110 01101001 01110100 01101001
01100101 01110011 00100000 01110100 01101000 01100001 01101110
00100000 01100001 01110011 00100000 01101001 01101110 01100100
01101001 01110110 01101001 01100100 01110101 01100001 01101100
00100000 01100011 01101100 01101111 01110011 01100101 01100100
00100000 01100101 01101110 01110100 01101001 01110100 01101001
01100101 01110011
```

(Blackman 2012: 6)

Instruction: The Quotation Can Be Decoded By Copying and Pasting the Digits into an Online Binary Code Translator

https://www.rapidtables.com/convert/number/binary-to-ascii.html

In *The Interface Effect* (2012), Galloway acknowledges how our subjectively affective interactions are integral to how interfaces function, in processes of bio/digital-mediation. Galloway extends his theorisation of the interface beyond objective materialist definitions (for example as windows, screens, laptops and smartphones), towards an interpretation which encapsulates interfaces as active negotiators of processual effects; facilitators of embodied 'affects', as this praxis case study proffers.

> Interfaces are not simply objects or boundary points. They are autonomous zones of activity. Interfaces are not things, but rather processes that effect a result of whatever kind.

> (Galloway 2012: vii)

This is a theorisation of interfaces concurred by Gibbs, for whom 'mass media introduces another layer of complexity' into our 'bio/digi-rhythmic' processes of experiencing, embodiment and cognition, as it introduces 'new modes of conscription of human affect, habit for the capture of attention in a process Maria Angel and I term "biomediation"' (Gibbs 2015: 228). For Gibbs and Angel, 'all media are biomediations of the human', as they proffer that 'media communicate through processes that are more than semiotic and cognitive [through] the transmission of affect in communication' (Angel and Gibbs 2006: 24). In the *Methodologies* Chapter 2, this research introduced Gibbs' theorisations on affective methodologies to contextualise the experimental 'assemblage' approach applied by this praxis; for synchronising a

theoretical/experiential perception of the 'bio/digi-rhythmic' body, using embodied interventions, 'rhythmanalysis' and sound 'data-streams'. It is affect, for Clough too, which produces the 'biomediated body' (Clough 2008: 2). Affectivity, as integral to processes of biomediation, indicates for Clough 'a dynamism immanent to bodily matter and matter generally- matter's capacity for self-organization in being in-formational' (Clough 2008: 1). A conceptualisation of affect which she accredits to Deleuze and Guattari, as 'pre-individual bodily forces augmenting or diminishing a body's capacity to act' (Clough 2008: 1), critically engaging bodies with 'technologies that are making it possible to grasp and to manipulate the imperceptible dynamism of affect' (Clough 2008: 2). In *01000101 01111000 01101000 01101001 01100010 01101001 01110100 01101001 01101111 01101110* (*Exhibition*, 2018), the researchers sought to engage participants' bodies in a reversal of the data-translation process performed via the window; which attempted to 'make visible', tangible and perceptible the often 'imperceptible dynamism of affect' (Clough 2008: 2) into which we become entangled through our interactions with digital technologies. The concept of the 'biomediated body', for Clough, as porous, dynamic and affectively enmeshed, challenges outmoded autopoietic notions of 'the body-as-organism' (Clough 2008: 2), in which bodies are considered, 'informationally closed to the environment, thus engendering [their] own boundary conditions' (Clough 2008: 2). In the exhibition and the 'live' performative 'event' at 211 High Street, this research attempted to synthesise the 'bio/digi-rhythms' of embodied experience in contextual relation to the urban city street; through the sensorial processing of the 'data-language' through the body (a rhythmically affective processual experience which is further extended and elucidated to the listener/reader through the sound 'data-stream'). This research suggests that to think of interfaces materially, arguably engenders the boundary conditions integral to

prevailing bio/digital cultural polarisations; which represent our subjective interactions with digital devices as dichotomously connected and disconnected from 'reality'. In such discourses, the 'biorhythms' of our embodied experiences are positioned in opposition to our digitally-mediated interactions in the 'virtual' realm (Clough 2008: 3). This research suggests that in prevailing data-tracking practices our subjectivities are framed through perceptions of the 'body-as-organism' (Clough 2008: 2): As biometric paradigms encourage us to perform ourselves as autopoietic, 'self-defining' subjects, who digitally-mediate our enclosed and separate 'selves' through the materiality of an equally bounded digital-interface, thus 'informationally closed to the environment' (Clough 2008: 8). In *01000101 01111000 01101000 01101001 01100010 01101001 01110100 01101001 01101111 01101110* (*Exhibition*, 2018), this praxis attempts to collapse such existing 'virtual/actual' and bio/digital polarities, relocating the bio/digi-mediated body in its contextual relation to the affective and rhythmic spatio-temporalities unfolding on a busy urban city street; which can be heard and 're-experienced' by the listener/reader through the sound data-stream. In Goldsmith's text *Wasting Time on the Internet* (2016), counter to his personal embodied act of running and digital interaction as dualistic activities considered in the previous praxis case study, he puts forth an alternative positivist observation on bio/digi-mediation's affective potentials, as wholly embodied. Witnessing, through the spectacle of gaming, his teenage children and friends 'deeply engaged with what is happening on the screen while being highly sensitive to each other; not a move of their body or expression of emotion gets overlooked' (Goldsmith 2016: 9).

Gaming ripples through their entire bodies: they kick their feet, jump for joy, and scream in anger. It's hard for me to see in what way this could be considered disconnected.

(Goldsmith 2016: 9)

For Clough too, it is at the thresholds between 'the empirical and the virtual' (Clough 2008: 3) where bio-mediation both exposes and shields from view the 'postbiological threshold [which is] inserted into "life itself"' (Clough 2008: 3). This case study suggests that the experimental exhibition and 'live' bio/digi-rhythmic 'event' at 211 High Street engenders a performative, allegorical 'postbiological' mode of thought, in which the embodied subject is utilised as a conduit for processing the digital data. This performative process proposes a reversal of prevailing biometric data-tracking methods, in which the body produces quantifiable data through 'self-tracking' practices, whereby the numerical digits of binary code produce sensorial affects in and through the body instead. Clough elucidates how theorisations of affect which link it to 'the philosophical conceptualization of the virtual' (Clough 2008: 3), can expose the potentiality of thresholds whereby 'the virtual is the potential tendency of biomedia and new media to realize the challenge to autopoiesis of the body-as-organism that the biomediated body poses' (Clough 2008: 3). This research suggests that using the sound data-stream as an alternative bio/digi-mediated process of 'data-capture', realises such affective potentials in the theoretical/experiential fluid 'third' space of praxis, as it performs a new embodied 're-experiencing' of the bio/digi-rhythmic 'event' for the listener/reader, which collapses existing binarised virtual/actual and bio/digital distinctions. This research thus proffers that a renegotiation of our perceptions of interfaces as 'thresholds, those mysterious zones of interaction that mediate between

different realities' (Galloway 2012: vii), situates the 'biomediated' body (which is reimagined in this praxis as the 'bio/digi-rhythmic' body), as simultaneously and dynamically belonging to the realms of both the 'virtual' and the 'empirical'; as this research proposes through a synthesis of our 'bio/digi-rhythms'.

