



PLACE TRACE

Embodying site and architectural experience through movement praxis

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Abstract

This research offers the field of architecture an original praxis that employs movement to enhance dynamic, relational, and corporeal awareness of place during the communicative and representational processes of architectural design. Much of architectural design practice is spent at a distance from the animate site, and the representational techniques with which architects communicate with themselves can be equally distancing. During design, images of the building are tiny, static, largely visual, and often viewed from above rather than within the design. This study proposes that measures that physically engage architects in dynamic embodied understandings of both the site and of future inhabitant experience can reduce this felt distance during design practice. Dynamic and embodied perception can strengthen attention and identification with the life and ecology on site, also helping architects to perceive the dynamic experiential qualities as-if-in the future building. This transdisciplinary practice-research addresses the following over-arching research question: -

How might movement be employed as an aid to architectural design to enhance the experience of designing with-in the animate site and as-if-in the future design.

This PhD research has developed a way of embodying site and architectural experience through a movement praxis which is called Place Trace. During the processes of architectural design, Place Trace provides a way of using movement to communicate with oneself during design both with-in the site and as-if-in the future building; affectively tracing the steps of future inhabitants and the qualities of real and imagined place with the moving body-self. Three key qualities of body-place encounter identified in Phase 1 of the study underpinned the movement praxis trialled during design in Phase 2. These qualities are identified as body relational space, rhythm, and density of body-place encounter. When attending to these three qualities, the aspects of site and design traced around my body in movement were experienced as close, immediate, clear, real, and memorable, as if *traced* upon my physical body-self, connecting me to the site and design. The original praxis initiated during this research offers the field of architecture accessible ways of using and attending to the whole body's movement to trace, embody, and thus feel and remember, the surrounding qualities of real and imagined place, also bringing the practitioner's body-self into a closer dynamic body-place relationship with-in the site and as-if-in the design.

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PRACTICE RESEARCH MATERIALS, PUBLICATIONS AND OUTPUTS

Website

The practice-research is documented in an accompanying website that contains documentary films, galleries, and booklets of images. Short films provide an overview of the research project, including narration, journal excerpts, footage of original research events, and concept demonstration using movement. Films should be watched in one of the following sequences:

- Option 1: Watch all six films in sequence before starting to read the document to gain an overview of the research sequence, key themes and movement practices.
- Option 2: Watch each film before reading the related chapter (see guidance at the start of chapters).

Links to the website and its films and galleries are provide below¹:

Website: Place Trace

[Place Trace \(squarespace.com\)](https://www.place-trace.com)

Film 1: Origins of research

[Film 1: Origins of research — Place Trace \(squarespace.com\)](https://www.place-trace.com/film-1)

Film 2: Phase 1 movement-place-imagination study

[Film 2: Phase 1 movement-place-imagination study — Place Trace \(squarespace.com\)](https://www.place-trace.com/film-2)

Film 3: Phase 2 design trial with-in and as-if-in

[Film 3: Phase 2 design trial- with-in and as-if-in — Place Trace \(squarespace.com\)](https://www.place-trace.com/film-3)

Film 4: Designing with body relational space

[Film 4: Designing with body-relational space — Place Trace \(squarespace.com\)](https://www.place-trace.com/film-4)

Film 5: Designing with rhythm and density

[Film 5: Designing with rhythm and density — Place Trace \(squarespace.com\)](https://www.place-trace.com/film-5)

Film 6: Impact of movement on design

[Film 6: Impact of movement on design — Place Trace \(squarespace.com\)](https://www.place-trace.com/film-6)

Density booklet (from Phase 1)

[Density Booklet — Place Trace \(squarespace.com\)](https://www.place-trace.com/density-booklet)

Gallery of main design trial (from Phase 2)

[Gallery of main design trial — Place Trace \(squarespace.com\)](https://www.place-trace.com/gallery)

¹ These website links will remain stable until after the PhD has been granted when the website content will be uploaded to <https://www.researchcatalogue.net/portals?portal=2012382> (the Birmingham City University portal of *Research Catalogue*).

Practice samples at VIVA

Sketch book journals - Phase 1 (mixed media sketches and text)

- 18/5/14-28/7/14: movement session records
- 8/8/14-1/5/15: movement session records
- 8/8/14-9/4/16: species and anatomical studies & movement session records

Sketch book journals – Phase 2 (mixed media sketches and text)

- Pilot Study: journals
 - 10/4/16-2017: reflective journal
 - 2018-A: reflective journal
 - 2018-B: reflective journal
 - 2018-2019 C: reflections after walking practice and during literature review
- Main Design Trial: journals (site analysis and early design)
 - 2020 mid-December- January 2021 reflective design journal

Diagram: illustration of pilot study findings (embroidered fabric)

Film: movement excerpts from research events

Phase 2- early Main Design Trial:

- Sketches made during movement- working large as-if and as-in design (graphite, charcoal, oil pastel and clay from site on cartridge)
- Models exploring site topography, conceptual ideas, and massing as-in the design (clay from site, terracotta, balsa wood)

Phase 2- sketch design period of Main Design Trial: large drawings as-if-in design (water colour, pencil, graphite and charcoal on cartridge and tracing paper):

- Two views on entering living-dining area
- View from study window drawing as-in the design
- Layered sketches of views walking up and turning on ramp
- View when entering living room from lobby

Public Outputs:

Watson, R., Sara, R. (2015) '350 duets: body with-in place Towards a methodology of Attunement'. In: *Spaces of Attunement: Life, Matter & The Dance of Encounters*. Cardiff. 30-31 March 2015. n.p.

Watson, R. (2020) Place Trace: learning the living site as embodied memory for architectural imagination. In: *Presentations for Environment and Experience Research group*. Online. 4 December 2020. n.p.

CHAPTER 1: INTRODUCTION AND MOTIVATION FOR RESEARCH

1.0 Structure of document

This practice-research has identified and trialled an original embodied praxis, that combines ways of thinking, attending, and moving to trace the qualities of place during architectural design. This new praxis (the fruit of the research) is itself a type of methodology or underpinning framework. The central themes of this emerged during analysis at the end of Phase 1, with related applications and interpretations for design evolving gradually between and during the activities of Phase 2. Differences in the shape and nature of the two phases are reflected in the structure of this document.

- **Chapter 1** frames the study, including research questions, aims, a short outline of Phase 1 and Phase 2, and discussion of research motivations.
- **Chapter 2** describes the research design and methods of Phase 1 in detail, after introducing overall aims objectives and methodologies of the overall study.
- **Chapter 3** discusses the findings of Phase 1.
- **Chapter 4** introduces the methods, sequence, and formative framework for Phase 2. The research design and methodologies that ‘worked’ were themselves found in (and were the results of) practice, with each stage of Phase 2 informing the next. The structure of the chapter echoes this sequence. It incorporates an outline of the key elements of Place Trace, also introducing methodological approaches, research actions and influential contexts and literature.
- **Chapters 5 and 6** discuss the foundational components/elements of Place Trace in turn, namely Relational Space (Chapter 5) and Rhythm and Density (Chapter 6).
- **Chapter 7** explores what differentiated the overall experience of the new praxis on site and in studio from my typical working modes during architectural design, and relatedly the nature of the original contribution of this study to architectural discourse and embodied design processes.
- **Chapter 8** concludes the document, summarising the findings of the research and its research contribution as well as suggestions for further research and practice.
- **The Glossary of terms** is included at the end of the document before the references.
- **The appendices** are included at the end of the document.

1.1 Introduction to research

As an architect I have spent much of my design life in a studio or office, distant from the site. Most of the time images of the emerging design have been tiny, smaller than a computer screen and viewed from above as if from a great height. These design images viewed below me and in front of me were silent and static, devoid of life. In this designer-place relationship I was subject, looking down at and detached from the place below me which was object. This distant spatial relationship, with an almost purely visual focus, enforced an imaginative divide between my own perceptions as designer and the immersive, dynamic, and multisensory experience of future inhabitants of my designs. Furthermore, perceptual modes where the design and site were static failed to foreground the existing ecology and life on site. This felt divide was hard for me to cross as an experienced architect. My teaching experiences at Atlantic Technological University (ATU) suggested that this divide could be even more daunting and distancing for students.² During twenty years of parallel engagement in architecture and dance³, my contrasting experience of dance-movement was that it immersed the whole body-self with-in place; and when navigating place, all senses were employed.

Relatedly, the transdisciplinary practice-research⁴ articulated in this thesis addressed the following research question:

How might movement be employed as an aid to architectural design to inform and enhance the experience of designing with-in the animate site and as-if-in the future design?

The main aim of the research was as follows:

To identify and trial an original approach to embodied architectural praxis⁵ that employs movement to inform and enhance the architect's experience of designing with-in the animate site and as-if-in the future design.

During this practice-research I have initiated a new and original movement praxis that has helped me to design with-in the dynamic site and as-if-in the building being designed⁶. This document will explain how I first identified and then trialled the key components of this praxis (namely body-relational space, with awareness of body-place rhythms and densities) to

² 20 years of experience teaching Interior Architectural and Architectural students at Institute of Technology Sligo and Atlantic Technical University, Sligo.

³ See section 1.3 for outline of prior experience.

⁴ This PhD research is transdisciplinary as it works with ideas and practices that draw on a range of fields (including but not limited to architecture and dance) and the praxis and ideas developed during this PhD can likewise support a diverse range of disciplines (see Chapter 8) (see glossary).

⁵ In this study the word praxis is defined as a practice that incorporates actions (practices) that are underpinned by ways of thinking (see glossary).

⁶ The terms *as-if-in* and *with-in* are defined in the glossary and explained in Section 4.2.

strengthen my felt engagement with both the animate site and the emergent architectural design. The research moved through two main phases:

Phase 1 (2014-2016) aimed to **identify** several of my own innate movement-place associations, to provide foundations for an original and intuitive movement-based architectural praxis, grounded in my own embodied movement-place knowledge and associations. I intended to reveal what my moving body knew or understood about place because of a lifetime of movement, rather because of dance training or any other influential theory. As explained in Chapters 2 and 3, these embodied movement-place associations were identified through post-practice analysis of 356 involuntary mental images of place captured over a year during 500 short, improvised movement events. Phase One is discussed in Chapters 2 and 3.

During Phase 2 (2016-2020) I used the movement-place associations and ideas identified during Phase 1 as the foundations (or thematic prompts) for movement-based processes that were trialled during architectural design. These design trials included a pilot design trial of a garden seat and a main design trial of a new dwelling near Cape Town, South Africa⁷. The thematic prompts identified during Phase 1 included **relational space, rhythm, and density**. The new movement praxis was used to enhance my sensory understanding of the site when with-in it, also helping me in-studio to explore the emergent design as-if-in it. The new praxis was applied during design as a type of *Place Trace*⁸; an original and helpful way of harnessing and attending to movement during design, to trace, consider and feel the qualities of real and imagined place. The new praxis was employed alongside typical architectural communication methods such as drawing, modelling, and thinking. When describing real and imagined qualities of place around me both subjectively and intersubjectively in movement, the qualities of the animate site and design became traced upon my physical body-self, also connecting me to the site and design. The chief affective quality of the new practices was a strengthened sense of immediacy to, and engagement with, both site and design.

1.2 Motivation for research

This section introduces the architectural discourses and practices to which this study contributes and the related motivation for the study. Section 1.2.1 discusses the perceptual distance from inhabitant experience and life on site engendered by common architectural design processes. Referencing both personal experience and literature from the fields of

⁷ This dwelling was built after the conclusion of the design trial. Footage in and around the near complete building is included in the films and document.

⁸ Working name of the new praxis.

performing arts, cognitive science, sports science and psychology, the section proposes that movement holds the potential to address this problem as it stimulates and supports spatial cognition and imagination, also engaging multiple senses, and strengthening perceptual engagement with the surroundings. This section references increased support for phenomenological and embodied architectural epistemologies in the fields of cognitive science and environmental psychology. Section 1.2.2 contends that physically distanced and visually dominated architectural processes fail to foreground the life and thus ecology of the building site, arguing that in contrast movement engages all senses, strengthening dynamic and relational understandings of place, and thus reducing a subject-object bias (Auer, 2008). Furthermore, attention within and to movement foregrounds life and thus the ecology of place. Section 1.3 argues that interest in the benefits of using movement for architectural design is not new and that this study adds to a growing body of such research and practice. Section 1.4 introduces the phenomenological and practice methodologies that supported the research.

1.2.1 The problem of distance

Arguably, much of architectural practice is spent at a distance from the animate site, and the representational techniques with which architects communicate with themselves can be equally distancing, with images of the building being tiny, static, largely visual, and often viewed from above rather than within the design. Architectural historian Robin Evans (1986) reflects on 'the peculiar disadvantage under which architects labour, never working with the object of their thought, always working at it through some intervening medium' (Evans, 1986: 1). Architect Sarah Robinson describes this disengaged and downwards view as 'bestow[ing] the incomparable power of intellection', but from 'a viewpoint that doesn't exist to the inhabitant, in a perceptual mode that is simply inadequate to the whole manner in which the work will actually be experienced' (Robinson, 2021: 202). These top-down and disengaged perspectives are clearly insufficient, and architectural practice would benefit from additional closer and more engaged viewpoints. Direct corporeal design acts and the 'oblique' and 'disengaged' acts of drawing and digital representation are different but 'not necessarily incompatible' (Evans, 1986: 6); and the complex processes of architectural design benefit from both closeness and distance. However, this study proposes that architectural experience is typically dominated by the distant and distancing and would benefit from additional accessible practices that can strengthen embodied and felt design experience.; experiences that engender felt closeness⁹ as-if-in the design, as if the inhabitants.

⁹ See glossary of terms.

During design, the perceptual dominance of frontal vision can also exacerbate felt distance from the site and design. For example, in *The Eyes of the Skin*, architect Juhani Pallasmaa (2005) discusses the difference between frontal vision and peripheral vision, with frontal vision affecting a sense of separation in contrast to peripheral vision, and senses such as sound and touch, which evoke the impression of immersion or contact. Architect Harry Mallgrave (2013) expresses a related concern:

For many years now we have viewed design with an ocular bias and with an almost exclusive focus on form—that is, with the objectification of a building as a structured composition of formal elements (Mallgrave, 2013: 10).

I found that the dominance of distancing vision when designing became more acute in the years leading up to the PhD. In common with many architects, increased personal use of digital drafting aids and 3-D software enabled the quick production of multiple 3-D and 2-D views during design. However, the experience of using this software felt somewhat sterile and physically detached from the creative experience of my body-self, with the marks made seeming to belong to the computer rather than me. This perceived distance was twofold. As proposed by architect Jonathan Hale (2012) the degree of sophistication and detail already present in the software delegated a degree of agency away from myself as the designer to the tool or software application. Simultaneously, the increase in distance through hand to mouse with a separate screen reduced sensory feedback, creating felt distance between my body and the marks made. Resultantly, haptic engagement with the design became even more tenuous than that it had felt during traditional hand-drafting processes, and frontal vision became more dominant. Additionally, the ability to quickly zoom in and out of scenes reduced my felt engagement with any one image and increased my sense of being physically separate to the design. Relatedly, this study argues that the more removed the experience of the designer from that they are seeking to attend to (namely life on site and inhabitant experience), the more difficult it is to imagine that experience. The study argues that amongst the many factors being balanced during design decision-making, the aspects of the design (and inhabitant experience) that are less visible, tangible, or perceptible to the architect during design may be unnoticed or de-emphasized, namely life on site, dynamic experience, and all sensory future-inhabitant experience apart from frontal vision.

These detached personal experiences of architectural design were in marked contrast to my concurrent experiences of dance during which my whole body-self and multiple senses were present and engaged with-in both place and moment. Relatedly, the decision to use movement deliberately during design was motivated by a desire to find ways of reducing the

distance between myself as architect and the place designed, and of strengthening my own felt engagement during design with future inhabitant experience and the dynamic site.

Furthermore, alongside the motivations described above, this PhD was originally prompted by personal experiences that suggested that movement might trigger and heighten concurrent imagination of the qualities of places. In 2011, motivated by a curiosity about the relationship between body and habitation, I began work on a story that was structured as a fictional architect's design diary. As described in an accompanying *Film1 Origins of Research*¹⁰, I found that the most vivid mental images of the story's fictional places and events emerged unbidden while I happened to be dancing¹¹. This is not perhaps surprising, as there are many theories that connect imagination and mental imagery with movement (Thomas, 1999). The interrelationship between movement and imagination has been found to be associative, intersubjective, anticipatory, and mutually stimulating. For example, whole body movement such as the acts of walking and dancing have been found to stimulate divergent, creative thought (Oppezzo & Schwartz, 2014; Campion & Levita, 2014). Lakoff and Johnson (2008) relate linguistic corporeal metaphor to our conceptualisation of the world. Sofia (2013), Rosand (2013), Halshall (2013) and Kaushik (2013) describe the intersubjective experience of 'inner movement' felt during the experience of works of art, as for example when the eyes follow a line or the surface of a form. Also, in sports science, mental imagery is used as a way of anticipating and improving movement (Fournier et al., 2008; Schack et al., 2014), with 'internal simulation' helping a subject to 'anticipate the course of events caused by different action sequences' (Gross et al., 1999: 101). In the field of architecture, the generative nature of the physical act of drawing for architectural imagination has been discussed by architectural theorists such as Pallasmaa (2009) and Emmons (2014) and Zhu (2007). In these respects, movement and imagination work together, communicating with and strengthening one another.