Instruction: Play Sound Data-Stream

```
01110100 01101000 01100101 00100000 01100101 01111000 01110100
01100101 01101110 01110100 00100000 01110100 01101111 00100000
01110111 01101000 01101001 01100011 01101000 00100000 01110100
01101000 01100101 00100000 01100010 01101111 01100100 01111001
00100000 01100011 01100001 01101110 00100000 01100010 01100101
00100000 01110100 01101000 01101111 01110101 01100111 01101000
01110100 00100000 01101111 01100110 00100000 01100001 01110011
00100000 01100101 01101001 01110100 01101000 01100101 01110010
00100000 01100001 00100000 01100011 01101100 01101111 01110011
01100101 01100100 00100000 01101111 01110010 00100000 01101111
01110000 01100101 01101110 00100000 01110011 01111001 01110011
01110100 01100101 01101101
```

(Blackman 2012: 6)

Instruction: The Quotation Can Be Decoded By Copying and Pasting the Digits into an Online Binary Code Translator

In the sound data-stream *0/1* (Hughes and Allen 2018), the researchers/performers'
'live' bio/digi-rhythmic embodied 'event' performed on the street outside the 211 High
Street window, enacted a synthesis between their subjective, spoken rhythmic vocal
cadences and the multiplicity of rhythmic temporalities unfolding on the busy urban
city street. As the researchers/performers alternately take turns to 'speak' the binary
coded digits of '0' and '1' displayed on the gallery's interface, their nuanced vocal
intonations introduce corporeal differences to the repetitions of the spoken digits;
audibly apparent through the sound data-stream, as they subjectively/collaboratively
process the '0's' and '1's' in performative inter-relation. In *Rhythmanalysis* (2004),
Lefebvre perceived that 'We only hear the sounds and frequencies that we produce in
speaking – and vice versa, we can only produce those that we hear' (Lefebvre 2004:
88). In 'speaking' the 0's and 1's in dialogue, the researchers/performers thus arguably
collapse existing understandings of 'binary' boundaries between self/other, bio/digital,
the qualitative/quantitative and cognitive/empirical registers of experience through
their spoken rhythmic intervention; performing the binary code in an affective
collaboration. The verbal articulation of the algorithmic digits '0' and '1', which re-
materialises the binary code as speech through the medium of the researchers'
performing subjective bodies, thus poses a 'postbiological' (Clough 2008: 3) question
as to whether the digital can 'speak' the human subject; with the binary code producing
spoken sensorial affects through the conduits of the researchers' corporeal bodies.
The researchers' performing 'speaking' bodies, as they stand facing the window on
the busy High Street, also potentially 'rhythm the walk through the city' (Lefebvre 2004:
97) for passing pedestrians, who are occasionally required to alter the linearity of their
walking trajectories to sidestep the researchers' stationary poses. As overheard
snippets of conversational chit-chat and the intimate rhythms of passing footsteps

converge with the researchers' verbal performance and background traffic noise, the multiplicity of rhythms in flux are made-audible through the sound data-stream; becoming 'Entangled with one another, they penetrate practice and are penetrated by it' (Lefebvre 2004: 96). Lefebvre perceived, through his theoretical application of 'rhythmanalysis', that 'extra-everyday rhythms', rhythm 'the everyday and vice versa' (Lefebvre 2004: 95). The 'extra-everyday' rhythms, for Lefebvre, are the individualistic rhythms of singing, dancing, music and creativity, which he distinguishes as the inter-relational rhythms of difference; the rhythms which colour our lived embodied experiences beyond our basic habitual physiological biorhythms (of breathing, heartbeat, digestion, neurological rhythms, etc.). In the 'live' performative bio/digi-rhythmic 'event' at 211 High Street, the researchers/performers arguably introduce the 'extra-everyday' rhythms of a spoken bio/digital performance, both in polyrhythmic synchronicity with their existing embodied 'biorhythms' and into the habitual everyday rhythms of the street. Lefebvre's consideration of how 'urban, which is to say public, space becomes the site of a vast staging where all these relations with their rhythms show and unfurl themselves' (Lefebvre 2004: 96), posits the urban city streetscape as the place where rhythmic relations 'make themselves visible […] act themselves out' (Lefebvre 2004: 96). This research proposes that the use of sound as a material process of 'data-capture', enables the rhythmic relations unfolding in flux on the urban city street to be 'made-audible' for the listener/reader, through the sound data-stream *0/1* (Hughes and Allen 2018).

Instruction: Play Sound Data-Stream

https://soundcloud.com/user-658364094/01a

258

The porosity of our bodies means we also feel sound waves that we then comprehend and (re)constitute as a pulse, as a rhythm, and we interpellate ourselves accordingly.

(Duffy 2011: 18)

In the previous praxis case study *Running in Rome* (2017), this research suggested that the dominant 'white noise' of cicadas 'made-audible' in contextual relation to the running body through the sound data-stream, implied the increasing homogeneity of our eco-systems in contemporary life. This research suggests that similarly, in *0/1* (Hughes and Allen, 2018), the lack of difference and distinction between our sonic environments in urban cities, which arguably signifies the increasing homogenisation of the everyday rhythms of lived experience that directly affect our sense of wellbeing, can be discerned through the dominant background noises audible in the sound data-stream. Guzy's implication that 'Much like a cicada call, the blare of Western pop music […] dominates soundscapes across the globe' (Guzy 2017), is arguably affirmed by the intermittent beating rhythmic pulses of music which hang in the air from vehicles speeding by. In the sound data-stream *0/1* (Hughes and Allen 2018), the dominant noises of passing traffic which include car engines revving and accelerating, and the intermittent loud hissing and screeching sounds from buses breaking on the busy urban city street, at times overpower the researcher/performers' voices. The motorised sounds of vehicles performing 'the daily grind, the routine […] the perpetual' (Lefebvre 2004: 30) temporal everyday linear rhythms of commuting, temporarily 'drowning out' the embodied 'bio/digi-rhythms' of the researchers on the street. At the same time as the performative translation process of 'speaking' the digits produces a sensorial

embodied affect for the researchers/performers, their sense of embodiment is corporeally affected by the rhythms and sounds of the street; by the multiplicity of rhythmic temporalities which converge to produce 'a localised time […] a temporalised space' (Lefebvre 2004: 89). For Lefebvre, applying his concept of 'rhythmanalysis' to a busy Parisian street, 'No ear, no piece of apparatus could grasp this whole, this flux of metallic and carnal bodies. In order to grasp the rhythms, a bit of time, a sort of meditation on time, the city, people, is required' (Lefebvre 2004: 30). This praxis proposes that the empirical bio/digi-mediated process of 'data-capture' using the sound 'data-stream', adopted by this research, enables the spatio-temporal multiplicity of rhythms in flux on the busy city High Street to be extended and thus 'grasped' by the listener/reader in the theoretical/experiential 'bio/digi-rhythmic' space of praxis.

Chapter Summary

This *Performative Praxis* Chapter 4 has attempted to perform the research proposition, towards renegotiating an embodied 'bio/digi-rhythmic' synthesis in the theoretical/experiential 'third' space of praxis, using performative methods and sound 'data-streams'. The sound data-streams have been proffered in these praxis case studies as one potential processual method and materiality for 'rethinking' existing polarities between our bio/digi-mediated dimensions of embodied experience in contemporary culture. These case studies have endeavoured to facilitate a sensorial 're-experiencing' of the embodied bio/digi-rhythmic 'events' for the listener/reader, by positioning the sound data-streams to be experienced alongside the theoretical

material within the praxis space; towards synthesising oppositional perceptions between the bio/digital, mind/body, self/other, qualitative/quantitative, theoretical/experiential and virtual/actual using the material, empirical, affective and rhythmic potentialities of sound. This research suggests that the praxis case studies developed throughout this chapter have generated a heterogeneous assemblage of bio/digitally-mediated embodied interventions, all synchronously 'captured' using the sound data-streams, for renegotiating the subjective sensorial 'voice' of bio/digital experience.

Using the sound data-streams as a processual method of 'data-capture', this research has proposed that the practical methodological application of 'rhythmanalysis' is extended to the listener/reader. Who, through the embodied act of listening to the bio/digi-rhythmic sound 'events', can both experience the affects of the event and become 'rhythmanalytical' themselves; processing the converging bio/digi-rhythms through the theoretical/experiential sensory registers of their subjective body. The listener/reader thus plays an active participatory role in the performative case studies; 're-experiencing' the bio/digi-rhythmic 'events' through their subjective body, the listener/reader is given embodied agency in the theoretical/experiential, virtual/actual, bio/digital sonic space of synthesis. For Deleuze, 'space is rich in potentiality because it makes possible the realisation of events' (Conley 2010: 261). In this research, the space of praxis is proposed as 'making-audible' the realisation of embodied bio/digi-rhythmic 'events'. Furthermore, by positioning the subjective sound experience for the listener/reader in the theoretical/experiential space, this research suggests an emancipatory response to Lyon's question as to 'whose body registers which rhythms

and what this means for the production of knowledge' (Lyon 2019: 76). This methodological process arguably 're-territorialises' the research experience to include embodiment; 'thinking through' the sensorial, empirical, affective, rhythmic registers of the body and of lived experience. By re-thinking perceptions of what 'body-data' can be, this research proffers the processual 'sound experience' as a new embodied 'event'; a fluid and dynamic alternative to the conventional fixed biometric 'data-products' integral to prevailing self-tracking practices.

In the following conclusion to this thesis, the researcher will summarise and reflect on the empirical proposition made by this research praxis, to renegotiate the subjective 'voice' of bio/digital embodied experiences using performative methods and sound 'data-streams' as alternative processual and sensorial methods of 'data-capture'. This research will consider how its attempts to perform a 'bio/digi-rhythmic' synthesis in the theoretical/experiential 'third' space of praxis have been achieved, contemplating the scope of this empirical methodology for 're-thinking' existing problematic biometric data-tracking paradigms; which uphold dichotomous thinking towards our perceptions of embodiment through quantifiable systems of measurement. This research will thus summarise and reflect on the capacity of these methods to further facilitate and expand emancipatory potentials for 're-imagining' our subjective agency in relation to 'data-tracking' practices and perceptions of embodied 'data-capture'; towards renegotiating the 'data' body as empirical, processual, dynamic and affective through a 'bio/digi-rhythmic' synthesis.

Chapter 5: Conclusion

This thesis has attempted to develop an empirical methodological approach for 're-thinking' contemporary practices of digital self-tracking, which have been popularised in recent years through the rise in wearable, affordable biometric fitness devices, and socially-networked cultural 'data-logging' platforms such as the *Quantified Self* and *Strava*. This research has proffered that these prevailing digital-cultural paradigms, which encourage us to quantify our embodied activities by translating the body's physiological processes into biometric 'data-products', proliferate polarised understandings between our 'biological' and 'digital' realms of experience; thus limiting the scope for what 'body-data' could be. This research has proposed a subjective renegotiation of digitally-mediated embodied experiences, circumventing the use of the digital device as a biometric 'data-tracking' technology to develop an alternative processual and sensorial method of bio/digi-mediated 'data-capture', using sound 'data-streams'. To support the proposition for a subjective empirical 'data-set' using performative embodied interventions and sound 'data-streams', this research has repositioned Lefebvre's theory of 'rhythmanalysis' as a pragmatic methodological approach, for renegotiating a synthesis of the sensory body (our 'biorhythms') and its mediation through the digital device (our 'digi-rhythms') in the 'third' space of praxis. The rhythmic register, with its inter-relational, empirical and affective potentialities, has thus been adopted by this research as both a practical methodological approach and a metaphor for 're-thinking' our lived, embodied interactions with digital devices through a 'bio/digi-rhythmic' synthesis. During the study the researcher performed physical embodied interventions which she

synchronously 'streamed' through her digital smartphone device using the standard pre-installed 'audio-recording' function, to renegotiate a subjective 'voice' of bio/digi-rhythmic experience; capturing the embodied 'events' as they unfolded in 'real-time', through the processual materiality of sound. Using praxis has enabled the research enquiry to perform and extend the proposition for a subjectively experiential 'bio/digi-rhythmic' synthesis, by proffering the listener/reader an embodied 're-experiencing' of the digitally-mediated performative sound 'events' in a theoretical/experiential space. This research has thus reimagined the 'data-body' through the processual, empirical and sensorial sound-experience; a multiplicity in flux which resists binary oppositional thought, through the affective, rhythmic and fluid materialities of sound.

In the *Contextual Literature Review* in Chapter 1, this research considered the ideologies behind contemporary digital health tracking practices and popular cultural movements such as the *Quantified Self*, through the theoretical lens of Foucauldian philosophy. In particular, Foucault's ideations around how biopolitical mechanisms of power and surveillance have 'shape-shifted' as they become incorporated into our lived everyday subjective behavioural practices as 'technologies of the self' (Foucault 1982), in contemporary cultures. This research considered the implications of existing biometric 'self-tracking' practices, which entangle our digitally-mediated subjectivities into larger biopolitical and economically driven data-paradigms; using processes of 'big-data' capture to homogenise our quantifiable, measurable forms of 'body-data' into accumulative big-data masses, and raising pressing questions as to 'who has the power to speak with *our* data?' (Beer 2019: 1). This research proposed that our lived individual experiences in post-digital societies are thus subject to homogenisation and

that the scientific-technological drive to 'quantify' and 'measure' has privileged biometric-data over sensorial bodily experience; with prevailing digitally-networked systems of data-capture negating the 'voice' of subjectivity, as they render our data-bodies 'the object of information, never a subject in communication' (Foucault 1975: 200). This research revealed the complex multiplicity of paradoxical digital health discourses that individuals are required to navigate in the post-digital context, such as the '10,000 steps' daily physical/biometric activity recommendation. Data-tracking practices which encourage us to 'self-actualise', 'self-optimise' and 'self-monitor' through the use of wearable digital technologies and the subjective internalisation of measurable health standards, at the same time as they entangle our bio/digi-mediated selves into inequitable processes of 'big-data' capture. Considering how biometric data-tracking paradigms perform a dualistic Cartesian 'mind/body' reversal, which proliferates bio/digital polarities by privileging our representational 'data-products' over the sensorial dimensions of our subjective experiences, this research proposed a renegotiation of the 'self-tracking' data phenomenon to include embodiment. This research foregrounded the proposition for an approach to an embodied 'data-set' which resists existing binary oppositional 'bio/digital' perceptions to better speak the 'voice' of subjective experience, through Deleuze's concept of the 'Body without Organs'. The 'Body without Organs', a conceptual approach which introduces a multiplicity in flux, destabilising and resisting polarised thought, thus shaped the research proposition towards 'rethinking' a synthesis between the digital data-body (our 'digi-rhythms') and sensorial embodied experience (our 'bio-rhythms') within the space of praxis.

Through the *Methodologies* Chapter 2, this research formulated and expanded the methodological approach for performing a synthesis of the 'bio/digitally-mediated' body to include its sensorial dimensions, in the theoretical/experiential praxis space. Proffering to operate within a 'performative research paradigm' (Haseman 2006: 98) towards 'undoing' existing qualitative/quantitative, theoretical/experiential, mind/body, bio/digital dichotomies (which are proliferated in conventional methodological paradigms of data-capture), this research elucidated a heterogeneous assemblage of chosen methods and processes for renegotiating a subjective empirical 'data-set'. Sound was proposed as one processual method of embodied 'data-capture', used by this research for synchronously recording the researcher's subjective performative interventions through an alternative application of the digital device, as they unfolded in 'real-time'. Sound was proffered for its potentialities to counteract predominant cultural discourses of 'visibility' which are applied to 'knowing' and understanding our bodies through the visual sense register; including representational biometric paradigms which visualise the 'data-body' using quantifiable metrics. The material properties of sound, as well as its expansive, inter-relational, sensorial and affective fluidity, facilitated an extension of the researcher's embodied interventions for the listener/reader in the praxis space. This proposition of a phenomenological 're-experiencing' of the researcher's embodied 'events', digitally-mediated through the sound data-streams, was extended to engage the listener/reader's body in a 'bio/digi-rhythmic' synthesis through their subjective embodied act of listening. Renegotiating Lefebvre's theory of *Rhythmanalysis* (2004) as both a conceptual and pragmatic methodological framework, this research clarified the application of 'rhythmanalysis' within this enquiry as an embodied approach for synthesising a theoretical/experiential convergence of our 'biorhythms' and 'digi-rhythms' using sound and praxis. While

Lefebvre theorised 'rhythmanalysis' as a process of corporeal attunement to our inter-relational subjective 'being-in-the-world' (Lefebvre 2004: 44), he recognised that embodied rhythms 'cannot be analysed' (Lefebvre 2004: 88) when they are 'lived'. Perceiving that 'In order to analyse a [felt, experiential] rhythm, one must get outside it' (Lefebvre 2004: 88), Lefebvre acknowledged the relational process of internality/externality required 'to grasp a rhythm one must have been grasped by it, have given or abandoned oneself "inwardly" to the time that it rhythmed' (Lefebvre 2004: 88). This research proposed that 'capturing' the embodied bio/digital interventions using sound data-streams, to be 're-experienced' in the spatio-temporal 'third' space of praxis, enabled the listener/reader to synchronously 'grasp' and be 'grasped by' the bio/digi-rhythmic 'events', thus converging theoretical/experiential dimensions rhythmically and affectively.