This PhD harnesses gesture as a helpful and widely used type of movement that is employed during nonverbal communication to describe the world around us. Psychologists report that gesture has been found to aid spatial cognition (Tversky, 2019; Wilson and Gibbs, 2007; Wilson, 2002), also proposing that gesture during speech 'seems to serve a cognitive function for the speaker, helping to grease the wheels of the thought process that the speaker is trying to express' (Wilson, 2002: 628). Likewise, architectural phenomenologists propose that 'thinking is not something that goes on solely in our heads; we underestimate the extent to

¹⁰ Link to Film 1: <https://platinum-lizard-4njw.squarespace.com/work-1-1/project-one-agk86>

which thinking is very literally fleshed out through gesture' (Robinson, 2021: 199); and in *Tools for Ideas*, architectural researcher Christian Ganshirt (2007) describes gesture as the precursor to drawing and making, also arguing that architects frequently use gesture to augment speech when communicating architectural ideas and spatial qualities.

This PhD research has thus capitalised on innate embodied connections between movement, imagination, and cognition, experienced during drawing and gesture, to develop an original moment praxis that I have found to be practical, intuitive, and supportive of spatial and divergent thought; that harnesses gestural movement to communicate ideas with self, whilst enhancing whole body awareness. Moreover, as will be explained in Chapter 5, when this gestural movement is linked with a felt awareness of posture (and the whole body), I have found that it strengthens the immersive subjective and intersubjective impression of being with-in the imagined design, rather separate from it, as when viewing it from above.

Phenomenological philosophers such as Maurice Merleau-Ponty (1962) have long argued that both emotional perception and our connection to the world are routed through the body and our senses. Likewise, as architects design habitation for moving, interacting humans, both the functional and affective relationships between the moving body and architecture have been of interest to architects since early modernism and before (Bloomer et al., 1977; Mallgrave, 2013). Relatedly, in architectural fields, phenomenological theory has focussed on-

- the situated essence of places (Genius-loci) (for example Norberg-Schulz, 1980),
- on the senses, movement, and our haptic connection to architecture (for example Hale, 2000; Pallasmaa, 2005; 2009),
- and embodied and dynamic experiential qualities of architecture (for example Holl et al., 2006).

However, the 'crucial groundwork' of phenomenology is increasingly being 'corroborated and reinforced by subsequent work in the natural sciences' (Robinson, 2021: 9). Scientific findings have increasingly informed existing phenomenological approaches to architectural design in books such as *Architecture and Embodiment* (Harry Mallgrave, 2013), *Merleau-Ponty for architects* (Hale, 2017); *Mind in architecture: Neuroscience, embodiment, and the future of design* (Robinson and Pallasmaa eds., 2015); *Life takes place: Phenomenology, lifeworlds, and place making* (Seamon, 2018); and *Architecture is a verb* (Robinson, 2021). Drawing on growing findings from psychology and neuroscience, as well as phenomenological philosophical perspectives, this literature references ecological and dynamic understandings about how we perceive, understand, and negotiate our surroundings. Some of the same architectural thinkers have also considered the embodied, perceptual, and imaginative implications of the

representational processes and tools employed by architects to communicate with themselves during design, for example Pallasmaa (2009) and Hale (2012). As will be discussed further in Chapters 7 and 8 the praxis developed during this PhD contributes to such discourse, both to the representational methods used by architects as well as to ecological and relational ways of knowing place for design.

1.2.2 Need for relational and ecological awareness of the living sites of design

Although this research might appear to focus on the inner workings and embodied perceptions of an individual designer, the motivations for the study originate in ecological attitudes that relate physical awareness and engagement with our surroundings to a sense of solidarity and relatedness to life around us, awareness of both the experience of people and other species. Scientific recognition that body, mind, and world are not isolated from each other but experienced relationally (Spretnak, 2011), and that ‘to be human is to be already extended, ‘dilated’, into the world’ (Hale, 2017: 34), supports a changing and relational mindset that foregrounds our ecological interdependence with surrounding life and place. Philosopher and writer Charlene Spretnak (2011) describes this epistemological shift thus:

One simple idea underlies the systems of knowledge that have shaped modernity: that all entities in the natural world, including us, are essentially separate and that they function through mechanistic ways of interacting. In contrast, a very different, yet elegantly simple, idea is now emerging ... that all entities in the natural world, including us, are thoroughly relational beings of great complexity, who are both composed of and nested within contextual networks of dynamic and reciprocal relationships. We are made entirely of relationships, as is the whole of the natural world. (Spretnak, 2011: 4).

This study supports this world view, arguing that because we experience and know this relationality through our living interacting body-selves, embodied knowledge of our living physical surroundings should inform our conception of the living places that are the site of future buildings. Therefore, a further research motivation was the desire to enhance my awareness and understanding of the living and changing aspects of the site during design, and to do so within movement. In contrast to my material and place-perception as a person, my past material experience as an architect has focussed almost exclusively on solid, static, and permanent materiality. For example, the earth experienced in digital 3D models is blank; similarly on building sites the ground is stripped back to the inert substrate with roots and living vegetable matter removed beneath the future building (see Figures 1 and 2). During design, the behaviour of mobile elements such as sun and wind are habitually analysed remotely, diagrammatically, and numerically rather than in a manner that evokes the physical experience of their dynamic qualities.



Figure 1: Site before clearing (image courtesy of Simon Watson 04/02/22)



Figure 2: Terrace edge on-site (image courtesy of Simon Watson 04/02/22)

The desire to develop ways of using movement to understand and feel closer to the living sites of my designs (both with them and in them¹²) them was motivated by both the desire to improve my engagement with inhabitant experience and to better understand and relate to these sites as places already supporting multiple species; living places that my designs would affect and then become part of.

In the context of environmental education, Mathew Auer (2008) argues that activities which engage all senses to study qualities of place and environment, 'work to 'correct what is

¹² See glossary and Section 1.3.

otherwise a detached me/it' or 'subject/object way of understanding the environment' (Auer, 2008: 11). As motion awakens multiple senses, being seen, heard, and felt both by the mover and those witnessing them (Moore and Yamamoto, 2012), movement automatically reduces a detached 'subject-object' perception of place whilst also bringing us into active engagement with our surroundings. During movement our concerted senses experience our own motion and concurrently that of the life and change around us. We experience, for example, the sound, feeling and peripheral glimpses of our own feet and arms connecting with our surrounds as we walk. We hear, see, smell, and feel the impact of moving air as it stirs branches and pushes past us. In movement, we interact with place, we experience it as both subject and object; we affect place as well as being affected by it.

Thus, during this study, by using movement to respond to and imagine place, and by attending to the perceptions of all senses thus employed, my moving body-self was inevitably brought into heightened dynamic relationship both with and in place. This study contends that such design acts during which a designer is physically moved by the site, and especially by life and movement therein, have the potential to allow 'boundaries between the observer and the observed [to] begin to break down' (Auer, 2008:11), supporting empathy. Thus, empathy with both the existing and future human and other inhabitants of the site is supported by engaging in design practices that use multiple senses and movement to understand both the life on site and future inhabitant experience. Furthermore, movement brings us into dynamic engagement with our surroundings. Movement within place is also inevitably accompanied by change and thus interaction as we push off, drop towards, encircle, or pierce through the mediums surrounding our bodies. Movement triggers change and event, alteration that we might need to attend to in our surroundings, and in attending to our surroundings we use all the senses available to us concertedly. For example, in the field of movement analysis, Moore and Yamamoto (2012) illustrate how for example, even 'hearing a door open and turning one's head to look in the direction of the sound...require[s] the rapid coordination of sense impressions (hearing, vision, kinaesthesia, etc. with motoric signals' (Moore and Yamamoto, 2012: 13). For these reasons, this study proposes that the experience of body in interaction with-in place during movement is inherently relational and thus ecologically engaged, with 'body and environment co-create[ing] each other through mutual influence and interactional shaping' (Reeve, 2011: 48). In this relational exchange, buildings form part of a dynamic exchange between ourselves and our animate environment. Thus, this study views architectural experience from the perspective of the moving body, or architecture as 'verb' (Pallasmaa, 2011; Robinson, 2021), rather than static architecture, highlighting dynamic and interactive place

experienced from within a moving body-self, rather than constant place independent of inhabitants.

This PhD research acts on the premise that both (designers and inhabitants of buildings) are living creatures, perceiving, interacting, and surviving within an animate and constantly changing environment. Supporting the differential and ecological theories of environmental perception (Eleanor Gibson, 1969; James Gibson, 2014) this study argues that our innate motivation to read the movement in our surroundings supports survival. As will be discussed in further chapters, in accord with Gibson (2014) the study argues that we are constantly and actively engaged in perceiving our environment. Furthermore, as will be discussed in further Chapter 5, the study proposes that when reading surrounding movement (past and present), we anticipate and thus sense the trajectory, impact, rhythm, and immediacy of the changes to come. In dynamic body-place engagement during movement, even built architecture (that is sometimes perceived as permanent and static) is perceived and anticipated within a dynamic narrative through time. For the reasons introduced in this chapter, this study builds on ecological architectural discourses that call for consciousness of the living relationships present in place (Rawes ed., 2013; Kellert et al., 2011; Braungart and McDonough, 2009) and of the specific life and diversity on site. For example, architect Peg Rawes (2013) proposes that ‘interdisciplinary architectural, ecological, and relational approaches may be ... urgently required for dealing with the complexities in protecting and creating biodiversity in our architectures and environments’ (Rawes, 2013: x). The practices trialled during this study add such an approach to a varied body of architectural theory and practice that addresses concerns relating to the ecology and sustainability of life on earth. They are offered as an addition rather than replacement to existing practices, such as reducing buildings energy consumption¹³, or considering the environmental impact in the whole life of materials and systems used in construction (Braungart and McDonough, 2009). However, alongside these rational and technical approaches to ensuring sustainability, writers such as William Kellert et al. (2011), argue that an enhanced awareness of nature benefits physical and mental health, whilst also supporting care for or love of nature (Biophilia). In the book *Biophilic design: the theory, science and practice of bringing buildings to life* (Kellert et al., 2011) outline an architectural design approach that deliberately reinforces the connection between human and nature, arguing that ‘Biophilia is ...a “weak” biological tendency that is reliant on adequate learning, experience, and sociocultural support for it to become functionally robust’ (Kellert et al., 2011: loc. 467). This

¹³ As guided by national methods of assessment such as Leadership in Energy and Environmental Design (LEED) in the United States; Building Research Establishment Environmental Assessment (BREEAM) in the United Kingdom and Ireland); and Rational Building Energy Assessment in South Africa.

document will argue that the movement practices developed during this PhD strengthen both attention to, and a felt connection with, the natural life on site, paying specific attention to the local and diverse life and forces present on and around the building site. Chemist Braungart and architect McDonough (2009) argue that ‘in healthy thriving natural systems it is actually the fitting-est who thrive. [and that] fitting-est implies an energetic and material engagement with place, and an interdependent relationship to it’ (Braungart and McDonough, 2009: 120). Such a relationship demands attention to the detailed local dynamics of place, and a ‘focus on habitat as a place to know’ which philosopher Lorraine Code 2006 argues is ‘central to ecological thinking’ (Code, 2006: 370).

1.3 Adding to body of practice employing dance-movement for architecture

As outlined in this chapter, this study contributes to a growing field of theory and practice across the sciences, humanities and arts that highlights interrelationships between movement-experience and knowledge of the surrounding world. Relatedly, the study contributes to an increasing body of theory and practice that harnesses dance in support of architecture. For example, dance-movement has been employed in architectural education by dancers and architects such as Professor Rachel Sara (Sara and Sara, 2006; 2015), Professor Oren Liebermann (2019); Christos Daskalacos (2022), Adesola Akinleye (2021) and Susanne Martin (2021) to enrich architectural students’ understanding of dynamic body-place and spatial experience. Architectural researchers such as Stathopoulou (2011), Spurr (2007), Shastri (2010) and Levash (2015) have variously looked to dance and movement to inform the discipline of architecture. Similarly, interdisciplinary initiatives have fostered connections between dance, architecture and other art forms to enrich the creative exploration of place. I have participated, for example, in two such interdisciplinary initiatives, namely a Body-Landscape residential workshops led by Frank Van der Ven in 2017, and the *Dancing About Architecture* initiative at University College Cork in 2019. Finally, the relationship between body and space is of import both to designers of place and practitioners of site-specific performance and dancers and choreographers such as Hunter (2015; 2021), Brown (2015), Kloetzel (2015), and Lawrence (2019) who have engaged with architectural knowledge and concerns in the service of dance and performance. This research contributes to this expanding area of knowledge and practice, addressing the issues discussed in this chapter, namely the perceptual distance from inhabitant experience and life on site associated with current architectural design processes. In contrast, movement promotes cognitive, imaginative, and perceptual engagement with our surroundings. Furthermore, movement with-in animate place is

accompanied by a heightened relational and ecological awareness of surrounding life; and relatedly a sense of closeness rather than distance from the aspects of place described with the moving body-self; suggesting that movement might be employed during architectural design to strengthen a felt understanding of being with-in site and as if in design.

1.3.1 History and training in dance-movement and architecture

In common with some of the practice and research referenced in the previous section, this research was informed by parallel personal experience of both architectural design and dance-movement, starting in the years following my graduation as an architect in 1992 (RIBA¹⁴ part 2 qualification)¹⁵. This experience of dance and movement contexts (including Contact Improvisation, Laban Movement Analysis and Roth's Five Rhythms¹⁶) began in 1996 in the context of a recreational dance group that I initiated in rural Sligo. This self-directed group began to incorporate intermittent training in Contact Improvisation from Echo Echo Dance Theatre Company from 1997. I also completed Stages 1 and 2 of the Laban Guild Dance Leader's Training (2000 and 2006). Experience in facilitating other people's movement began in 1998 with an Arts Council funded residency in Lough Allen Community School during which I blended practices and perspectives from architecture and dance in the development of a performance. This would lead to facilitation of a wide range of community dance projects with diverse groups from preschool children to pensioners, informed by practices from both Laban Movement Analysis and Contact Improvisation. When I started teaching design studio in a BA (Hons) in Interior Architecture at Institute of Technology Sligo (2000-present), perspectives and experiences gleaned during concurrent movement projects increasingly suggested that there might be benefits in using movement in the service of architectural design¹⁷. As described in *Film 1: origins of research*, heightened imagination of places while dancing in 2012 and 2013 provided the final impetus for the PhD.

1.4 Overarching methodological approach

The motivations and methods underpinning both phases of this research were phenomenological: Ontologically, the primary focus of the study was on experiential meanings that occurred at the embodied meeting of one person and the world (Merleau-Ponty 1962).

¹⁴ Royal Institute of British Architects.

¹⁵ I obtained obtaining my professional qualification from the Royal Institute of Architects in Ireland (RIAI Part 3) in 2004.

¹⁶ My experience of Gabrielle Roth's Five Rhythms has been purely personal. I have no formal training in this.

¹⁷ Further reference to parallel experience of dance and architecture is included in Film 1 (link: [Film 1: Origins of research — Place Trace \(squarespace.com\)](#)).

Epistemologically, the study focussed on what our moving bodies know of the world, most specifically focussing on those aspects of my own/human perception that were rooted in movement and sense (ibid; Smith et al 2009). Methodologically all stages of the study attempted to capture, interpret and describe a clear picture of an aspect of human experience as it was lived and practiced from the perspective of the person that lived it (Smith et al 2009; Sullivan 2010; Van Manen 1990). However, as a study that investigated first automatic and intuitive ways of knowing and then more deliberate and creative ways of knowing, the study employed two types of Phenomenological methodology.

- **Phase 1 (the movement- place imagination study)** aimed to identify several of my own innate movement-place associations, to provide foundations for the design trials of Phase 2. Phase 1 adapted the first-person methods developed by Price and Barrell (2012) for Experiential Phenomenological Research, also drawing on principles and practices from Interpretative Phenomenological Analysis (IPA) (Smith et al 2009), as discussed further in Chapter 2, Section 2.2.
- **Phase 2 (the design trials)** were envisaged as transdisciplinary arts practice-research, providing an ‘insiders’ perspective’ (Sullivan 2010) on innovative architectural design practices that employed embodied ways of knowing informed by movement-based contexts.

The overall study was also inductive, seeking to generate meanings, knowledge and practices from the ‘as lived’ experiences recorded (Collins 2010; Robson 2002), rather than to test existing theories. Relatedly, the provisional findings (at the conclusion of Phase One) and their architectural implications influenced the subsequent focus and methods employed in the design trials of Phase 2. Similarly, within the design trials themselves, successes and pitfalls encountered during each design event informed the actions that followed.