This research enquiry applied the methodological framework outlined in Chapter 2 to three diverse 'real-world' case studies in the *Contextual Case Studies* in Chapter 3, towards further developing and synthesising a socio-cultural discourse for 'rethinking' a bio/digital paradigm of synthesis to include embodiment, towards emancipatory ends. The chosen contextual case studies were each proposed to have destabilised existing bio/digital, mind/body, qualitative/quantitative, virtual/actual dichotomies, by pragmatically renegotiating emerging biopolitical power-dynamics, tensions, inequalities, and bio/digi-polarities within particular 'digital-cultural' and 'digital-social' contexts of lived experience. In the first case study on the artist/choreographer Xavier Le Roy's performance practice, this research revealed how Le Roy's movement practice developed as a subjective response to the 'felt' embodied tensions and

bio/digital polarities that he experienced working within a field of biomedical research, driven by the embedded techno-scientific and Cartesian systems of digital-mediation, quantification and reductionism. This enquiry elucidated the development of Le Roy's 'autoethnographic' choreographic practice through a methodological application of 'rhythmanalysis'; proffering that his subjective embodied awareness in becoming 'rhythmanalytical' to the inter-relational affective, rhythmic 'disruptions' of his lived experiences, led to him renegotiate his 'voice' of subjectivity through the empirical realm of his performing, moving body. This research further posited that Le Roy extended this subjective agency to performers/participants in his later *Retrospective* (2012) work, in which he renegotiated the conventional spatio-temporalities of the gallery context into a collectivised, heterogeneous and affective 'third' space of experiential embodied synthesis. The second contextual case study, which navigated The Coastal Housing Group's (the partnership organisation for this *KESS 2* sponsored research project) integration of emancipatory processes of bio/digital-mobility into their existing everyday organisational culture, proffered that the social housing association have cultivated a fluid, heterogeneous, and non-hierarchical 'bio/digi-rhythmic' workspace. This empirical enquiry proposed that the Coastal Housing Group have destabilised the existing 'striated' organisational culture, by facilitating staff members with the 'nomadic' bio/digi-mediated embodied agency to re-territorialise their subjective experience of the working-day; towards renegotiating alternative rhythms, spatio-temporalities, and mobilities within a more synthesised 'digital-social' organisational culture. In the third contextual case study, this research explored how the artist and cultural theorist Hito Steyerl's experientially interactive augmented-reality work *Actual Reality*[OS] (2019), engaged viewers as embodied participants in a bio/digi-mediated interplay, through a site-specific installation which was navigated

subjectively using the digital smartphone device. This research revealed Steyerl's performative use of a 'language of duality' through the bio/digi-mediated interactivity of *Actual Reality*^{OS} (2019); in which the work presented co-existing binaries for participating subjects to renegotiate through the digital screen interface, collapsing distinctions between bio/digital, virtual/actual, internal/external, qualitative/quantitative and theoretical/experiential realms. This enquiry proposed that Steyerl's democratisation of the subjective experience in relation to the cultural-institutional context of the 'art encounter', sited within the internal/external grounds of the Serpentine Sackler Gallery in Hyde Park London, generated a performative virtual/actual 'third' space of bio/digi-rhythmic synthesis which empowered participants with embodied agency.

Through the three *Performative Praxis* case studies in Chapter 4, this research enquiry performed the proposition for a subjective renegotiation of the 'data-body', to include embodiment and introduce the 'voice' of subjective experiential inclusion into the 'third' bio/digi-rhythmic space, through praxis. The assemblage of bio/digi-mediated embodied interventions performed by the researcher and synchronously 'captured' through her digital smartphone device using the sound data-streams, circumvented the conventional use of the data-tracking device as a quantitative 'technology of the self'. Sound was adopted as a processual, empirical method of data-capture, for recording the researcher's embodied interventions as 'data-processes' in flux, unfolding in 'real-time'. 'Rhythmanalysis' was applied as a methodological approach for synthesising our 'bio-rhythms' and 'digi-rhythms' through the theoretical/experiential potentials of rhythmic affect, in the 'third' space of praxis. In

the first case study *Speaking the Data* (2017), the researcher gave subjective 'voice' to the biometric data stream that her moving, cycling body was producing in 'real-time' as she cycled on a digitised 'smart-bike' stationary exercise machine, in the context of a public gym environment. Synchronously 'capturing' this unfolding bio/digi-rhythmic embodied 'event' through the sound data-stream, the researcher's efforts to synthesise her 'bio/digi-rhythms' of breath and movement whilst maintaining a quantifiable biometric cadence were 'made-audible' for the listener/reader through the sound 'event'. In the second praxis case study *Running in Rome* (2017), the researcher extended a consideration of her running 'bio/digi-mediated' body, which she processually and experientially captured in 'real-time' through the sound data-stream, as she ran through a large public park in the urban city centre of Rome. As the researcher's running body performed a 'metronome' (Lefebvre 2004: 19), recalibrating her movements to the multiplicity of inter-relational, affective, rhythmic spatio-temporalities unfolding within the context of the urban public park space, the sound data-stream proffered an extension of the role of 'rhythmanalyst' to the listener/reader through a sensorial 're-experiencing' of the bio/digi-rhythmic 'event'. The third praxis case study, *01000101 01111000 01101000 01101001 01100010 01101001 01110100 01101001 01101111 01101110* (*Exhibition*, Hughes and Allen 2018), explored the heterogeneous potentials of siting an interactive 'bio/digi-rhythmic' exhibition and 'live' performance event on a busy urban pedestrian street. The exhibition, which utilised the window of a gallery space (located at 211 High Street, Swansea) as an allegorical 'interface' to engage the public in a bio/digi-mediated interplay, invited participants to perform the role of 'data-processor' to decode and translate the meaning of the binary language using their digital smartphone device. For the 'live' bio/digi-rhythmic event, the researchers performed the binary coded

language of 0's and 1's corporeally, speaking the digits amongst the unfolding everyday rhythms and lived spatio-temporalities of the busy urban city streetscape. As the researchers' subjectively nuanced vocal cadences entangled with the rhythms of the street, this research applied 'rhythmanalysis' for untangling the polyrhythmic multiplicities of the 'bio/digi-rhythmic' soundscape which unfolded in flux; extending the experience to the listener/reader through the sensorial materialities of the sound data-stream.

This thesis has synthesised a discourse for expanding our theoretical/experiential perceptions for what the 'data-body' can be, to include the subjectively empirical and sensorial dimensions of embodiment. This research enquiry has proposed and developed a subjectively embodied methodology for 'thinking through' the body, using praxis as a method and process for critiquing existing bio/digital, qualitative/quantitative, mind/body polarities in relation to existing biometric 'self-tracking' practices. Praxis has enabled this research to extend the proposition for 'thinking through' embodied experience to the listener/reader, who through the subjective act of listening has corporeally 're-experienced' the bio/digi-rhythmic sound 'events' in a synthesised 'third' space. This approach has also facilitated an extension of the role of 'rhythmanalyst' to the listener/reader, who has been invested with the embodied agency to register rhythmic and sensorial bio/digital affects through the sound data-streams; thus 're-territorialising' the data experience to include embodiment and proffering a response to Lyon's question as to 'whose body registers which rhythms and what this means for the production of knowledge' (Lyon 2019: 76). Furthermore, this embodied research approach which extends experiential bio/digi-

rhythmic 'events' to the listener/reader, offers the listener/reader a new way of negotiating their own subjective bodily rhythms and movements. Towards disrupting existing quantitative 'self-tracking' cultures of measurement which are enacted through self-scrutinising reductionist methods of 'data-capture', by extending the scope for the empirical embodied 'data-set' beyond the disseminated experiences of the researcher (the self), to the listener/reader (the body of the 'other'). While Lefebvre recognised, through his theoretical substantiation of *Rhythmanalysis* (2004), that embodied subjectivity is integral to our ontological perceptions of 'being-in-the-world' (Lefebvre 2004: 44), he also anticipated the potential criticisms to his phenomenological philosophical approach; as the 'standpoint of an all-too-conscious ego, a phenomenology stretching up to the ends of the road' (Lefebvre 2004: 18). In turn, this research acknowledges that while the inclusion of a plurality of other subjective 'data-sets' was beyond the parameters of this particular enquiry, there is scope to extend the empirical methodological approach developed within this praxis to a more extensive research study in the future. The methodological adaptation of Lefebvre's 'rhythmanalysis' as an 'embodied' research approach, has been adopted in a variety of manifestations within research areas of the Social Sciences and Cultural Geographies in recent years, for developing qualitative empirical studies in relation to socio-cultural lived experiences. However as Lyon contends, despite the theoretical inclusion of embodied research practices and processes within these disciplines, the presentation of such methods and findings rarely foreground 'a reflexive consideration of the researcher's body doing research' (Lyon 2019: 81); continuing to 'privilege the cerebral despite […] acknowledgement of the corporeal' (Lyon 2019: 81). This research praxis has developed an alternative subjectively embodied 'autoethnographic' approach which proffers a response to Lyon's observation; that the

researcher's 'body' is often absent from the research process and from data-findings, within other fields of practice. For Lefebvre, it is only by corporeally attuning to embodiment that the 'rhythmanalyst' becomes 'the agent' (Lefebvre 2004: 18); who, harnessing their subjective embodied agency, 'listens- and first to his body; he learns rhythm from it, in order consequently to appreciate external rhythms. His body serves him as a metronome' (Lefebvre 2004: 20). This research has proposed that by using a methodological assemblage of performative embodied interventions, sound data-streams, and a theoretical/experiential application of 'rhythmanalysis', the affective inter-relationality of our 'digital-experiential' subjectivities can converge in the 'bio/digi-rhythmic' space of synthesis. Sound data-streams, as an experiential process of 'data-capture' which account for the researcher's moving, dynamic bio/digi-mediated body 'doing research' (Lyon 2019: 81) in particular spatio-temporalities, have enabled this research to synthesise a proposition which is 'founded on the experience and knowledge of the body' (Lefebvre 2004: 67); towards collapsing distinctions between the virtual/actual, bio/digital, qualitative/quantitative, mind/body, self/other and corporeal/sensorial dimensions of experience. The 'bio/digi-rhythmic' space of synthesis has been posited through a 'theory of rhythm as the force of the middle' (Ikoniadou 2014: 13), for attuning, recalibrating and integrating our internal embodied 'bio-rhythms', with the external 'digi-rhythms' of our digital-social experiences; always in contextual, affective and fluid inter-relation to our 'being-in-the-world' (Lefebvre 2004: 44). While sound data-streams have been used in this praxis as one potential method, materiality and process for renegotiating a synthesis of existing bio/digital polarities, this research recognises that advancements in digital-sensing technologies will give rise to other processual, empirical potentialities for 'capturing' the dynamically embodied dimensions of our 'digital-experiential' lives in the future. As such, through

future technological expansions the corporeal materialities of our subjective embodied experiences may be 'captured' through different forms of 'data' (as the digital-cultural 'shapes' of our data-bodies inexorably shift); and will inevitably raise more pressing ethical, moral and biopolitical research concerns surrounding the digital biometric, wearable, and mobile technologies of the future. Although this research enquiry was conducted prior to the COVID-19 global health pandemic, it recognises the increased emphasis upon digitality as a 'technology of the self' during the current world crisis. Thus, a deeper cultural understanding of 'data-capture' in relation to our present, intensified lived everyday bio/digitally-mediated experiences is perhaps even more pressing and significant at this time.

In conclusion, this research enquiry has demonstrated that our existing perceptions of 'body-data', as the representational biometric 'data-product's' of our experiential digitally-mediated subjective activities, can be renegotiated and expanded to include embodiment. This thesis has converged literature from diverse fields of study that may have previously been considered distinct, in order to synthesise a theoretical/experiential discourse for better contextualising our digital, health and cultural lived practices as inter-relational. The assemblage of literature and praxis synthesised within this enquiry thus contributes a new lens with which to view the inter-relations between our biological bodies and digital interactions, as 'data'. This research praxis has renegotiated the subjective 'voice' of bio/digital embodied experience, using performative methods and sound 'data-streams' as alternative empirical and processual methods of 'data-capture', for 'capturing' the sensorial materialities of subjective experience as unfolding 'data-processes' in flux. The

researcher's bio/digi-mediated embodied interventions generated a subjective 'data-set' which destabilises conventional 'quantitative/qualitative' and 'bio/digital' data dichotomies, using sound data-streams to perform the proposition for a 'third' bio/digi-rhythmic space of synthesis through praxis. Furthermore, the sound 'data-streams' have extended a subjectively embodied bio/digi-rhythmic 'sound experience' for the listener/reader, in the 'third' inclusively experiential space. This empirical enquiry has thus proffered the emancipatory potentials for 're-imagining' our subjective embodied agency in relation to 'data-tracking' practices, towards freeing our digitally-mediated subjectivities from the perceptual and experiential limitations of existing quantifiable biometric systems of 'data-capture'. This research has demonstrated that a subjective renegotiation of the 'data-body' has the potential to both expand our perceptions of what embodied 'data' can be (as experiential, sensorial, processual, dynamic, inter-relational, rhythmic and affective) and collapse existing bio/digital polarities through a theoretical/experiential 'bio/digi-rhythmic' synthesis.