1.5 Summary of introduction and motivation for study

This chapter has discussed problems posed by the perceptual distance from site and building experienced by architects during the design process, also arguing that top-down perceptual distance and largely visual sensory engagement encourages perception of the site of designs as static, and inert, also supporting a subject-object perspective on the existing ecology and life on site. Relatedly, the research sought to address this problem and increase physical, relational, and dynamic engagement with place, by using movement to help the researcher (me) to design with-in the site and as-if-in the design. This chapter has argued that movement has the capacity to respond to this research aim. Referencing research and theory that has influenced this study, this chapter has discussed several motivations for strengthening the use

of movement during architectural design practice to enhance relational ecological, multi-sensory and felt engagement with-in site and as-if-in design, whilst supporting spatial cognition and imagination. Interest in the benefits of using movement for architectural design is not new and this study adds to the growing body of such research and practice referenced in Section 1.3. Finally, this chapter argues that attention within and to movement within place foregrounds the specific existing life on-site, therefore supporting and fostering awareness of local ecology and the existing biodiversity within the sites of buildings. As will be discussed in the chapters that follow, the specific contribution of this study is an original and accessible movement praxis that adds to a growing body of research and practice that highlights the importance of embodiment and movement for Architecture.

CHAPTER 2: FRAMING THE OVERALL STUDY AND PHASE 1

2.0 Introduction and structure of chapter

Please see links below to Films 1 and 2:

- *Film 1 illustrates influential practices and experiences leading into the research.*¹⁸
- *Film 2 illustrates the research methods of Phase 1*¹⁹.

Chapter 2 describes the research design and methods of Phase 1 in detail after introducing the aims objectives and methodologies of the overall study.

As suggested in Section 1.4, the primary focus of the study was phenomenological, with a shift in purpose and methods as the study moved from Phase 1 (Chapters 2 and 3) into Phase 2 (Chapters 4-7). Relatedly, the structure of the document echoes the sequence of the research, and the methodologies and findings of the two phases are discussed in turn in the following chapters.

2.1 Overall sequence, questions, aims and objectives of research.

The main aim of the research was as follows:

To identify and trial an original approach to embodied architectural praxis²⁰ that employs movement to inform and enhance the architect's experience of designing with-in the animate site and as-if-in the future design.

Architectural practice can be pressured and architectural design time consuming. As an architect I aimed to initiate an embodied approach to design that would 'work' (Nelson, 2013), that would help rather than hinder my design practice. To these ends the new praxis needed to be readily embodied, intuitive, accessible, and flexible; incorporating practices that I (and potentially others) would choose to use in the future amongst the everyday pressures of architectural practice. Relatedly, I chose not to impose unfamiliar theories or techniques upon my moving body self, but rather to first understand my moving body-self better from its/my own perspective (Phase 1) and then to use my own pre-existing or innate proprioceptive or embodied understandings of place in movement as a starting point for the new movement-based design praxis; (to base the new praxis on things about place that already mattered to my body-self during movement). Relatedly, the research moved through two Phases (see Figure 5

¹⁸ It would be helpful to watch Film 1 and Film 2 before reading this chapter. Link to film 1: <https://platinum-lizard-4njw.squarespace.com/work-1-1/project-one-agk86>

¹⁹ Link to Film 2: <https://platinum-lizard-4njw.squarespace.com/work-1-1/project-two-w5tla>

²⁰ In this study the word praxis is defined as a practice that incorporates actions (practices) that are underpinned by ways of thinking (see glossary).

and following section). In Phase 1 I began by capturing unexpected mental place imagery during improvised movement, seeking to find connections between place and movement. The movement-place relationships that emerged would become the foundations of the embodied/moving architectural practices that would eventually be tested during the design of a building in Phase 2.

The overall research question would become: -

How might movement be employed as an aid to architectural design to inform and enhance the experience of designing with-in the animate site and as-if-in the future design?

The research moved through 2 phases that responded to the following underlying enquiries:

Phase 1 (see Chapters 2 and 3):

What innate embodied movement-place associations and relationships can be identified during improvised movement?

Phase 2 (see Chapters 4, 5, 6 and 7):

How can innate movement-place associations and relationships be interpreted considering existing theories and practices to provide initial foundations for a movement based architectural design praxis?

How can movement be employed with-in an animate site to enhance knowledge regarding the still and dynamic qualities of the site including natural life within it?

How can movement be employed to enhance and inform the architectural design process as-if-in the future design?

Sequential Aims and Objectives:

Phase 1 asked the following:

What innate embodied movement-place associations and relationships can be identified during improvised movement?

Over the period of a year, I documented any unexpected mental place images that occurred during 500 short, improvised movement events to music, also recording any notable movement characteristics concurrent with the mental images. The events occurred in my studio (Sligo, Ireland) and a bedroom (Cape Town, South Africa). A period of post practice analysis followed during which I identified several strong relationships between the characteristics of the movement and the place imagery evoked. The methods supporting the following aims and objectives of Phase 1 will be discussed in further detail in this chapter.

Aim of Phase 1 (2014-2016):

- To identify several of my own innate movement-place associations, to provide a starting point/foundation for an original and intuitive movement-based architectural praxis grounded in embodied movement-place knowledge and associations.

Phase 1 Objectives:

- Enact many diverse improvised movement events (over a protracted period in limited settings), recording movement qualities, concurrent involuntary mental imagery of place and related feelings (see example in Figure 5).
- Employ inductive analytical processes to identify the strongest and most reliable relationships between movement-qualities, imagined place-qualities and feelings.

Phase 2 aimed to address the following questions:

How can innate movement-place associations and relationships be interpreted considering existing theories and practices to provide initial foundations for a movement based architectural design praxis?

How can movement be employed with-in an animate site to enhance knowledge regarding the still and dynamic qualities of the site including natural life within it?

How can movement be employed to enhance and inform the architectural design process as-if-in the future design?

The main design trial (the design of a dwelling) built upon the experience and understandings that emerged from both Phase 1. However, an embodied understanding of practices and possibilities suggested by the Phase 1 findings was required for the recognition and development of a fruitful and intuitive approach to the use of movement during design. So, the main design trial followed an exploratory period that included literature review, a pilot design trial, both physical and theoretical exploration of several movement practices that seemed pertinent, and a regular walking practice during which I explored different ways of focussing sense and attention on the shifting relationship between body-self and surroundings. Both the preparatory period and the main design trial of Phase 2 will be described further in Chapter 4.

Phase 2 Aim:

Initiate and trial an original architectural praxis that employs movement and movement-place perceptions to strengthen embodied communication with self about place experience during the process of architectural design, employing ideas and practices that enhance and inform the design process, both with-in the animate site and as-if-in the future design.

Phase 2 Objectives:

- Conduct a pilot design to reveal and trial practices worthy of further exploration.

- Frame an initial approach to Place Trace in consideration of the findings of Phase 1, the pilot design trial and pertinent architectural and movement-related theory and practice.
- Prepare for the main design trial by identifying and enacting movement practices that facilitate movement-place sensitisation.
- Trial an original movement praxis during the design of a building, focussing on ways of first learning the characteristics of the site with-in movement, and then in studio attending to movement when exploring the qualities of the emergent design as-if-in it (see example in Figure 3).



Figure 3: Left -moving within the site using gesture to trace place around my body (2019); Right-in studio tracing the qualities of design 'as if in' it (2020).

The research was supported by reflective journalling throughout and by the overall research objectives outlined here.

Objectives relevant to overall research:

- Contextualise and inform the emergent praxis, considering prior personal influences and praxis, as well as relevant research literature and movement practices.
- Document, observe, reflect upon, and interpret all movement and relevant design events using sketch-journals and other supporting media.
- Contribute to wider discourse and practice by sharing the findings as an online record of practice (filmic, graphic, and written) and a reflective account/commentary (40 000 words).

In accordance with the principles of Interpretative Phenomenological Analysis (IPA) advocated by Smith, Flowers and Larkin (2009), the literature review was focussed by the 'overarching themes' (ibid) that emerged from Phase 1 and the pilot design trial, also helping to shape the approach to Place Trace used during the main design trial.

Figure 4 outlines the research sequence employed:

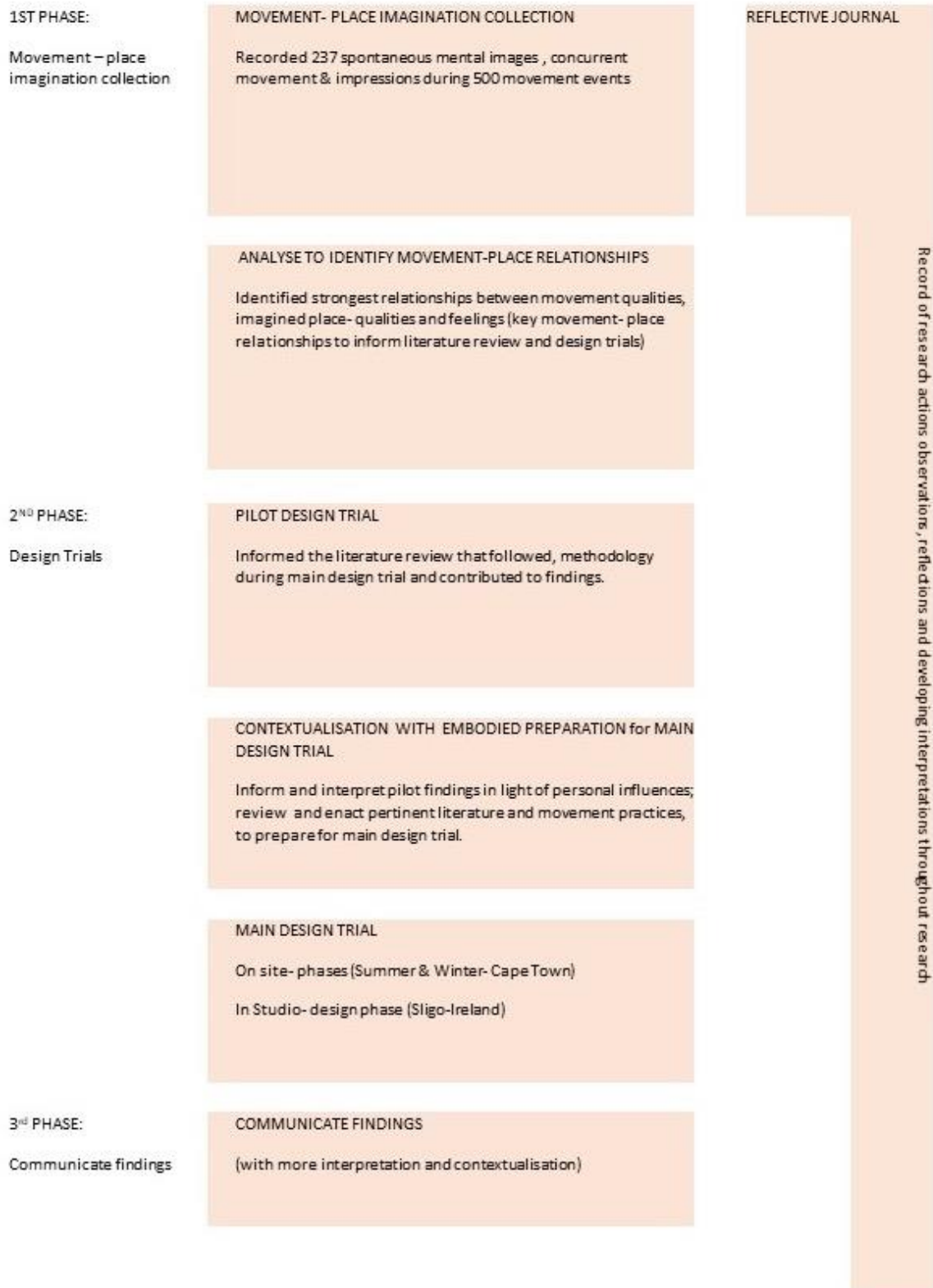


Figure 4: Research sequence

2.2 Phase 1: methodology

Film 2 provides an illustrated explanation of the movement events and records of Phase1. It would be helpful to watch Film 2 before reading this section (see link below)²¹.

The purpose of the movement-place-imagination study was to better understand the pre-existing relationship between my moving body-self and its imagination of place, so that this understanding could inform the exploratory architectural practices that would follow. During 2014 and 2015 I orchestrated a series of 500 improvised movement events in my home studio in rural Sligo, documenting both movement and 236 concurrent spontaneous mental images in sketchbook journals (using writing and thumbnail sketches). I use the phrase **movement-imagery-events** in this section to describe the short instances during which mental imagery occurred during improvised studio-based movement. This chapter explains the processes that I employed: -

- (i) to capture and record mental imagery of place during short movement-imagery-events in the studio, and
- (ii) to identify patterns connecting the movement with the place imagery. This chapter also discusses related methodological issues.

Although I tried to limit my exposure to new theorised movement-place influences during Phase 1, the nature of the study was inevitably influenced by prior movement experienced in the context of Laban Movement Analysis (Laban Community Dance Facilitation training after Anna Carlisle MBE and Cathy Kennedy), Contact Improvisation (after Steve Batts and Ursula Laeubli of Echo Echo Dance Theatre Company) and the Five Rhythms (Roth, 1998 and personal practice).²² I also acknowledged and incorporated body-place experiences and movement-focussed reflection that occurred during my life both inside my studio and outside of my studio (for example when walking).

The research of Phase 1 was inductive, attempting to capture, interpret and describe a clear picture of an aspect of 'as lived' human experience from the perspective of the person that lived it (myself) (Smith et al., 2009; Sullivan, 2010; Van Manen, 1990), and most specifically focussing on inner experience and what my moving body-self knew of the world in movement. Accordingly, research was adapted from the first-person methods developed by Price and

²¹ Link to Film 2: <https://platinum-lizard-4njw.squarespace.com/work-1-1/project-two-w5tla>

²² The specific influences of these dance practices and approaches are discussed further in Chapters 3, 4, 5 and 6 when interpreting the findings of Phase 1 and framing the architectural movement praxis of Phase 2. However, the habit of using music as stimulus for movement was common to all the above dance contexts.

Barrell (2012) for Experiential Phenomenological Research, as well as from Interpretative Phenomenological Analysis (IPA) (Smith et al., 2009).

2.2.1. Data creation and collection

2.2.1.a *The movement events*

The movement events happened as described here and in Film 2. For example, Figure 5 demonstrates movement that triggered a place image (journal excerpt) during a typical short event.



the dawn a huge ball perched balanced in the horizon
wide open arms to the day
a golden halo extended

Figure 5: Movement re-enactment and journal entries -event 1 (18/05/14)

As illustrated in Film 2, after selecting a random track of music, I started to move, following the impulse of the music, prior movement, and the moment (see Figure 6). I kept moving until the track was complete. I did not try to imagine any place and I focussed on the movement alone. If a mental image 'appeared' within my awareness, I kept moving until the image lost connection with the movement. Then I immediately recorded both the image and the corresponding movement in sketch journals. For example, during the event illustrated in Figure 5, at the moment when I rose onto my toes stretching my arms out, hands and fingers splayed, an unexpected mental image of a wide dawn horizon with a huge ball of sun appeared. I immediately stopped moving and documented the imagery and the concurrent movement using sketches and words.

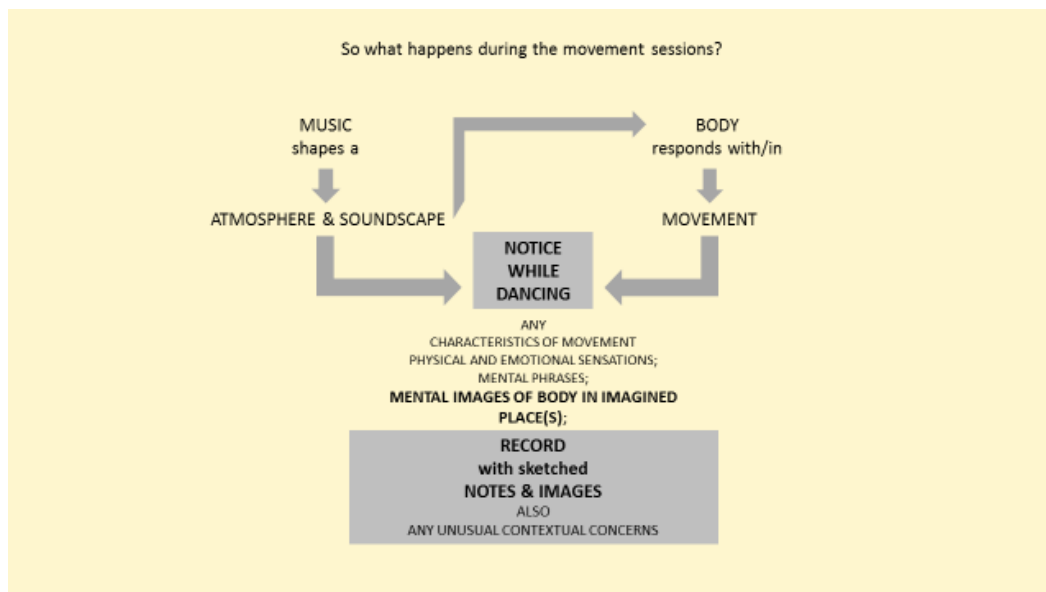


Figure 6: diagram of data creation & collection

During the movement events, the intention was to move freely with reduced premeditation. I found that it was difficult to initiate free movement without something external to respond to. I could not use visual or obvious place-related stimuli as this would anticipate the types of mental imagery evoked. The intention was for the movement itself to stimulate the visual mental imagery. Sound (in the form of music) provided a non-visual stimulus to which my moving body could respond. Tracks of music were selected randomly to encourage the occurrence of diverse stimuli with unexpected movement responses. To ensure a wide range of tempo, genre, mood and association, music was sourced from three large personal collections, belonging to a radio DJ, a student of music history and a family member. The characteristics of the music were understood to have combined with the movement to evoke unexpected but affiliated images of inhabited places. The interaction between movement and music was understood as illustrated in Figure 6²³.

The movement experienced during the period of creation-collection engaged diverse moods, sensations, spatial qualities, tempos, body parts and energy levels. However, none of this movement demanded professional levels of skill or physical prowess. Most of my own dance experience has been in the context of community and recreational dance (as described earlier), movement in life had not been heavily influenced by sport but did involve swimming and water as I grew up in a hot climate. Furthermore, all the movement during Phase 1 could

²³ The three music collections included classical and folk music from several cultures and times, as well as a wide range of contemporary genres. Some music was purely instrumental, some included lyrics. Events were disqualified from the study if the music appeared to be a stronger influence on the imagery than the movement, or if lyrics directly influenced mental place imagery.

occur in non-dance contexts such as childhood play, sports, and everyday activities. Terms and verbs used to describe this movement were simple and colloquial (for example: kneel; duck; rock; swirl; step; shuffle; roll). As advocated by Price and Barrell (2012), I found that an open and present awareness that was 'parallel to experience' (ibid, loc. 1188), enhanced the ability to recognise both movement and concurrent mental images. Such an awareness is needed during the shifting interdependencies of Contact Improvisation, where one dancer, might for example, slide under and then lift another. Therefore, experience of such dance contexts may have facilitated this aspect of the research.

When recording the movement relating to imagery, I used the first words that come to mind (such as those examples in Figures 7 and 8). Records of movement were often brief, relating to the movement immediately anticipating or concurrent with imagery. This may have been described as a single movement (for example, I look up sharply, raising one arm) or a more generalised type of movement (for example, I am spinning slowly, using wide sweeping movements). As illustrated, only notable²⁴ movement attributes were captured. Mental imagery occurred during roughly half of the movement-imagery-events. The remainder of the 500 movement-event records consisted of observations and reflections whilst moving, and these contributed to the first stage of reflective journaling. Additional notes on what I sensed, perceived, and attended to during movement accompanied practice throughout all phases of the study, influencing developing interpretations of events and practices. The unexpected mental images or scenes that appeared in my mind during some of the short movement events²⁵ had the following characteristics and content. As in Figure 7, most mental images were brief, glimpsed and recognised within a couple of seconds. More detailed scenes transmuted from a first glimpse or impression into a short parallel scenario while dancing, some of which changed or developed over the course of up to minute before fading and losing connection with the movement. As such, the recorded events aligned with the experiential 'snapshots of lived experience' collected and researched by Price (ibid. loc: 1169-72). These mumbled 'inner-seeings' (ibid. loc: 1048-51) revealed the instantly recognisable and the visual, with limited qualities within conscious focus. However, some were accompanied by notable sensations and atmosphere.

Scenes were variously inhabited by three types of agents. Firstly, there was a sketchily imagined landscape or setting. Secondly, in most scenes, I was an imagined subject engaged

²⁴ Notable to me (the mover) within in the moment.

²⁵ The word **movement-imagery-event** or **event** refers to a whole short 'occasion' as recorded, which includes both movement and concurrent mental imagery.

within this setting/place (see Figure 7). Thirdly, scenes sometimes included dynamic agents such as people, creatures, machines or moving lights (see Figure 8).



Figure 7: Pushing up and out – cresting a green hill [setting]. This is mine; I am taking this [subject].



Figure 8: They danced sharp limbed... [other agents]

Recognisable ‘visual’ qualities including colours and forms were revealed within qualities of light. Impressions of recognisable objects and materials were named, (such as the grassy hilltop in Figure 7). However, as event records deliberately avoided invented elaboration (Price and Barrell, 2012), records focussed on the clearest aspects of the imagined scenes, and sometimes that was only an impression of a shape, colour, or material as in Figure 9. It is important to note that although I did not deliberately elaborate or invent, sometimes mental phrases or impressions of events came to mind alongside the images. At times these phrases seemed poetic, as could the words that most immediately captured the impression of a scene.

The *Density Booklet* on the website provides more illustrations of the mental imagery that occurred during this phase.

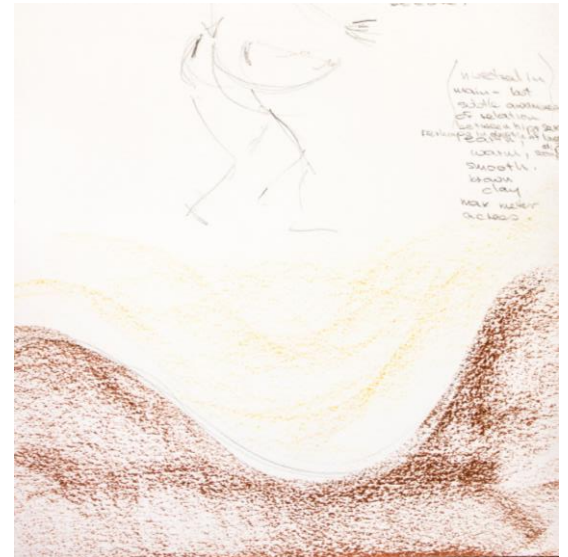


Figure 9: Forward scoop with hips achieved with knees...earth, warm, smooth, brown clay, max a meter across

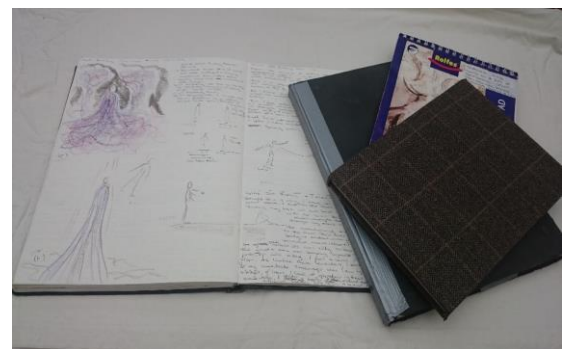


Figure 10: Sketchbooks for data collection

2.2.1.d Recording the events

Events were recorded using sketches and written notes. These records captured automatic mental images, feelings, inner speech (phrases or words) and the movement qualities that invoked these impressions. Notable contextual issues (such as changes to date; body; place; soundtrack and any obvious recent influences) were noted before the start of related events. The following guidelines helped me to ‘report what was there without judging, interpreting, telling a story, or being poetical’ (Price & Barrell, 2012 loc.: 1184).

1. Only those metaphors and words that described the imagery, movement, and feelings accurately (and without development) were recorded.
2. The interval between experience and record was short (a few minutes).
3. Any reflection that occurred was acknowledged but labelled as such.
4. The record was in first person, present tense encouraging a sense of immediacy.
5. All records were contained in sketch books (see Figure 10).
6. A constant collection of media was used when sketching or painting the scenes (see Figure 11).
7. Depictions of scenes were no more detailed than the mental imagery.



Figure 11: Media used to record events.

Five hundred of such events (236 with mental images) were documented in a series of sketch books (Figure 10) over the course of a year, heeding Varela & Shear's (1999) warning that ‘without a sustained examination’ we cannot produce [first person] phenomenal research that is ‘rich and subtly interconnected enough’ (Varela and Shear, 1999: 2). In recognition that ‘human experience is not a fixed, pre-delineated domain’, [but] ‘changing, changeable and fluid’ (ibid: 14), these movement- imagery events were spaced over a full calendar year of mixed weather, physical and emotional conditions, thus mitigating the influence of experiential spikes. As **movement** needed to be the evocative and variable stimulus (rather than places), the

locations of movement events were limited to two familiar rooms. Most events occurred in my studio in Sligo. Some others occurred in a family bedroom near Cape Town (see Figure 12).



Figure 12: Two rooms where Phase 1 movement occurred.

During the study, it became clear that the influence of the two rooms was minimal. The few interiors in the mental place images bore little relation to the characteristics of either room.

2.2.2 Data analysis

Analysis of the journal records from Phase 1 employed inductive processes to identify meaningful and reliable cross-data relationships between movement-qualities, imagined place-qualities and feelings. Several such relationships were suggested during the year of the movement events. However, it was difficult to establish whether these relationships were important, reliable, or correctly interpreted. As advocated for the first person Experiential Phenomenological Method referenced above (Price & Barrell, 2012), qualitative analytical methods were employed to identify cross-data patterns, before quantitative checks established reliability. In other words, the quantitative checks were simply used to establish that the found pattern or association was present across most of the related movement-imagery events. The analytical process is outlined in Figure 13.

Qualitative analytical processes were adapted from Interpretative Phenomenological Analysis (Smith; Flowers and Larkin, 2009), employing repeated 're-readings' of the original data, each with a specific purpose. Moving between these pen and paper methods and Nvivo software, dominant categories of place descriptors (e.g. colour) were identified before all event records containing each subcategory (e.g. yellow) were examined in turn. Patterns revealed within these subcategories were then reviewed across the full set of journal records (all events). The intention and methods used were phenomenological and inductive; seeking to reveal the characteristics of an experiential phenomena as it was lived from the ground up (the records themselves). To these ends, iterative methods supported gradual shifts in understanding (Smith et al., 2009), whilst analysis continued to reference the complete original event records (Van

Manen, 1990). Multiple research actions, moving between Nvivo and paper and pen methods facilitated triangulated perspectives during analysis (Collins, 2010).

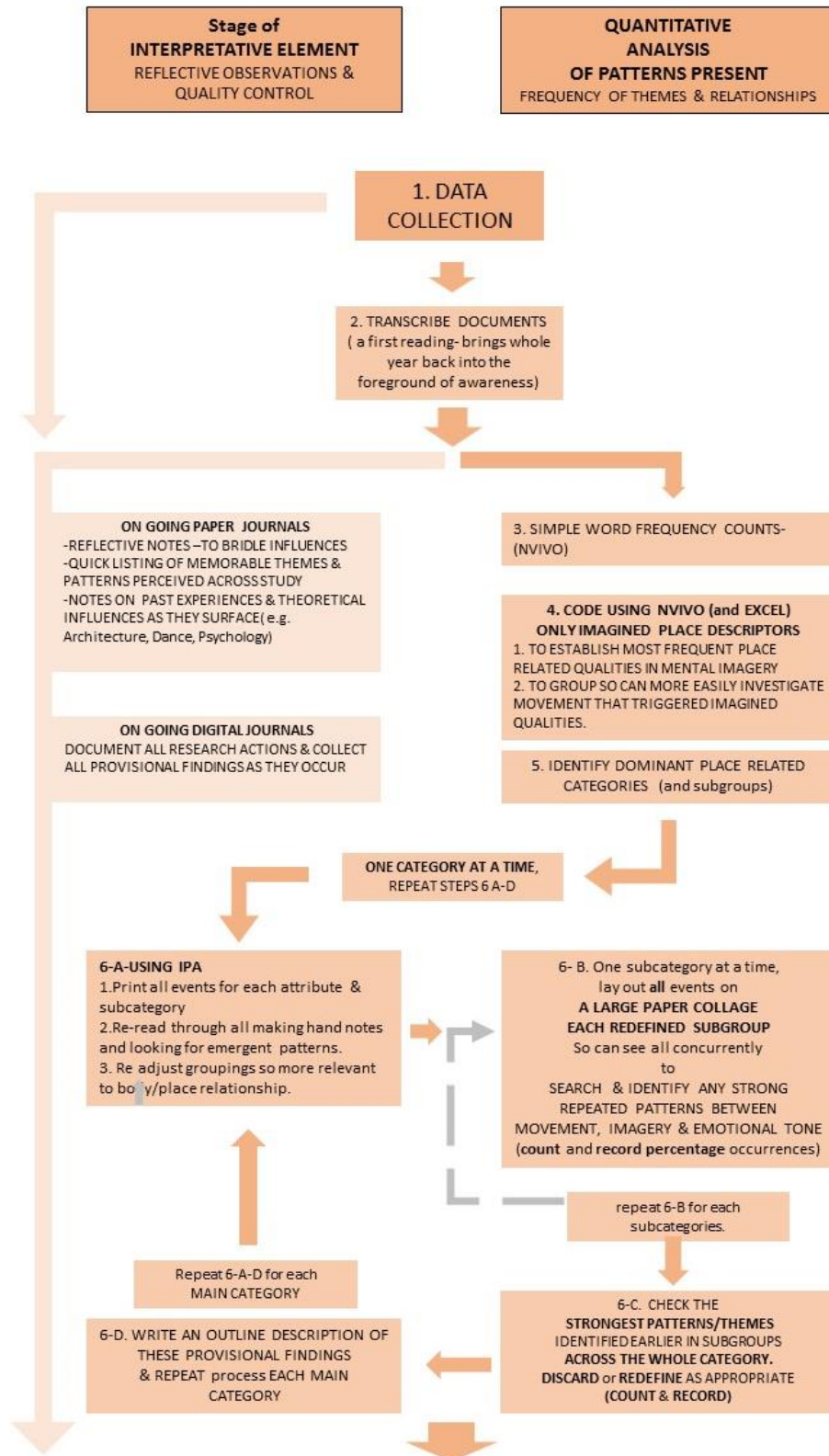


Figure 13: Data analysis process for Phase 1

As illustrated in Figure 13 the sequence of analysis was as follows:

- I transcribed the journals, facilitating a first reading which brought the whole year back into the foreground of awareness (Step 2).
- Then I revisited the journals to note and bridle the ideas that had already begun to emerge, also reflecting on emergent findings throughout analysis.
- I used Nvivo and Excel to list and group all place descriptors present in the recorded data (see Steps 3 & 4 of Figure 13). As shown in figure 14, the following were the most frequent categories of place descriptor in the mental imagery:
 - Spatial qualities (shape, scale, and position of surrounding forms)
 - Dominant material properties of surroundings
 - Colours and qualities of light in scenes

CATEGORY OF PLACE investigated	% OF SCENES in which recorded
Material: material element that the body engaged with or within	76%
Space: bounded shape of place that the body is within	53%
Colour of imagined place (Light as a related category)	51% (21%)

Figure 14: Most frequent categories of place-quality

The rest of the movement-place analysis was limited to these four place categories. All event records incorporating these categories were investigated for clear links between place, movement, and feelings, one category at a time using steps 6A to 6D of Figure 13. Analysis and findings related to spatial qualities are outlined next, before analysis and findings related to materials, colour and light.

2.2.3 Identifying Phase 1 findings relating to space

Firstly, in accordance with IPA (Smith et al., 2009) I re-read through all printed events incorporating a category, making hand notes in the margins and looking for emergent patterns and typologies (Step 6A).

As illustrated in Figure 15-right, I identified the following typologies of spatial body-place relationship in the imagery:

- Settings I was above,
- Flat wide settings,
- Path-like settings,
- Concave settings,
- Interior settings (mostly with a view out).

Then, one subcategory at a time, I laid all events out on a large sheet of paper, so that I could search for patterns present within that imagined place-type (see Figure 15-left above: Step 6B), reading back and forth across subcategories and later across a whole category (see Figure 15-left below: Step 6C) as I identified and then confirmed patterns in the relationships between the movement and the concurrently imagined place. Establishing the percentage of events in which the pattern occurred confirmed whether I had found a notable, reliable connection between my movement and the related place quality (as illustrated in Appendix 1).



Settings I was above



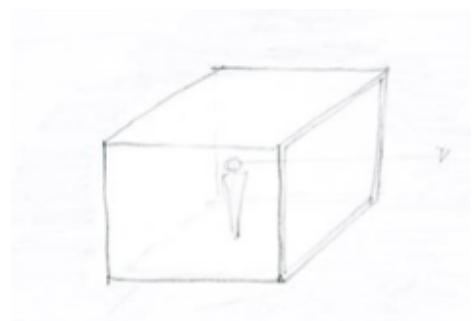
Flat wide settings



Path-like settings



Concave settings



Interior Settings

Figure 15: Upper left- step 6B; Lower left- step 6C; Right-Types of body-place spatial relationship in mental images

The Phase 1 findings identified using this process will be discussed in Section 3.2, after description of the additional measures needed to analyse events in terms of materials and light.