Bibliography

Aas, K.F., 2006. *'The Body Does Not Lie': Identity, Risk and Trust in Technoculture*. Crime Media Culture, 2 (2), pp. 143-158. https://doi.org/10.1177/1741659006065401 [accessed 18 February 2017]

Adams, T.E., Jones, S.H., Ellis, C., 2015, *Autoethnography: Understanding Qualitative Research*, New York: Oxford University Press

Ajana, B., 2017. *Digital health and the biopolitics of the Quantified Self*. Digital Health, vol. 3, pp: 1-18. https://journals.sagepub.com/doi/10.1177/2055207616689509 [accessed 2 June 2017]

Ajana, B., 2013, *Governing Through Biometrics: The Bio-politics of Identity*, London: Palgrave Macmillan

Alhadeff-Jones, M., 2017. *Lefebvre's Path Toward Rhythmanalysis*. http://alhadeffjones.com/autoethnography-of-a-rhythmanalyst/2016/11/14/lefebvres-path-toward-rhythmanalysis [accessed 25 May 2019]

Angel, M., Gibbs, A., 2006. *Media, Affect and the Face: Biomediation and the Political Scene*. Southern Review: Communication, Politics and Culture, vol. 38 (2), pp. 24-39. https://search.informit.com.au/documentSummary;dn=162702512239768;res=IELHSS;subject=International%20law [accessed 17 April 2018]

Armstrong, E., 2013. *The Role of Active Participation and Citizen Engagement in Good Governance*. https://www.un.org/esa/socdev/egms/docs/2013/EmpowermentPolicies/Elia%20Armstrong%20presentation.pdf [accessed 20 November 2016]

Auslander, P., 2018, *Reactivations: Essays on Performance and Its Documentation*, USA: University of Michigan Press

Auslander, P., 2006. *The Performativity of Performance Documentation.* PAJ, 84, pp. 1-10. https://www.mitpressjournals.org/doi/10.1162/pajj.2006.28.3.1 [accessed 16 March 2018]

Baugh, B., 2010, In: Parr, A. [Ed.], *The Deleuze Dictionary Revised Edition*, Edinburgh: Edinburgh University Press

Beer, D., 2019, *The Data Gaze: Capitalism, Power and Perception*, UK: SAGE Publications Ltd

Bentham, J., 1843, In: Bowring, J., *The Works of Jeremy Bentham Volume IV*, Edinburgh: William Tait

Blackman, L., 2012, *Immaterial Bodies: Affect, Embodiment, Mediation*, UK: SAGE Publications Ltd

Bolt, B., 2016. *Artistic Research: A Performative Paradigm?* PARSE 3. https://parsejournal.com/article/artistic-research-a-performative-paradigm/ [accessed 23 June 2018]

Boundas, C. V., 2010, In: Parr, A. [Ed.], *The Deleuze Dictionary Revised Edition*, Edinburgh: Edinburgh University Press

Cage, J., Cunningham, M., 1965. *Variations V.* [Mixed-Media Choreographed Performance]. http://www.medienkunstnetz.de/works/variations-v/ [accessed 26 September 2018]

Clough, P. T., 2008. *The Affective Turn: Political Economy, Biomedia and Bodies*. Theory, Culture & Society 25 (1), pp. 1-22. https://journals.sagepub.com/doi/10.1177/0263276407085156 [accessed 3 December 2016]

Colebrook, C., 2010, In: Parr, A. [Ed.], *The Deleuze Dictionary Revised Edition*, Edinburgh: Edinburgh University Press

Conley, T., 2010, In: Parr, A. [Ed.], *The Deleuze Dictionary Revised Edition*, Edinburgh: Edinburgh University Press

Connor, S., 2011, *Ears Have Walls: On Hearing Art,* In: Kelly, C. [Ed.]*, Sound: Documents of Contemporary Art,* Massachusetts: The MIT Press

Deleuze, G., Guattari, F., 2013, *A Thousand Plateaus*, UK: Bloomsbury Academic

Deleuze, G., 2005, *Francis Bacon: The Logic of Sensation*, UK: Continuum

Deleuze, G., 2015, *Logic of Sense*, UK: Bloomsbury Academic

Deleuze, G., 1992. *Postscript on the Societies of Control*. October, vol. 59, pp. 3-7. https://www.jstor.org/stable/778828?seq=1 [accessed 22 July 2018]

Denzin, N.K., Lincoln, Y.S., 2008, *Strategies of Qualitative Enquiry*, USA: SAGE Publications

Derrida, J., Prenowitz, E., 1995. *Archive Fever: A Freudian Impression*. Diacritics, vol. 25 (2), pp. 9-63. https://www.jstor.org/stable/465144?origin=JSTOR-pdf&seq=1 [accessed 19 January 2019]

Di Pellegrino, G., Làdavas, E., 2014, *Peripersonal space in the brain*. Neuropsychologia, 66, pp. 126-133.

https://doi.org/10.1016/j.neuropsychologia.2014.11.011 [accessed 16 April 2017]

Dow Schüll, N., 2016. *Data for Life: Wearable Technology and the Design of Self-Care.* BioSocieties, 11, pp. 317-333. https://doi.org/10.1057/biosoc.2015.47 [accessed 30 March 2017]

Duffy, M., Waitt, G., Gorman-Murray, A., Gibson, C., 2011. *Bodily Rhythms: Corporeal Capacities to Engage with Festival Spaces*. Emotion, Space and Society, vol. 4 (1), pp. 17-24. https://doi.org/10.1016/j.emospa.2010.03.004 [accessed 22 May 2018]

Edensor, T., Larsen, J., 2017. *Rhythmanalysing Marathon Running: 'A Drama of Rhythms'.* Environment and Planning A: Economy and Space, vol. 50 (3), pp. 730-746. https://doi.org/10.1177%2F0308518X17746407 [accessed 18 September 2019]

Edensor, T., Kärrholm, M., Wirdelöv, J., 2018. *Rhythmanalysing the Urban Runner: Pildammsparken, Malmö.* Applied Mobilities, vol. 3 (2), pp. 97-114. https://www.tandfonline.com/doi/full/10.1080/23800127.2017.1347361 [accessed 19 September 2019]

Elden, S. (Ed.), 2004, In: Lefebvre, H., *Rhythmanalysis: Space, Time and Everyday Life*, London: Continuum

Etkin, J., 2016. *The Hidden Cost of Personal Quantification.* Journal of Consumer Research, vol. 42 (6), pp. 967-984. https://doi.org/10.1093/jcr/ucv095 [accessed 6 January 2020]

Finley, S., 2008, In: Given, L.M. [Ed.], *The SAGE Encyclopedia of Qualitative Research Methods Volumes 1 & 2*, USA: SAGE Publications Ltd.

Foucault, M., 1975, *Discipline and Punish: The Birth of the Prison*, Harmondsworth: Penguin

Foucault, M., 1980, In: Gordon, C. [Ed.], *Power/Knowledge: Selected Interviews & Other Writings 1972-1977 by Michel Foucault*, New York: Pantheon Books

Foucault, M., 1988, In: Martin, L.H., Gutman, H., Hutton, P.H. [Eds.], *Technologies of the Self: A Seminar with Michel Foucault,* US: University Massachusetts Press

Foucault, M., 1978, *The History of Sexuality, Volume 1: An Introduction*, Harmondsworth: Penguin

Foucault, M., 1986, *The History of Sexuality, Volume 3: The Care of the Self*, New York: Pantheon Books