2.2.4 Identifying Phase 1 findings relating to materials, colour and light.

During the initial period of collecting movement events, I noticed that some scenes seemed to have a strong and engaged focus on a type of material (or elemental) environment. So, although a few scenes featured an even mixture of materials (such as air, earth and water), many felt, for example, airy, featuring flight and focussed on or within the sky. Or in others earth, concrete, stone or tarmac dominated. At the beginning of the period of analysis an open search for place related qualities revealed that 76% of the scenes referenced elemental material qualities (earth/solid; water/liquid/viscous medium; mist/fog; voidness; air/sky), prompting further analysis (Figure 14).

When beginning to analyse movement associated with imagined material qualities, the steps described earlier in Figure 13 were followed. However, the material complexity of scenes necessitated additional analytical measures. Whereas one identifiable enclosing form characterised the shape of settings, several elemental materials featured in many scenes. So, despite detailed re-categorisations at varied stages, patterns and affinities only began to emerge when all scenes were arranged across the floor (Step 6B) with the proportions of imagined materials and any imagined types of physical material engagement arranged across the sheets. Scenes, for example, in which I imagined swimming in water were separated from scenes imagined splashing in shallow water or standing in rain. The number of material variations and the mixtures of materials within scenes led to subtle variations in emergent patterns. These complexities prompted a comprehensive mapping using Excel (see also Appendix 2), which recorded and counted all movement descriptors and feelings within the events related to each type of material environment, including the mixtures of materials imagined in each scene. The categories of movement descriptors included in the excel mapping were driven by the types of words used to describe movement in the journals and included the following:

- Sensations
- Emphasized body-parts
- Direction of movement
- Shaped path of movement
- Orientation of body
- Verbs used to describe movement (for example kick, splash, slide, float)

As referenced earlier, this material mapping in Excel was then expanded to include all events referencing colour and light (see Appendix 2). Colour was analysed as a separate category. However, in the main, the imagined colours seemed to relate directly to the common colours of materials described, for example blue sky, brown earth, grey concrete, and therefore indirectly to material density. With regards to light, the brightness of imagined scenes seemed to be associated with a closing-downwards versus opening-upwards of the head and torso, as illustrated in Figure 16. This was a weak finding as light was only referenced in twenty one percent of the scenes, but the association between opening and brightness would influence later decisions in the design trial.



Figure 16: Opening up to brightness

2.3 Working with prior influence and literature

In the context of Interpretative Phenomenological Analysis, Smith et al. (2009), Van Manen (1990) and Ellet (2011) advocate a bracketing or bridling of personal influences that might colour interpretation before phenomenological data is analysed. Smith et al. (2009) describe this as a cyclical process, which must be repeated with each encounter as it is difficult to anticipate the prior experiences that might be relevant:

When encountering a text, I don't necessarily know which part of my fore-structure is relevant. Having engaged with the text, I may be in a better position to know what my preconceptions were (Smith et al., 2009: 25).

However, the researcher in this study was also the 'researched'. Thus, bracketing was replaced by a contextualisation of the findings in the light of the researcher's prior experience, with prior influences and practices being viewed as foundational rather than separate to the research, shaping rather than distorting the design praxis that would follow. In this study, the study was contextualised considering personal experience, influences and theory at several stages. Firstly, throughout the study I recorded reflections on related ideas, past experiences and pertinent theory or influences in sketchbook journals.

Although the research process built upon several influential contexts, I tried to level the influence of new contexts during Phase 1, to prevent undue experiential intensity from exciting new ideas or practices. To this end, I postponed the period of literature review until after the completion of Phase 1. This also complied with the principles of Interpretative Phenomenological Analysis (IPA) (Smith; Flowers and Larkin, 2009), in that the focus of the literature reviewed was directed by the initial 'overarching themes'(ibid) that emerged from the movement place-imagination study (Phase 1). As will be discussed in Chapter 4, the strategy with regards to influences shifted in Phase 2.

2.4 Validity, reliability and limits

On balance, the study was ideographic, aiming to highlight existing patterns and interrelationships through an in-depth investigation of one subject's subjective experience of a phenomenon. First-person research is not new in the Arts (Sullivan, 2010), Architecture (Manolopoulou, 2013) or Sciences (Price and Barrell, 2012). Price describes a lineage of first-person consciousness or auto-research that stretches back into the 19th century (ibid). In accord with McNiff (in Sullivan, 2010) and Price and Barrell (2012), this document maintains that arts-based and subjective research should be recognised as complimentary to scientific research. It supports Sullivan's (2010) argument that an 'insider's view' can highlight aspects of experience that are 'invisible' to the scientist (Sullivan, 2010), thus revealing questions that may be worthy of further exploration in studies beyond the scope of this project. As first-person practice-led research the findings of Phase 1 do not offer universal conclusions. Instead, they offer a reflective interpretation of what happened within one person's experience. As there was only one subject, this phase of the study constituted a type of case study and some related principles were applied, such as sampling until saturation was reached, data ordering, data analysis and a literature comparison that followed the analysis (Collins, 2010). Sullivan (2010) submits that practice-led researchers often augment their own original methods with appropriate practices and principles borrowed from other methodologies. In this light, Phase 1

is informed by the Experiential Phenomenological Method developed by Price and Barrell in the context of first-person consciousness research (Price & Barrell, 2012).

Collins describes validity as the 'truth value of the project's findings' (Collins, 2010: 146). Collins also advises that "internal validity can be enhanced by establishing relationships where certain conditions are shown to lead to other conditions" (ibid). Phase 1 analysis identified clear relationships between a few imagined place-qualities and concurrent real movement. Those relationships between movement and imagined place qualities that were confirmed across the most of the related event records constituted the findings of Phase 1; and would inform the architectural movement practices of Phase 2. As will be described in Chapter 3, some of the identified place-body meanings constituted functional hypotheses- 'statements about the relationships between ... experiential factors, including quantitative relationships between one factor and another' (Price and Barrell 2012, loc. 1279-81). For example, spaces in the imagined scenes were more open, when the concurrent movement was more slow and more regular. The first-person elements of the study were necessarily interpretative, recognising that the researcher's embodied ways of knowing were strongly influenced by many contextual issues. For this reason, the praxis developed in Phase 2 would build upon Phase 1 findings considering personally influential movement contexts.

CHAPTER 3: PHASE 1 FINDINGS

3.1 Outline of phase 1 findings

Phase 1 sought to identify proprioceptive movement-place associations to provide a starting point for a movement praxis to be employed during the process of architectural design, a praxis that would build on the way that my moving body-self already knew and imagined place rather than on an externalised intellectual understanding of the relationship between my body and place.

The findings of Phase 1 addressed the following sub-question:

What innate embodied movement-place associations and relationships can be identified during improvised movement?

As outlined at the start of this document, relational space (from the trunk of the body out), density and rhythm emerged as central foci from the findings of Phase 1, later shaping the movement praxis developed during the design trials of Phase 2.

I understood the mental images of Phase 1 to originate in amassed bodily memories of encounters with qualities of place, evoked during associated experiences of movement. Tversky (2019) confirms that ‘actual actions can facilitate imagined ones’ with the imagined actions being ‘congruent’ rather than necessarily ‘identical to the imagined ones’ (Tversky, 2019: 94). Likewise, I considered that the imagery of Phase 1 highlighted embodied patterns of remembering, understanding, and anticipating interactions with the world that had evolved during a lifetime of moving through and negotiating my surroundings; revealing ‘implicit awareness of [my] own body’s possibilities for action in a given environment’ (Hale, 2017: 15). In this interpretation typical body-place patterns found in such images indicated the aspects of body place encounter that my moving body-self might need to attend to²⁶ in a remembered type of place. Arguably, these aspects might also influence implicit embodied place experiences of future building inhabitants as they moved through my future designs. Also, the felt somatic qualities of movement might evoke like subjective engagement with associated qualities of place. The following relationships between movement and imagined place qualities were found during post practice analysis:

²⁶ Mc Namara (2013) explains how the ‘spatial structure of an environment is represented in memory and how memories of familiar environments are used to guide actions in space’ (McNamara, 2013: 182). He describes three types of memory included in contemporary models of spatial cognition. These include allocentric, ‘object-to-object’ memories, ‘view-point-dependent’ memories, and egocentric self-object memories (McNamara, 2013: 184) that assist movement in the near surroundings. The egocentric memory system ‘computes and represents self-to-object spatial relations needed for spatially directed motor activity, such as walking, reaching, and grasping. (McNamara, 2013: 182). I consider the glimpse mental images of Phase 1 to have been influenced by my egocentric spatial memory.

- (i) A direct spatial relationship between the shape of imagined place and the path and edge of my movement around my body,
- (ii) A direct relationship between the rhythmic tempo of movement and the imagined spatial proximity (perceived immediacy/density) of imagined boundaries,
- (iii) relationships between the felt rhythm and path of movement (in reflective journal observations),
- (iv) differences in the material density of imagined surroundings during movement that involved the trunk and head versus those during movement focussed through the hands and feet,
- (v) A direct relationship between the sensation of expansion, contraction and fluidity in the body and the material density of the imagined surroundings.

The following sections will discuss these findings in turn.

3.2 Path, shaped bounds and peripheral vision

Whereas the overall *shape* of my body often illustrated *objects or agents* in space (such as birds, trees, aeroplanes), the shaped *path* of my movement tended to influence the shape and **body-relational** direction of *imagined boundaries and enclosure* of the setting I imagined being in (for example: room or landscape).

Analysis of the Phase 1 journal records found an unexpected relationship between the path of movement and the imagined shape of surroundings. At the commencement of this study, I had an expectation that place-imagery might bear a relationship to the shape or stance of my body. Alice Sara remarks on architectural students' tendency towards static spatial understandings (Sara & Sara, 2015). Therefore, this expectation may have related to my architectural experience of designing using static visualisation processes, one experiential 'frame' at a time (for example: a plan or a section), or to prior dance with small children which included experiences of becoming trees, rockets, birds, fairies, taking on both the imagined forms and movement of these agents²⁷/personae. The Phase 1 movement events did include some similar experiences of, for example, fluttering hands recalling leaf fall, or outstretched arms recalling a tree. However, during the period of recording movement events, I noticed that the peripheral path and direction of movement around my body tended to echo the body-relative shape and position of bounding forms in the mental imagery. Halfway through event collection, I began to suspect that the imagination of these surrounding forms might originate in the perceived 'visual

²⁷ The word 'agents' refers to live or mobile creatures and objects in the imagined scenes.

trace' of the movement of my limbs, picked up in my peripheral vision during movement. I had noticed the visual trace of recent movements when recording the wings of dragonflies in flight (see Figure 17-left). A concurrent study of the amount of my moving body seen in my peripheral vision suggested a connection between the imagined forms and my present peripheral awareness of past movement formations, see Figure 17 (image and journal entry) and excerpt in Film 2.

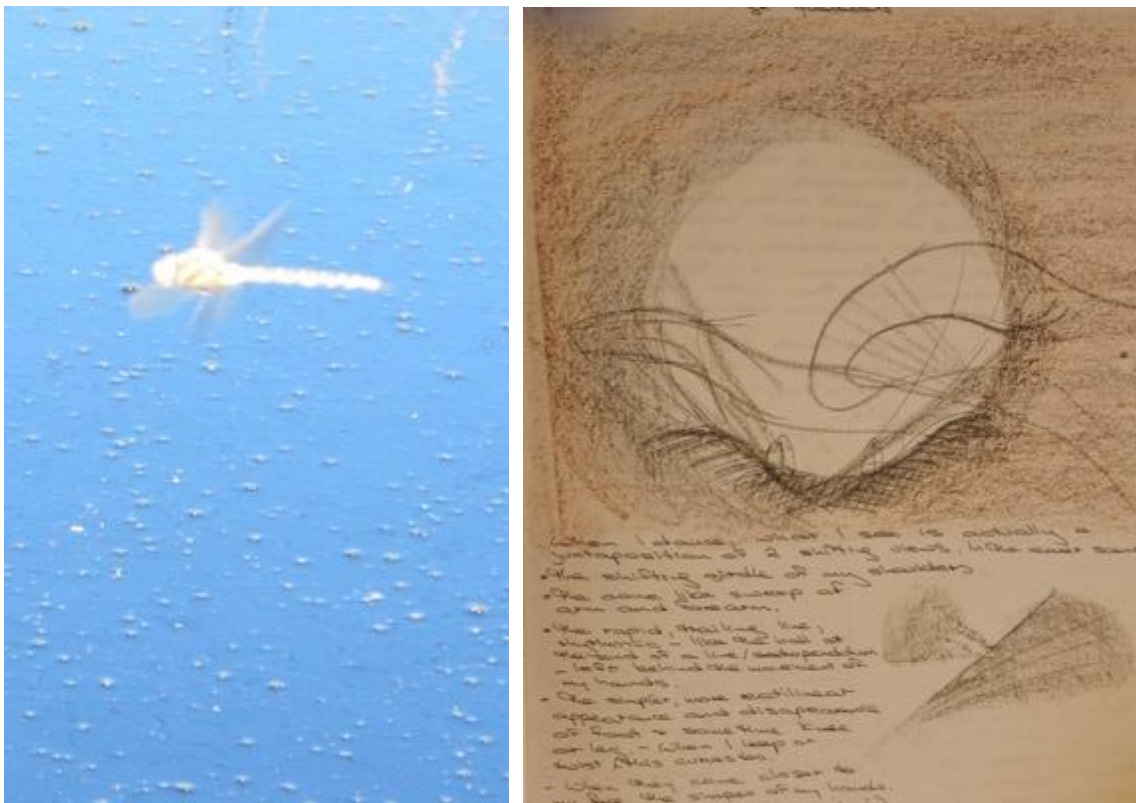


Figure 17: Illustrating visual trace and peripheral vision -dragonfly photograph and event 239 from journal.

The following two journal excerpts record realisations connecting visual perception with the passing of time that were to influence the architectural practices of the design trials.

Event 261: 16/11/2014:

'Trace' [or motion blur]– suggests that visuals are not experienced as static, but as dynamic environments. An obvious example is a dragonfly wing, which moves so fast that we can only see it as a blur of where it is now, mixed up with where it has been during the last couple of seconds ... We experience this in movies. What we are seeing is a series of stills, but we don't experience them as stills, we experience them as a dynamic environment, which contains both static and mobile elements ... the ever-present mobile element being our own body in motion. Arguably, our visual experience of form always incorporates mobile path, be it of head, hand, or threat from [encounter with] mobile external elements.

Event 239: 2/11/2014 (peripheral vision when looking forward- see Figure 17-right):

When I dance, what I see is a juxtaposition of two shifting views. In the nearer scene, the shifting girdle of my shoulders, the cone like sweep of arm and forearm. A rapid trailing line (rhythmic- like a ball at the end of a line or pendulum) is left behind the movement of my hands. [more included in Appendix 3].

These extracts illustrate the record of motion and memory in my visual perceptions of place, highlighting both the visual presence of the path of my own motion during movement, but also the role of memory in visual perception of surrounding architectural form. Both observations would influence the practices developed during the design trials of Phase 2. However, although peripheral vision may influence imagery, further analysis was to identify other functional relationships between the path of movement and the shape, scale, and position of imagined spatial boundaries.



'He was crouched rocking in a slight hollow in the rock'.



'I am perambulating the streets ...As I walk on, the streets open to me ... My path is straight, a sidewalk king. I am the middle of the street'.

Figure 18: Path of movement and bounding formations - journal excerpts from events 98 (22/08/14) and 158 (13/09/14).

The pen and paper re-reading of all events which featured shaped bounds²⁸ (steps 6-A in Figure 13), confirmed that in some types of shaped landscape, the movement itself seemed to scoop or grind out the landscape (Figure 18-left). In other instances, the shape of the imagined surroundings seemed to flank (Figure 18-right) or echo those of the movement's boundaries and direction, creating concave or hollow bounds. This relationship was initially identified in imagined settings where (i) regular, linear movement evoked scenes with high forms flanking an open-ended path or route (path-like settings in Figure 18-right), or (ii) where real movement

²⁸ The word 'bounds' refers to a 'bounding formation'.

appeared to 'scoop' or 'grind' out imagined hollowed or concave forms, creating dips in the setting surrounding my imagined self (concave settings in Figure 18-left). However, when all event records and spatial categories were analysed (using steps 6 A-D Figure 13), a relationship between the peripheral path of movement and shape of setting was to be confirmed across the events.

This finding suggested a subliminal relationship between the field of movement and the anticipatory awareness of architectural form and space. It also suggested that using movement whilst imagining place using a similar spatial body-place relationship might harness my existing processes of embodied imagination in support of architectural design. Also, the experiences of Phase 1 suggested that movement engages peripheral vision, and peripheral vision is an important aspect of the subtle experience of buildings. Therefore, practices that engage peripheral vision would benefit architectural design as 'much architecture is theorized and taught solely in terms of focused vision, but we are embraced by space by means of our peripheral perception' (Arbib, 2015: 80).