Gainey, M., Horvath, M., 2009. *Strava, Inc.* San Francisco, California. https://www.strava.com [accessed 10 March 2019]

Galloway, A.R., 2014, *Laruelle: Against the Digital*, Minneapolis, MN: The University of Minnesota Press

Galloway, A.R., 2012, *The Interface Effect*, UK: Polity Press

Gibbs, A., 2015, *Writing as Method: Attunement, Resonance, and Rhythm*. In: Knudsen, B.T., Stage, C. [Eds.], *Affective Methodologies: Developing Cultural Research Strategies for the Study of Affect,* UK: Palgrave Macmillan

Goldsmith, K., 2016, *Wasting Time on the Internet*, New York: Harper Perennial

Guzy, M., 2017. *The Sound of Life: What is a Soundscape?* Folklife Digital Magazine. https://folklife.si.edu/talkstory/the-sound-of-life-what-is-a-soundscape [accessed 14 October 2019]

Hammond, C., 2019. *Do We Need to Walk 10,000 Steps a Day?* BBC Future Website. https://www.bbc.com/future/article/20190723-10000-steps-a-day-the-right-amount [accessed 3 January 2020]

Haseman, B., 2006. *A Manifesto for Performative Research*. Media International Australia incorporating Culture and Policy, 118 (1), pp. 98-106. https://journals.sagepub.com/doi/10.1177/1329878X0611800113 [accessed 21 June 2017]

Heitger, A., 2018. *On Self-Tracking as Surveillance Practice*. On_Culture: The Open Journal for the Study of Culture, 6. https://www.on-culture.org/journal/perspectives/heitger-self-tracking/ [accessed 16 June 2019]

Ikoniadou, E., 2014, *The Rhythmic Event: Art, Media, and the Sonic*, Cambridge, MA: The MIT Press

Kelly, K., Wolf, G. 2007. *Quantified Self.* https://quantifiedself.com. [accessed 14 November 2016]

Kember, S., 2013. *iMedia*. https://www.youtube.com/watch?v=p5IWLjVBHgc [Accessed: 5 November 2016]

Kember, S., 2016, *iMedia: The Gendering of Objects, Environments and Smart Materials*, UK: Palgrave Macmillan

Kember, S., Zylinska, J., 2012, *Life After New Media: Mediation as a Vital Process*, Cambridge, MA: MIT Press

Kember, S., 1998, *Virtual Anxiety: Photography, New Technologies and Subjectivity*, UK: Manchester University Press

KESS 2, 2020. *About KESS 2.* http://kess2.ac.uk/about/ [accessed 16 August 2020]

Kirby, A., 2009, *Digimodernism: How New Technologies Dismantle the Postmodern and Reconfigure Our Culture*, New York: Continuum Books

Knudsen, B.T., Stage, C., 2015, *Affective Methodologies: Developing Cultural Research Strategies for the Study of Affect,* UK: Palgrave Macmillan

Le Roy, X., 1999. *Product of Circumstances*. [Performance]. https://www.youtube.com/watch?v=ffDoMK12LO4 [Accessed: 14 January 2018]

Le Roy, X., 2012. *Retrospective*. [Performance]. Fundació Antoni Tàpies Gallery, Barcelona. https://fundaciotapies.org/en/exposicio/retrospective-xavier-le-roy/ [accessed 8 April 2018]

Le Roy, X., 2018. *Retrospective*. [Performance]. Museo Jumex, Mexico City. https://www.youtube.com/watch?v=JUUDpVNq9Os [Accessed: 18 October 2019]

Le Roy, X., 1998. *Self Unfinished*. [Performance]. Museum of Modern Art, New York. https://www.youtube.com/watch?v=z0HS_DU-stc [Accessed: 7 January 2018]

Le Roy, X., 2017. *Self Unfinished.* https://www.youtube.com/watch?v=QjUDY_54eLM [Accessed: 6 January 2018]

Le Roy, X., 2003. *Self Unfinished*. http://www.xavierleroy.com/page.php?id=c775674ebd34dae5be38976cf5426dec4dc eb5cb&lg=en [accessed 8 January 2018]

Lefebvre, H., 2004, *Rhythmanalysis: Space, Time and Everyday Life*, London: Continuum

Lepecki, A. [Ed.], 2012, *Dance: Documents of Contemporary Art,* London: Whitechapel Gallery

Li, J., Lepp, A., Barkley, J.E., 2015, *Locus of Control and Cell Phone Use: Implications for Sleep Quality, Academic Performance, and Subjective Well-being*. Computers in Human Behaviour, vol. 52, pp. 450-457. https://doi.org/10.1016/j.chb.2015.06.021 [accessed 23 March 2020]

Lista, M., 2013, *Xavier Le Roy: A Discipline of the Unknown*. Afterall: A Journal of Art, Context and Enquiry, 33, pp. 26-37. https://www.jstor.org/stable/10.1086/672017?seq=1 [accessed 12 August 2017]

Little, J., 2016, *Running, health and the disciplining of women's bodies: The influence of technology and nature*. Health & Place, vol. 46, pp. 322-327. https://doi.org/10.1016/j.healthplace.2016.11.011

[accessed 15 February 2017]

Livesey, G., 2010, In: Parr, A. [Ed.], *The Deleuze Dictionary Revised Edition*, Edinburgh: Edinburgh University Press

Lupton, D., 2016, *The Quantified Self*, UK: Polity Press

Lury, C., Wakeford, N., 2012, *Inventive Methods: The Happening of the Social,* UK: Routledge

Lyon, D., 2019, *What Is Rhythmanalysis?,* UK: Bloomsbury Academic

Marks, J., 2010, In: Parr, A. [Ed.], *The Deleuze Dictionary Revised Edition*, Edinburgh: Edinburgh University Press

Massumi, B., 2002, *Parables for the Virtual: Movement, Affect, Sensation*, Durham, NC: Duke University Press.

Mayfield, J., Min, E., Barger, S., Myrin, A., 2014. *Zwift, Inc*. California, USA. https://zwift.com/uk [accessed 5 June 2019]

McCormack, D.P., 2013, *Refrains for Moving Bodies: Experience and Experiment in Affective Spaces,* USA: Duke University Press

McMullan, T., 2015. *What Does the Panopticon Mean in the Age of Digital Surveillance?* The Guardian. https://www.theguardian.com/technology/2015/jul/23/panopticon-digital-surveillance-jeremy-bentham [accessed 22 February 2017]

Message, K., 2010, In: Parr, A. [Ed.], *The Deleuze Dictionary Revised Edition*, Edinburgh: Edinburgh University Press

Milne, G., 2020, *Smoke & Mirrors: How Hype Obscures the Future and How to See Past It,* London: Robinson

Mirzoeff, N., 2015, *How to See the World,* UK: Penguin Random House

Neff, G., Nafus, D., 2016, *Self- Tracking: The MIT Press Essential Knowledge Series*, Massachusetts: The MIT Press

Palmer, M., Jones, O., 2014, *On Breathing and Geography: Explorations of Data Sonifications of Timespace Processes with Illustrating Examples from a Tidally Dynamic Landscape (Severn Estuary, UK).* Environment and Planning A: Economy and Space, vol. 46 (1), pp. 222-240. https://doi.org/10.1068%2Fa45264 [accessed 16 June 2019]