3.3 Body part and density of imagined boundaries

The second Phase 1 finding that influenced the spatial practices of the design trials related the density of imagined formations in scenes to the body parts engaged in movement. As will be discussed further in this chapter, this finding would reinforce the importance of attending to the movement of the torso during the design trials. When investigating the relationship between concave spaces and movement, I noticed the following:

Two types of association appeared to exist between (i) the **path of the body's movement** and (ii) **the shape and location of the imagined boundary/enclosure**. The distinction between these types of relationship related to the **body-parts** creating the shaped path/periphery and the **density of the imagined boundary/enclosure**.

- a. The shaped path and direction of the movement of **the torso** appeared to be echoed by the shape and location of imagined **hard, dense enclosures**.
- b. The peripheral shape created by the path of **hands and feet** appeared to be echoed by the shape and relative position (direction from body) of imagined **soft or delicate enclosures**.

A trans-category review of all shaped scenes supported these findings: Firstly, when my torso was engaged in movement involving strong, sudden movement, the shaped path, periphery, and orientation of this movement were most frequently echoed by the imagined

shape and relative location of imagined hard, dense enclosures (of materials such as concrete, stone and earth) as in Figure 19.



Standing – my internal world brewing something hard...There is a **jerky internal rhythm** in this place within- **felt in my head and upper torso**...The left is distinctly clearer than the right, but that was the direction of the jerking motion’ [note the sloped, rhythmic formation of the colonnade].

Waterfall of the **upper body dropping**; *silo*... one drop in an empty and echoing chamber – high walls surrounding- **hard and impermeable**, frightening.

Figure 19: Movement of torso and hard bounding forms-events 122 and 11

Contrastingly, the peripheral shape created by the path of my fast-moving *hands* and *feet* appeared to be echoed by the shape and relative position (from my body) of imagined *soft or delicate* enclosures (of materials such as water, long grass, light skeletal structures, or fabric). As illustrated in Figure 20, these are materials that my body has experience of shaping and changing using my hands and feet, thus extending the boundaries of the space within which my body moves, experiences such as clearing brush, splashing water, making hollows in grass.



‘I am stepping through a landscape of my own making **described by the light, playful extent of my gesturing fingers**; a **watery landscape**; a sea in responsive suspense.’

‘A young, bad, happy creature, **kicking up a ruckus in the sunny grass. A big, fat trampled circle**’.

Figure 20: Soft malleable bounding forms -journal event records (2014-2015)

A cross-data check compared the movement of varied combinations of body parts with the imagined shapes of solid imagined enclosure (as indicated in the upper, brown section of Figure 21), and soft imagined enclosures (as indicated in the lower blue section of Figure 21). These

tendencies were confirmed by the number and percentage of occurrences within the concave scenes imagined, and then confirmed against all scene categories with solid bounding forms (see Figure 22).

CONCAVE SURROUNDING LANDSCAPE – BOUNDING FORM DENSE & SOLID, (no path beyond, no landscape imagined beyond 'surroundings form')								
	<i>Path of Moving Body Part suggesting shape imagined</i>							
<i>Number</i>	<i>head</i>	<i>hands</i>	<i>Upper torso</i>	<i>arms</i>	<i>hips</i>	<i>feet</i>	<i>legs</i>	
13	11.5	2	12	5	9	5.5	7	
	88%	15%	92%	38%	69.21	42%	54%	<i>Focus on body core & VISUAL FIELD (HEAD)</i>
CONCAVE SURROUNDING LANDSCAPE – BOUNDING FORM LIGHT/SOFT/MALLEABLE, - (no path beyond, no landscape imagined beyond 'surroundings form')								
	<i>Path of Moving Body Part suggesting shape imagined</i>							
<i>Number</i>	<i>head</i>	<i>hands</i>	<i>Upper torso</i>	<i>arms</i>	<i>hips</i>	<i>feet</i>	<i>legs</i>	
9	2	8.5	1	5.5	1	6	4.5	
	22%	94%	11%	61%	11%	67%	50%	<i>Focus on body extremities</i>

Figure 21: Body parts and solid versus soft bounding forms

LANDSCAPE CATEGORY		orientation of torso	locomotion of torso	
FLAT/WIDE LANDSCAPE (ON/IN LANDSCAPE)		N/A	N/A	
HIGH ABOVE LANDSCAPE (BOTH GROUNDED AND IN AIR)		N/A	N/A	
SHAPED PATH OR ROUT – BOUNDS FLANKING ROUTE		100%	100%	
CONCAVE OR SURROUNDING BOUNDS SENSE OF ENCLOSURE		100%	100%	17&2
INTERIOR & AMBIGUOUS SPACES		6/7	6/7	7

Figure 22: Relationship between motion of torso and solid bounding forms

This combined finding emphasized the importance of environmental density to my moving body; of the difference between malleable densities that could be subject to the actions of my hands and feet, and solid densities that my whole body and torso needed to negotiate. Arguably, solid boundaries are less easy to change with our hands and feet than soft boundaries, necessitating whole body movement to avoid and negotiate them. Additionally, our vital organs are contained within our torsos. It is possible that physical memories such as ducking, avoiding, and changing direction might encompass amassed memories of the solid environmental boundaries that necessitated such actions. This finding emphasizes that solid and soft boundaries have differing implications and embodied architectural meanings that are affected by their *felt density*, highlighting the relational nature of the encounters between the body's material density and those of its surroundings, as will be discussed in Chapter 6.

Secondly, these findings suggested a felt association between the movement of my torso/body core and attention to solid boundaries, highlighting the importance of an engaged awareness of my whole felt body, (core in addition to hands) during the design of solid forms.

3.4 Reflections on rhythm in Phase 1 journals

Phase 1 journal reflections on the rhythmic path of movement bear a relationship with both the findings discussed previously (Section 3.3) and findings that will be discussed in section 3.5 considering the density of spatio-temporal experience. An awareness of rhythm was present from the start of the research. The rhythm of body-place experience was not directly identified as a core finding of Phase 1. But rhythmic qualities were one of the most documented movement attributes in journal entries from the start of Phase 1, and rhythm was one of the most frequently used words. Reflection regarding connections between the spatial path of movement and felt rhythmic qualities started near the beginning of the Phase 1 event enactment period. I drew lines to record the sensation of rhythmic movement, recognising connections between the continuity or abruptness of changes in the shape of my movement's path and the concurrent sensation of smoothness versus sharpness or hardness. Figure 23 includes some of these journal excerpts.



27/06/14 - event 20



26/06/14 - event 16

Curve with a sharp edge - allure with a bite-
swinging hip - smooth curve- sudden sharp
change in direction on edge of lift - curves
down again with gravity



26/07/14- event 40

A darting sharp-kneed leap around space, a
sea of diagonals

Figure 23: Journal excerpts illustrating rhythm of path

As illustrated, I noticed a clear distinction between the feeling of movement in which the path was continuous (with curved, smooth changes in direction), and movement with sharp or abrupt changes in direction. Figure 24 provides a simple illustration of this relationship. The sketched lines in the images below follow the path my hands have taken, illustrating how the shape and paths sensed in our surroundings might have perceived rhythmic qualities that can be physically understood because of our prior embodied experience of sharp and smooth paths of motion.



Figure 24: Path and smooth continuity versus sudden sharp change

In this example, states of continuity or change are felt as rhythmic qualities. Similarly, the rhythmic quality of the lines and edges surrounding us might be perceived as smooth, restfully continuous, or evenly rhythmic; or in contrast sharp, hard, and demanding incorporating the demands of stopping and starting and of impact or change. Such associations were to influence my interpretation of the perceived rhythms of paths and edges of places during the design trials of Phase 2.

3.5 Speed or irregularity of movement signals contracted boundaries.

Whereas previously described findings suggested the importance of spatial relationship to my moving body-self, the following finding suggested the importance of felt temporal rhythm and the anticipation of body-place encounter feeling dense versus spacious in terms of available space-time.

When comparing all scenes which referenced a shaped setting (landscape, urban scene, or interior) a strong functional relationship was found between the **tempo (suddenness and speed)** of movement and the **concurrent contraction of imagined spatial boundaries** (such as valley sides, the width of streets etc.). Conversely stillness, slowness, and steady movement evoked images of wide-open landscapes and far views.

Recognition of this finding emerged when cross-checking instances of the finding which related the path of movement with the shapes of concave and path-like settings. An apparent contradiction arose within the spatial sub-category defined as 'interior space'. Here both minimal and spatially complex movement evoked imagined interior scenes. However, the interior images appearing during relative stillness also contained open views through windows, or a double awareness of both being within a room and simultaneously in the space beyond the bounds of the room (see Figure 25, left and right). Furthermore, the stance of both standing and kneeling evoked images of both rooms with windows and of open landscapes. Thus, the common denominator (open, long view), appeared to relate to stillness rather than either body shape or path.

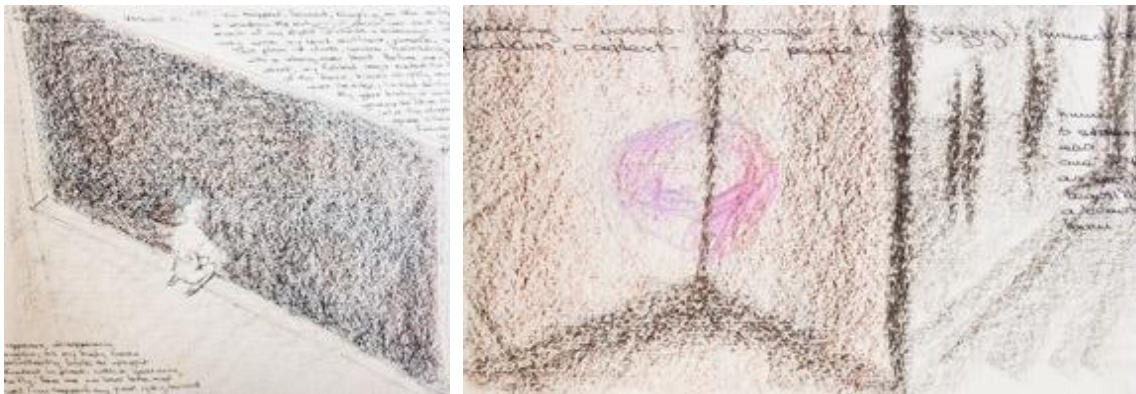


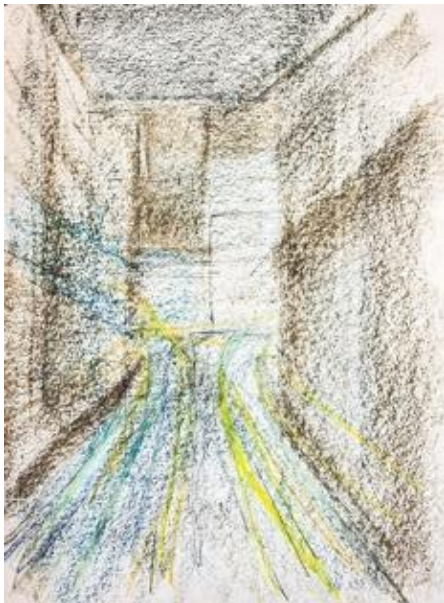
Figure 25: Left-Phase 1 journal entries- Interior scenes with window; Right- double image of room and street.

This proposition seemed to support earlier observations in which I had noticed a direct correlation between imagined narrowness and speed. The 'path shaped spaces' flanked by solid formations (city buildings, colonnades, valleys, tunnels) seemed to become narrower and taller during faster movement (see Figure 26-left). Conversely, scenes were wider and more open during regular or slower movement (as in Figure 26-right). A cross-event check refined the finding. When checked across all events, the relationship appeared to relate to rhythmic 'sharpness' and sudden change as well as speed²⁹. Sudden and fast movement was found to be accompanied by a contraction of imagined spatial boundaries. As discussed in more detail in section 6.4, this seemed to align with definitions of tempo from the effort qualities in Laban Movement Analysis in which the tempo of movement impulse is described as sudden versus sustained (Davies, 2006; Fernandes et al., 2015) rather than fast versus slow. Similarly, several

²⁹ See Appendix 4. Table summarising the relationship between suddenness and contraction of space.

observations during the event enactment period related tempo to the experience of wide or narrow movement.

Journalled observations (see Section 3.4) also related path to rhythm and to a related sense of either continuity or of impactful stops and starts. Furthermore, during the original dance sessions, I noticed a tendency in my own movement towards narrowness during fast movement and wideness during slow movement. I noticed that faster rhythms are easier to respond to when using small movements, such as a jiggle or quiver; whereas larger, full body movements are easier when enacted slowly.



Event 3: Fast rhythm...night-time street, between high rises, fast moving traffic- delayed lines/streaks of light - main colours dark grey with neon streaks.



Event 93: The weather is coming in. It is looming too far to be looming over me yet ...The plain darkens ... I kneel and watch a single beast approach.

Figure 26: Scenes with fast and slow movement

During the period of event enactment, studies of the relationship between the rhythm and path of movement related smooth movement with curved paths; and curved-pathed movement with feelings of continuity and boundlessness. In contrast 'hard', 'sharp' syncopated rhythms in movement were characterised by paths with sharp changes in direction, stops and starts. Such 'stops' and 'starts' suggest boundedness through impact or the necessity of changing direction. In a like respect, movement observations about *even* rhythms remarked on the experience of repeated patterns becoming experiential 'surface textures' as opposed to individual forms. For example: when viewing a field, I no longer see each sharp blade of grass, I see the textured surface of the field. Furthermore, I noticed that my focus appeared to contract during faster and more complex movement, with my attention directed more narrowly around my body. This phenomenon may have related to a concentration of attention. It may also have

related to a sharpened environmental awareness when encountering suddenness and surprise as found by Gibson (1969). Interpretations of the reasons for this pattern in my embodied imagination included the following:

- That attention to surroundings contracted in response to the demands of rapidly changing circumstances, also accompanied by energetic and changing movement.
- That the degree of felt boundlessness or boundedness was associated with the impactful stops or continuity of felt rhythms such as when changing direction when encountering solids.
- That there was a relationship between width of movement and its natural pace (although this did not account the place related imagery).

I considered the first two of these interpretations to be the most plausible. Both suggested a connection during our movement in the world between the anticipation and experience of available time and available space, felt as contraction versus expansion of felt space-time, ergo the degree of its felt density. As will be discussed further these findings regarding the spatio-temporal density of felt experience and related felt rhythmic qualities would influence the way in which I considered and enacted architectural experience during the design trials of Phase 2. This finding suggested that when experiencing movement within a design, there might be moments with an affinity to an expanded or contracted view, for example an affinity between a slowed pace and an awareness of expanded boundaries. In addition, this finding suggested the possibility of a felt intersubjective experience of calming or 'quickening' when viewing the rhythm and path of architectural forms and lines.

Section 3.5 described the impact of the felt rhythm of movement during phase 1 on the concurrent imagination of available space. Here, the pace, tempo and degree of change or continuity of movement through time seemed to be connected to both to the expansion and contraction of imagined space. The suggested implications for architectural design are that opening vistas and spaces have an embodied suggestion of restfulness and availability of time with the findings of Phase 1 suggesting that contraction or immediacy of time is often associated with contraction or immediacy of space, signalling the demands of imminent body-place encounter. As discussed further in Chapters 6 and 7, this finding contributed to a movement praxis which would interpret architectural experience in terms of the felt nature and anticipation of dynamic relationships and encounters.

3.6 Imagined and felt density and gravity

The **physical sensations of density** and gravity (both inside and in exterior contact with the body) **signal the dominant densities of the materials** of the imagined surroundings.

See also *density booklet on website*³⁰.

During the movement events of Phase 1, the imagined presence of solidness (earth or concreteness), wateriness, or airiness appeared to be invoked by like sensations of solidity, liquidity, or diffusion; felt both within and outside my body. These feelings were identified in the characteristics of movement and linked imagined scenes which felt airy (open, expanded and delicate), versus scenes which feel watery (fluid, released, indeterminate, buoyant) or solid (hard, contained, heavy). As will be discussed, these feelings occurred at my body's periphery as surface contact which could be hard, soft etc. They also occurred within my body as the physical experience of expansion, fluidity, or contraction (as illustrated in Figure 27).



Expansion and delicacy- becoming less concentrated, less dense, more open.

Event 18: I am in a slow drifting tumble, my body mostly horizontal in sensation – the medium viscous but porous – and open. There is a sense of gravity in touch but not downward in motion as parts of my torso and limbs resist the rolling current around me. There is a sense of both roll and drift ... a slow and mostly horizontally oriented tide, rolling not choppy.

Solid earth, connected to ground through gravity, experienced as impact when density meets density. Body contained as substance with hardness.