Parikka, J., 2016, *The Contemporary Condition: A Slow, Contemporary Violence: Damaged Environments of Technological Culture*, Berlin: Sternberg Press

Park, J., Friedman, E., 2007. *Fitbit Inc.* San Francisco, California. http://www.fitbit.com [accessed 16 March 2017]

Portanova, S., 2013, *Moving Without a Body: Digital Philosophy and Choreographic Thoughts*, Massachusetts: The MIT Press

Rajan, K.S., 2006, *Biocapital: The Constitution of Postgenomic Life*, US: Duke University Press

Reichelt, L., 2007. *Ambient Intimacy*. Disambiguity: Understanding Humans. https://www.disambiguity.com/ambient-intimacy/ [accessed 25 October 2019]

Robinson, S., Pallasmaa, J. [Eds.], 2015, *Mind in Architecture: Neuroscience, Embodiment, and the Future of Design*, Massachusetts: The MIT Press

Rose, N., 1999, *Powers of Freedom: Reframing Political Thought*, Cambridge: Cambridge University Press

Rose, N., 2001. *The Politics of Life Itself*. Theory, Culture & Society, vol. 18 (6), pp: 1-30. https://doi.org/10.1177/02632760122052020 [accessed 4 March 2017]

Rosenbaum, L., 2019. *Should You Really Take 10,000 Steps A Day?* Fitbit Website Blog. https://blog.fitbit.com/should-you-really-take-10000-steps-a-day/ [accessed 12 March 2020]

Seigworth, G.J., 2018, In: Sampson, T.D., Maddison, S., Ellis, D. [Eds.], *Affect and Social Media: Emotion, Mediation, Anxiety and Contagion,* US: Rowman & Littlefield Publishers

Sharma, S., 2009, *Baring Life and Lifestyle in the Non-place*. Cultural Studies, vol. 23 (1), pp. 129-48. https://doi.org/10.1080/09502380802016246 [accessed 3 February 2017]

Sharma, S., 2014, *In the Meantime: Temporality and Cultural Politics*, UK: Duke University Press

Shilling, C., 2016, *The Body: A Very Short Introduction*, UK: Oxford University Press

Stagoll, C., 2010, In: Parr, A. [Ed.], *The Deleuze Dictionary Revised Edition*, Edinburgh: Edinburgh University Press

Steyerl, H., 2016. *A Sea of Data: Apophenia and Pattern (Mis-)Recognition.* e-flux Journal, 72. https://www.e-flux.com/journal/72/60480/a-sea-of-data-apophenia-and-pattern-mis-recognition/ [accessed 10 August 2018]

Steyerl, H., 2019. *Actual Reality^OS*. [Catalogue of Exhibition at the Serpentine Sackler Gallery, 11 April 2019- 31 January 2020]. London: Serpentine Galleries

Steyerl, H., 2019. *Actual Reality^OS.* Serpentine Gallery, London. https://www.serpentinegalleries.org/whats-on/hito-steyerl-actual-reality-os/ [accessed 7 November 2019]

Steyerl, H., 2019. *Actual Reality^OS.* Serpentine Gallery, London. https://www.youtube.com/watch?v=WY5gnHV5dBE [Accessed: 9 November 2019]

Swan, M., 2013. *The Quantified Self: Fundamental Disruption in Big Data Science and Biological Discovery*. Big Data, vol. 1 (2), pp. 85-99. http://doi.org/10.1089/big.2012.0002 [accessed 2 March 2017]

Thaler, R.H., Sunstein, C.R., 2009, *Nudge: Improving Decisions about Health, Wealth and Happiness,* London: Penguin Books

Thrift, N., 2005, *Knowing Capitalism*, London: SAGE Publications Ltd

Till, C., 2014. *Exercise as Labour: Quantified Self and the Transformation of Exercise into Labour*. Societies, vol. 4 (3), pp. 446-462. https://doi.org/10.3390/soc4030446 [accessed 27 January 2017]

U.S. Department of Health and Human Services. 2018. *Physical Activity Guidelines for Americans, 2nd edition*. https://health.gov/sites/default/files/2019-09/Physical_Activity_Guidelines_2nd_edition.pdf [accessed 18 October 2019]

Voegelin, S., 2010, *Listening to Noise and Silence: Towards a Philosophy of Sound Art*, New York: Continuum Books

Watkins, E., 2019. *Hito Steyerl's Actual Reality OS*. Plinth Magazine. https://plinth.uk.com/blogs/magazine/hito-steyerls-actual-reality-os [accessed 10 October 2019]

Whall, M., 2017. *Crossed Paths*. [Performance] https://www.mirandawhall.space/?page_id=2363 [accessed 21 February 2020]

Wikström, G., Regnér, A., 2016. *Vision for eHealth 2025- Common Starting Points for Digitisation of Social Services and Health Care*. https://www.government.se/4a3e02/contentassets/b0fd09051c6c4af59c8e33a3e71fff24/vision-for-ehealth-2025.pdf [accessed 14 February 2017]

Wilson, I., 1996. *Wattbike.* Nottingham, UK. https://wattbike.com/gb [accessed 7 April 2020]

World Health Organisation, Regional Office for Europe. 2016. *From Innovation to Implementation: eHealth in the WHO European Region.* https://www.euro.who.int/__data/assets/pdf_file/0012/302331/From-Innovation-to-Implementation-eHealth-Report-EU.pdf [accessed 5 December 2016]

World Health Organisation, Regional Office for Europe. 2018. *Urban Health Rome Declaration adopted at Health in the Cities*. https://www.euro.who.int/en/health-topics/environment-and-health/urban-health/news/news/2018/01/urban-health-rome-declaration-adopted-at-health-in-the-cities [accessed 4 February 2019]

Appendix

Figure i. Fitbit Charge 3, Wearable activity-tracker

Figure ii. Fitbit Charge 3, Wearable activity-tracker

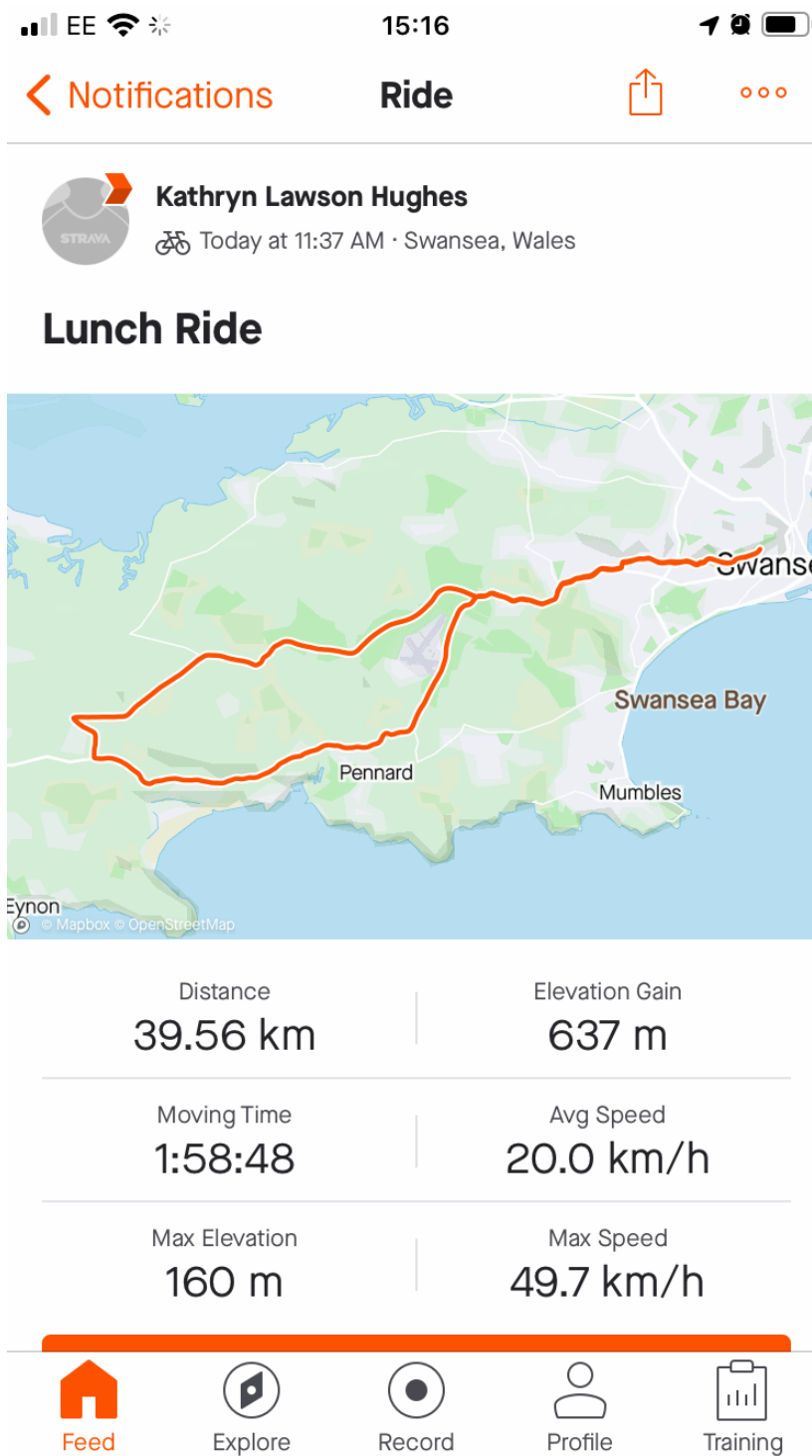Figure iii. Apple iPhone 8, 'Voice Memos' app. (2021)

Figure iv. Strava app., Screenshot of GPS map and activity data (2021)

220mm

COASTAL Housing Group · Ministry of **Furniture**
3rd Floor - High Street, Swansea

Figure v. Coastal Housing Group Swansea Office Headquarters, 3rd Floor Plan

Figure vi. Swansea University Sports Centre, Indoor gym and sports-hall entrance (2021)

Figure vii. Swansea University Sports Centre, Athletics track and field (2021)

Figure viii. Swansea University Sports Centre, Athletics track and field (2021)

Figure ix. Wales National Pool Swansea, Main entrance (2021)

Figure x. *Wattbike*, indoor 'smart-bike'

Figure xi. *Wattbike*, Swansea University's Indoor Gym Facilities (2021)

Figure xii. Researcher's photographs of *Wattbike* digital-interface, captured during a workout (2017)

Figure xiii. *Zwift,* digital-interface

Figure xiv. *Zwift,* digital-interface

Figure xv. Garmin Forerunner 45S, GPS activity tracker and 'smart-watch' (2021)