Figure 27- Feeling airy, fluid or hard

3.6.1 Describing felt density

As outlined earlier, during events that focussed on materials with related densities, the associated movement sensations were felt both outside and inside the body-self. The outer imagined experience of these elements appeared to be evoked by felt memories of past

³⁰ Link to density booklet: <https://platinum-lizard-4njw.squarespace.com/work-1-1/project-two-w5tla>

encounters with such materials. For example, memories of actions such as splashing water, balancing on a small boat, and swimming appear to be awakened by like movements, invoking related situational imagery. These encounters included familiar ‘types’ of action such as rocking on water or stamping on solid ground and concrete. However, the qualities of these actions were more closely linked to the encounter with the characteristic density rather than to the imagined material. The material environment was, for example, fluid and changeable or dense and hard. The descriptions above illustrate the outer experience of these elements, the body in encounter with the elements outside it. There also appeared to be affective states of being ‘of’ or ‘like’ these elements that accompanied the imagination of each, felt as experiences within the body, such as expansion and lightness (airiness), or release and indeterminacy (being of water). Furthermore, the imagination of solidity, liquidity and diffuseness (airiness) was linked to the felt experience of density and correspondingly of gravity. There was a functional relationship between imagined density and the body’s-oriented memories of gravity, expressed in movement, which was correspondingly downward, upward, or buoyantly horizontal. This experience of gravity had associated body parts. Active arms and the upper body tended to evoke imagined scenes in which air and sky dominated. Feet and legs dominated during scenes which focussed on earth, concrete or tarmac. Events which featured water and the experience of liquidness were the most complex and varied. In these scenes, arms and legs often featured together, sometimes referred to as limbs. In such scenes, sensations of buoyancy, indeterminacy, surrender, and release were referenced when the body was horizontally oriented or lying down, with both legs and arms moving freely and gesturally. The discussion that follows in relation to each material- element explores these inner and outer feelings of density and the related movement. In all these scenes, the appearance of colour was strongly related to the material types. However, as mentioned earlier, an affinity existed between light, openness and upward-ness which brightened colours.

3.6.2 Being and feeling airiness and diffusion

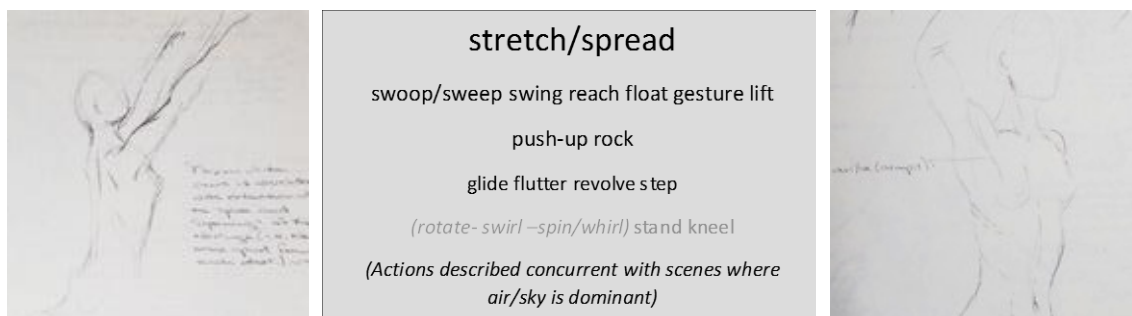


Figure 28: Feeling open and airy drawings adapted from Calais Germain (1993); and word cloud of verbs in airy scenes.

As described earlier, most movement events invoking images that focused on air and sky felt expansive and open as well as delicate and light. Active, wide or raised arms dominated these scenes. These movements opened the torso, expanding and lifting the ribcage, encouraging the experiences of levity rather than gravity (after Laban in Maletic, 1987) and the accompanying feeling of opening the lungs to invite the air within (see Figure 28 left and right). Connection to the ground was light, often experienced through the balls of the feet. The movement evoking 'airy' or sky focussed scenes, was characterised by actions such as 'stretching' and 'spreading,' describing the movement of my upper body (see Figure 28-centre). Other actions such as swoop, float, lift, glide and flutter were associated with flight. The association of arms and hands with airiness may have been reinforced by the sensation of eddies and currents of air moving against the skin of hands and arms. These sensations, felt as my arms moved around my body were remarked upon when reflecting on events during Phase1.



Event 49: The wind lifted her, picked her up, her toes the last to leave the ground, her cloak extended her, grew her arms, introduced her to the tangible power of the air.

Event 395: A choir of delicate vibrations, rippling, fluttering, felt in my wide outstretched arms, delicately connected bare feet ... fluttering of my hands, palms down, riding the high band of strata, the thin layer of air.

Figure 29: Being in and of air (Phase 1 journal entries)

Although the head-foot orientation of the body was mostly vertical, spatial qualities of the movement were described as wide and opening, curved, rotational and horizontal in emphasis. As suggested by the findings, movement in airy and sky focussed scenes tended towards slowness. In summary, the movement qualities, which involved an open torso, wide arms, curved horizontal paths, slower movement, and a delicate connection to the ground, contributed towards movement and scenes which felt-expanded, open, delicate, light, loose,

free, disembodied soft and insubstantial, all feelings of unboundedness and diffusion, reduction in density, of becoming air (see Figure 29).

3.6.3 Being and feeling solid ground

In contrast to diffuse 'airiness', solidity was associated with feelings of hardness, strength, containment, connection and journey. In some scenes, there was also some association with sharpness, violence, emptiness and barrenness (a lack of softness, or moisture). Feet and the lower body were featured in scenes with a stronger focus on the 'ground' (earth, tarmac or concrete). Actions where contact with the world was focussed through the feet dominated the scenes which focused on solid materials (see Figure 30, left and right), involving movement which repeatedly left and then returned towards the earth reinforcing a rhythmic and impactful connection with the solid ground plane. During these movements, gravity was repeatedly reinforced. Spatially this movement could be wide or narrow. However, there was a clear vertical emphasis with tendencies towards backwards, forwards, diagonal and downwards paths with sharp changes in direction. There appeared to be a further affinity between rhythmic, repeated movement and a focus on solid materials, the tempo of which was described as fast and hard rather than slow or still.



Event 174: A dark plain below my feet ... Alone in the dust, I study my feet.



Event 9: Relentlessly steady rhythm- hard dry ground- long journey-brown dust- a long walk. Loss, hardness, strong walk, hard strong heel-toe connection to ground, a lone march no room for softness.

Figure 30: Journal entries examples of hard scenes

Arguably, the most frequent contact between body and solid is through our feet, with strong associations with the act of standing and travelling from one spot to another. During this contact, we experience impactful connection to the ground plane which reinforces the experience of the solid nature of the material with which our bodies connect (see examples in Figure 30).

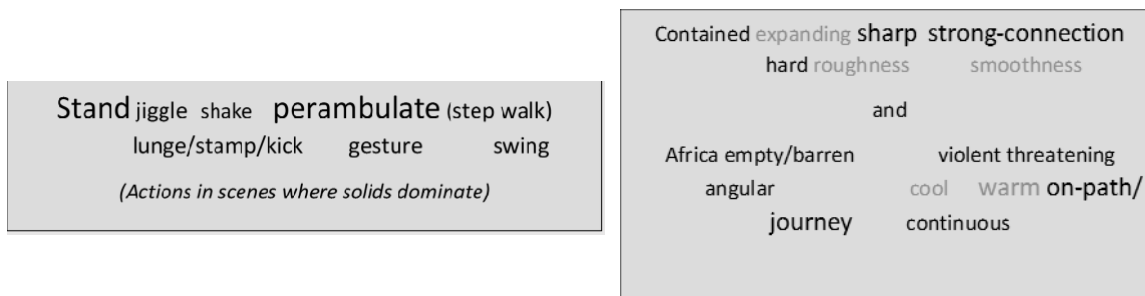


Figure 31: Word clouds- actions and feelings during hard scenes

Together the actions and movement descriptors associated with scenes with a focus on solid materials had affiliated feelings of travel, route, and strength of connection, as well as feelings of sharpness, hard impact and containment (see Figure 31). The strength of the embodied association between solidity, gravity and the supporting ground was thus emphasized, with implications for architectural experience that would be considered during the design trial in terms of the experience of gravity and levity, stability and mobility (see Section 6.4).

3.6.4 Being and feeling water and liquidity



Event 37: Drift, float ... limitless, weightless-movement; ... An ocean of darkness with stars as floating, drifting fish



Event 89: She splashed up a storm

Figure 32: Journal entries watery scenes

Although watery experiences were characterised by lightness and smoothness; there was also a strong focus on feelings of release, weightlessness, and surrender. The experience of weightlessness might be expected to have a stronger logical association with air. However, real physical memories of weightlessness and of being carried by an element related to the release from gravity experienced while swimming, rather than to experiences of flight within air. Interestingly, images that encompassed the feelings of weightlessness and horizontality thus referenced space (void) and viscous air-water mixtures (see Figure 32 - Event 37). Whereas the

upper body and arms dominated scenes focussed within sky and air, and the feet those engaged with solid ground, the imagination of water seemed associated with a more even distribution of focus between arms, hands, and feet. Similarly, there was a stronger focus on the arms and legs used in concert (as limbs), with greater interchange between the roles of the limbs, as when rolling and tumbling horizontally. Furthermore, emphasis on the centre and trunk of the body (hips, buttocks, belly and torso) was increased in watery events, with several scenes referencing the sensation of movement rippling or flowing through the body (see Figure 33 - Event 376). Scenes featuring water were very varied, as are physical memories of the varied states of water. It was imagined in the following forms:

- As a flat surface upon which I stood and rocked, balancing
- As splashing waves as my feet and hands made splashing type actions (Figure 32 - Event 89)
- As water falling onto round surfaces as I swivelled in unwinding curves (Figure 33 - Event 376)
- As rain falling around and running off me as I stood feeling my weight fall away from me (Figure 33 - Event 206)
- As a strange viscous air-water material that I was swimming or drifting horizontally within (Figure 32 - Event 37)
- As a liquid rippling or flowing up and down the inside of my body
- As wisps of cloud and mist trailing off the ends of my movement



Event 206: I am standing, eyes closed, head back, arms at my sides. It is all washing off me; falling away from me; a deluge; a torrent- washing it all away; my weight falling away through my feet; surrendering to gravity; no effort required, except that of balance over my feet.



Event 376: As I begin to move ... the balls and soles of my feet are mobile, allowing my knees, hips and upper body to revolve and describe complex circles, curves and curlicues. The movement is fluid and complex, rippling and flowing up and down my body.

Figure 33: Journal entries- more watery scenes

Some of the actions described might have been experienced in boats or on floating platforms, such as standing rocking. Some movements were rhythmic and wave-like, such as dip and fall, waltz, and sway. Some might have occurred when being carried in water, such as drifting, swimming and tumbling. Other movements evoked feelings of rippling release experienced when unwinding one's joints through curved and opening rotations (Figure 33 - Event 376). Spatial relationships were varied, with a tendency towards curved movement, mixed orientation to the ground plane and included more trailing indeterminate and asymmetrical movement than usual. When referenced, the tempo of movement tended to be rhythmic, but could also be slow or still.

These movement qualities and associated imaginings of water evoked a wide range of feelings (see Figure 34). However, the common denominators might be understood as sensations of surrendering, of release from tension and gravity and of boundlessness, of 'giv[ing] [my]self over to the movement' (Hunter, 2021: 245)³¹. As described, the physical experience of water was rich in motion and complexity, with strong affinities between liquidity and the motion of the body.

relaxed/weight-falling	released/ surrendered
water-falling-outside	unwinding/loosening
weightless/void	release-of-tension
blissful/heavenly	indeterminate delicate/light
smooth clean/clear/washed	water-within/through-
body floating	limitless

Figure 34: Most frequent feelings associated with watery scenes.

3.6.5 Feeling material density

During Phase 1, interior and exterior feelings of solidity, liquidity and diffuseness during movement were found to evoke like scenes featuring air, water, or earth/concrete/ground. These associations suggested that feelings of material density play a meaningful role in the manner with which my body makes sense of place. As mentioned in sections 3.6.3 and 3.6.4, the felt qualities of density appeared to relate to past physical experience of these material-elements, sometimes challenging my own intellectual expectations of the qualities of these

³¹ Hunter (2021) discusses how movement responses to watery surroundings highlight the porosity of the boundaries between our fluid mobile insides and our outsides, our bodies, and their surroundings.

materials. Furthermore, the connections found between feeling and density suggested rich opportunities for architectural imagination. For example, inner feelings of airiness, liquidity and solidness might be augmented within an architectural environment by providing experiential opportunities for inhabitants, such as opening the torso when looking up through a window, recognising fluidity or release in associated forms, or feeling a highlighted connection to the earth. As discussed in Chapter 6, such ideas would influence the approach taken during the design trials of Phase 2.

Felt and imagined material density was a strong but subtly expressed finding. In the preparatory periods of the design trials of Phase 2 I wanted to understand and test the associations of place-densities in movement (see Section 4.4.2). To facilitate this, I mapped the movement descriptors collated in Excel into word clouds for each type of material density, using the word clouds as visual guides. These word clouds and the categories of movement descriptors mapped from the journals are illustrated in the *Density booklet* on the website, and also in Appendix 5. These word clouds became suggestive guides during movement. As will be discussed in the chapters that follow, similarities between my own Phase 1 movement descriptors and those of Laban Movement Analysis would influence the focus of literature review and the practices of Phase 2.

3.7 Exceptions as potential findings or limitations

There were three influences in the events that represented repeated exceptions to the identified body-place meanings. These exceptions were found to dominate or direct the overall characteristics of the scenes. The following two exceptions might constitute findings in themselves:

- The directive power of active palms of hands, especially the single right hand. This exception would influence the movement praxis of Phase 2 and is discussed further in Chapter 5.
- The central role that live-agents played in the scenes that contained them. This perhaps aligns with the importance of life and interaction in environmental perception.

For additional notes on exceptions and minor findings or tendencies see Appendices 6 a-f.

3.8 Conclusion of Phase 1 findings:

The findings of Phase 1 discussed in this chapter suggested the following:

- (i) A strong association between by the peripheral path of my movement (as experienced from the centre of my body outwards) and an imagination of edges or boundaries (Section 3.2)

- (ii) An imaginative awareness in movement of the manipulability (hands and feet) versus intractability (head and torso must move) of surrounding material densities (see Section 3.3)
- (iii) An imaginative awareness in movement of the contraction and expansion (density) of available space-time (Section 3.5)
- (iv) A felt awareness (both inside and outside the body) of the density of possible surrounding materials (Section 3.6)
- (v) The felt rhythm and the rhythmic path of movement were recurring themes throughout phase 1 (Section 3.4).

The experiences and findings of Phase 1 suggested a subliminal relationship between the field of movement and the anticipatory awareness of architectural form and space. Specifically, these findings suggested that body relational spatial qualities, material densities and spatio-temporal densities might potentially be aspects of place experience that might be explored in movement during architectural design.

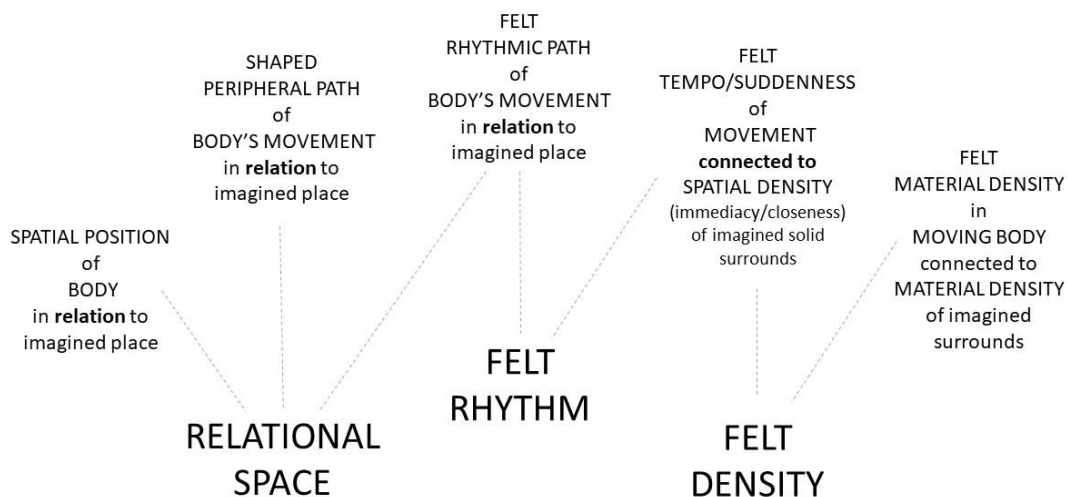


Figure 35: Themes arising from Phase 1 findings

Figure 35 illustrates the main connections between the Phase 1 findings and the focus on relational space, rhythm, and density during Phase 2. The following chapters will discuss how the Phase 1 findings influenced the application of these three thematic concerns as Place Trace in Phase 2. As will be explained in Chapters 4, 5 and 6, working with body relational space from the centre of my body out to the peripheral path of movement, much like the finding described in Section 3.2, would bring me into relationship as-if-in the design from where I would attend to the rhythms and densities surroundings me.

Three findings of Phase 1 together influenced my understanding of how my moving body-self might perceive the immediacies/densities and rhythms of its encounters with its

surroundings, and the anticipated continuities and immediacies, expansion and contraction, and stabilities and mobilities that form part of these body-place exchanges. Phase 1 findings relating to the felt experience of material densities suggested that I am in constant felt awareness of the densities that surround me as I move; and that these densities either constrain me or allow me to expand into and through them. Furthermore, the material densities imagined surrounding me were not limited to solids (as familiar within architecture); but incorporated a wide range of material densities with related felt experiences from feelings of airiness through, fluidity to the resistance of solid forms. Secondly, the finding that differentiated the movement of the trunk and head and those of the hands and feet when encountering imagining solid versus soft boundaries, highlighted the shifting relationships at play when we encounter parts of our surroundings that are more or less dense than ourselves, things that we can manipulate as opposed to things that we have to negotiate. Thirdly, the finding in which time and space expanded together highlighted the expansion and contraction, the density or closeness of encounter in space and time, a sense of continuity or a sense of immediacy. Finally, the relationship between the perceived tempo or rhythmic quality of movement and the imagined density of materials and available space, and the rhythmic shape of edges (Sections 3.4, 3.5 and 3.6), suggested that it might be possible to work with the architectural experience of rhythm and density together during design (as illustrated further in Chapter 6).

By the conclusion of Phase 1 I understood body-place felt density in terms of anticipation of rest versus physically demanding-change, continuity versus immediacy, resistance and stability versus manipulable mobility, all experienced in the shifting relationship between my moving body and its surroundings. As discussed further in Chapter 6, I hoped to be able to work with these qualities in design to evoke fluctuating qualities in the rhythm and immediacy/density of body-place experience for future inhabitants suggested by shifts in material, time and space (both volume and shape) when moving through a building and its surroundings.

CHAPTER 4: FRAMING PHASE 2-THE DESIGN TRIALS

4.0 Structure of chapter

Chapter 4 introduces the methods, sequence, and formative findings of Phase 2. An outline of the aims and objectives of Phase 2 is followed by discussion of what is meant by moving with-in the site and as-if-in the design (concepts central to the research). This is followed by a broad introduction to how I conceptualised the research methods that facilitated all phases of Phase 2 including the development of the praxis. Then a sequential description of the research actions of Phase 2 outlines the formative experiences of each research stage; ideas and practices that would influence the phases that followed. Key concepts, practices and influential contexts are discussed in further detail in Chapters 5-7.

It would be helpful to watch Film 3 before reading this section (see link³²). It provides an illustrated explanation of the overall approach taken during the design trials, also illustrating the central concepts of moving with-in the animate site and as-if-in the imagined design.

4.1 Aims, questions and objectives of Phase 2

Phase 2 Aim:

Frame, initiate and trial an original approach to embodied architectural praxis that employs movement to inform and enhance the architect's experience of designing with-in the animate site and as-if-in the future design.

Phase 2 addressed the following sub-questions:

How can innate movement-place associations and relationships be interpreted considering existing theories and practices to provide initial foundations for a movement based architectural design praxis?

How can movement be employed with-in an animate site to enhance knowledge regarding the still and dynamic qualities of the site including natural life within it?

How can movement be employed to enhance and inform the architectural design process as-if-in the future design?

³² Link to Film 3: <https://platinum-lizard-4njw.squarespace.com/work-1-1/project-three-4rpah>

During Phase 2 I began to develop ways of attending to movement during design that helped me (the architect) to communicate with myself about the qualities of place, both with-in the site (Figure 36-left) and as-if-in the imagined design (Figure 36-right).



Figure 36: Left-on-site tracing place around my body (2019); Right- in-studio tracing design as-if-in it (2020)

In this phase I built on prior embodied experience and influential movement contexts, using both past architectural and movement experience, and the thematic findings of Phase 1 as starting points during both the pilot and the main trial³³. Key prompts to attention and action derived from the findings of Phase 1 included (i) attention to relational space from the centre/trunk of the body out towards the edge of movement and (ii) multisensory attention during movement to the rhythms and densities of body-place experience (material, spatial and temporal). Discussion of how I interpreted related movement-place associations and developed ways of moving using these prompts begins in this chapter and is developed in the chapters that follow. As illustrated in Figure 37, between 2016 and 2020, the following Phase 2 objectives were accomplished in turn:

1. Conduct a pilot design to reveal and trial practices worthy of further exploration.
2. Frame an approach and prime/prepare for the main design trial by accomplishing the following:
 - a. Identify theory and practices with potential for embodied application during design from: -
 - i. the movement-place associations found during Phase 1
 - ii. the pilot design trial and
 - iii. pertinent or familiar architectural and movement-based contexts.
 - b. Prepare for main design trial by identifying and enacting movement practices that facilitate movement-place sensitisation, and by framing an initial approach to Place-Trace.

³³ There is further discussion of prior architectural and movement experience in Section 4.4.1 and chapters that follow.

3. Trial an original movement praxis during the design of a building (dwelling), focussing on ways of first learning the characteristics of the site with-in movement, and then in studio of attending to movement when exploring the qualities of the emergent design as-if-in it (see examples in Figure 36).



Figure 37: Phase 2 research sequence

4.2 Moving with-in the site and as-if-in the design

From the outset of Phase 2 I aimed to develop movement practices that would help me to better comprehend the site and emergent design from the perspective of future inhabitants. I also intended to develop a praxis that would acknowledge and foreground the existing life on site; fostering empathy for and awareness of the diverse dynamics on site to inform design decisions. The terms as-if-in and with-in were helpful in these regards. During the pilot design trial, I began to find it useful to conceive of future inhabitant experience of the site and design as a mixture of subjective and intersubjective experience. The terms as-if-in the design and with-in the site were helpful when approaching how to embody such future inhabitant experience.

In the studio the terms as-in and as-if the design acted as useful constructs when seeking ways to better embody and imagine the experience of the design as-if-in it. When designing in the studio, being as-in the site or future design meant enacting physical body-place relationships to refine somatic experience of design elements. In Figure 38 for example, the scale and position of the projected site photo that I trace (in the studio, Sligo) matches the positions experienced when originally taking the photograph (on site, Cape Town). In other words, I am experiencing the landscape as-in the design, looking up at what would be above me, down at what would be below me. This pilot design event influenced the practices that followed.

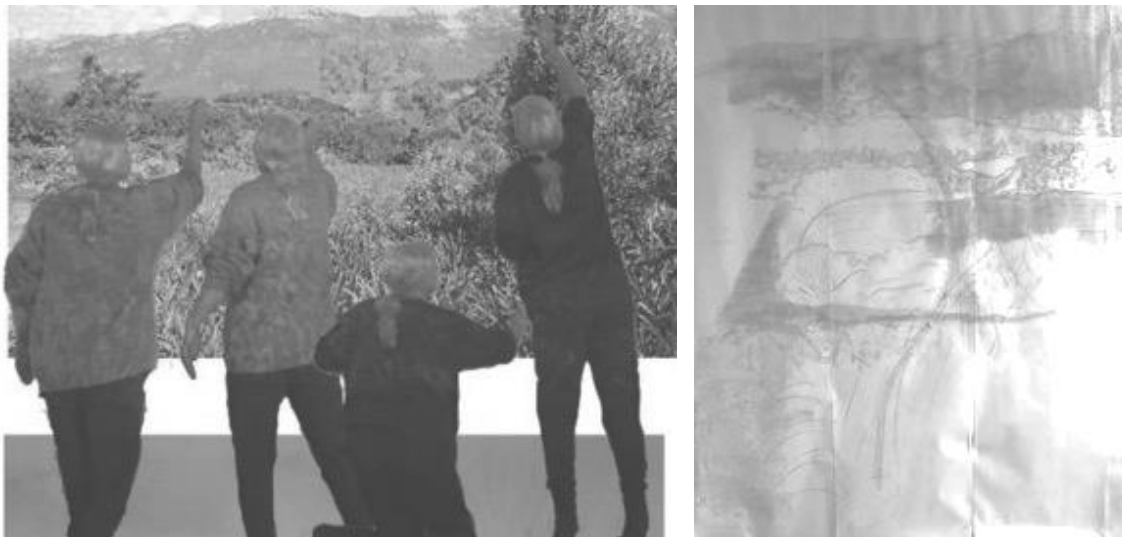


Figure 38: Tracing the qualities of a view as-if and as-in the site -pilot design trial (circa January 2017)

Figure 39 describes another way of enacting experience as-in the design. Here I am physically mimicking sitting in and testing angles of a seat as-in it.



Figure 39: Enacting site experience ‘as-in it’ to refine comfortable angles and to trace the edge of reach -pilot design trial (2017)

Being as-if the existing site or future design meant tracing or embodying its qualities in several ways to reveal and feel physical associations that future inhabitants might feel intersubjectively when viewing it. Jonathan Hale describes how ‘the ability to be “moved by” an experience has its roots in our ability to move, which gives us a kind of inward knowledge of what it feels like to move in the way that a form suggests’ (Hale, 2017: 55). As will be discussed further in Chapter 6, assuming shared somatic knowledge with future inhabitants about how viewed forms might feel when in physical contact with them (rough, smooth, sharp etc) provided me with a means to work directly with felt qualities of a place. I could trace, embody, and thus test perceived qualities in movement as-if them. This action was simultaneously subjective (felt directly) and intersubjective (echoing the qualities of another). During the event shown in Figure 38, I realised that I was physically tracing and simultaneously feeling patterns in the visual experience of the site topography as-if (or embodying) those felt qualities³⁴. Moving as-if-in imagined place combined both moving as-in it and as-if it.

The words ‘with’ and ‘in’ together represented intersubjective and subjective body-place relationships when with-in the site. Moving ‘with’ the qualities of the site, entraining, or moving in sync with them (Tversky, 2019; Wilson and Gibbs, 2007; Wilson, 2002) provided a physically felt and thus memorable understanding of patterns and qualities in the layered hierarchy of experience on-site through time. With-in the site I could trace visible forms. I could also echo the rhythmic sounds surrounding me or follow the path of movement of for example birds, wind, and traffic. This movement acted as type of memorable and felt marker, an embodied patina or trace. Moving ‘in’ the site, for example, walking, sitting, or standing in its terrain, allowed me to trace the footsteps and related experience of future inhabitants. Moving ‘in’ the site also strengthened understanding of present site-specific interactions with

³⁴ This rough conceptualization of the relationship between subjective and intersubjective experience is clearly simpler than reality, but I found it useful during design practice.

implications for the future design and inhabitants (both human and other). For example, potholes signalled mole rat presence highlighting the need to separate earth banks from the claw-vulnerable green roofs of the design. Both moving with the movement of the site, tracing and embodying its qualities, and moving in it (tracing the footsteps of future inhabitants), strengthened a sense of engagement, of being physically with-in the site with heightened awareness of the site as a living place as opposed to a blank canvas. As discussed further in Section 4.4.3, the movement of Phase 2 would incorporate both gestural movement and walking. Additionally, when moving in landscapes, either gesturally or when walking, the body-self is both with and in the landscape in a process of dynamic relationship and discovery during which the body-self becomes part of the place. As suggested by Lund (2012), when walking 'location does not imply status quo but is rather about being with it and moving through it in a process of becoming' (Lund, 2012: 236). and that 'what emerges is that landscapes happen through the continual and motional entwining of inhabitants and the surroundings' (ibid). The approach discussed here framed the praxis developed during Phase 2. Discussion of the application of these two constructs will continue in Chapters 5-7.

4.3 Underpinning methodological approach supporting Phase 2

This section summarises the simple underpinning research approach or method that I found to be effective when developing the embodied praxis during Phase 2. This phase (the design trials) was envisaged as inter or trans-disciplinary³⁵ arts practice-research, mostly drawing on experience and theory from the fields of Architecture and Dance-movement and providing an 'insider's perspective' (Sullivan, 2010) on innovative architectural design practices. The core motivation was phenomenological, aiming to better understand and then employ a 'subjective' aspect of 'as lived' experience (Groat and Wang, 2013) within the architectural design process. The research was arts practice-research that constructed 'knowledge derived from doing and from the senses' (Barrett and Bolt, 2007: 3). Likewise, the purpose of the design trials was to develop a 'practical knowing in doing' achieved during design, with related 'insights' (Nelson, 2013: 9) of 'how to do things' and 'what work[ed]' (Nelson, 2006: 106-109), that would inform my own future praxis and potentially that of others. Furthermore, the desired research was not conceived of as a one-off experiment (to prove, disprove or reveal something fixed), but rather

³⁵ Referencing Rendell (2013) and Klein (2006) (see glossary), the research findings might constitute transdisciplinary rather than interdisciplinary research. The initial intention was that it should be interdisciplinary, but the way in which the praxis was conceptualised and interpreted referenced theory from a wider range of sources. Also, elements of the praxis are already being applied by Masters students from other creative disciplines (for example graphic design, sculpture and writing).

as helpful first iterations of a praxis that I would want to develop further after completion of the study.

The research was both cyclical and experiential in nature. I found it helpful to conceive of both the architectural design process and the practice-research of Phase 2 as types of experiential learning (Barrett and Bolt, 2007; Kolb in Loo, 2004), with each phase of the research informing the practices and ideas employed during the next stage³⁶.

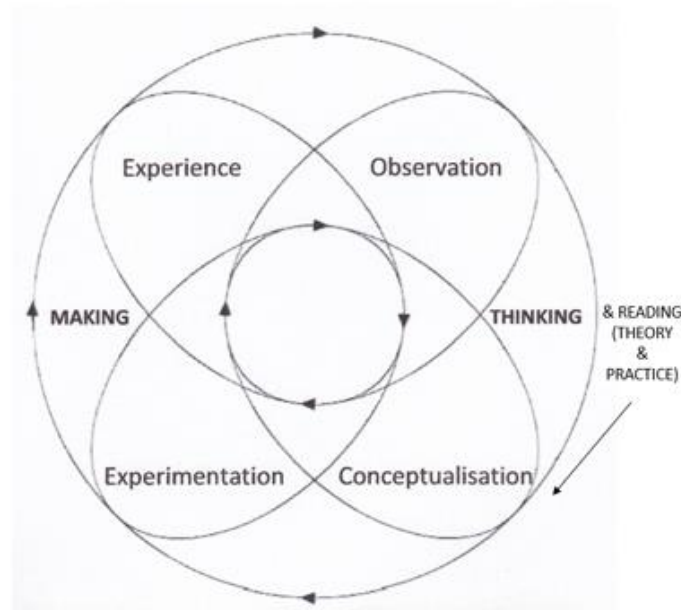


Figure 40: Diagram combining ideas after Gureckas and Kolb (adapted from Watson 2014: 75)

The length of the study, and inevitable periods between research actions, supported a reflective approach during which I moved cyclically through the processes of experimentation; concrete experience of the experimentation; reflection and observation and then conceptualisation (Kolb in Loo, 2004) and between the design (and movement based) processes of thinking and making or doing (after Gureckas in Carpenter, 1997) (see Figure 40). Ideas from other theorists and practitioners were integrated during this cyclical process. Both architectural design and research processes incorporate both quick moves between thought and action (or making), as well as longer loops incorporating larger changes or research phases. Thus, as conceptualised by Schon (1987;1995) all stages of Phase 2 incorporated both reflection 'on action' between events and research stages and 'in action' within the research events. Relatedly, experiential understanding of what movement or ideas I might apply in a particular

³⁶ I found Kolb's model simpler to follow than the somewhat similar research cycle rhizome modelled by Smith and Dean (2009).

design situation was informed by the pilot design trial³⁷, and then repeatedly within the main design trial itself as I discovered what proved fruitful in practice.

A gradual, reflexive (Nelson, 2006) and cyclical approach in which each experience built upon the last, allowed ideas and techniques to unfold alongside a developing attunement³⁸ to the characteristics of the movement-place experience explored. Periods during which I contextualised my new experiences considering prior experience and other professionals' practices and theories allowed me to make sense of new discoveries and explorations. Thus, the new practices built on my pre-existing embodied understandings, whilst integrating pertinent ideas from the surrounding fields of architecture, dance-movement, and environmental psychology. The research was thus shaped to support intuitive application of the new movement practices during design.

4.4 Sequential discussion of Phase 2

4.4.1 the pilot design trial (2016-2017)

As illustrated earlier in Figure 37, Phase 2 began with a pilot design trial. This provided me with the opportunity to begin to identify and test movement-based practices that would work in the context of design whilst beginning to trial ways of working with the themes identified as important during Phase 1 (namely body-relational space and the rhythms and densities of place). I also aimed to explore practices that combined the movement of my hands (my most familiar architectural movement focus) with attention to whole body movement. The connection between core/trunk experience and peripheral movement had been highlighted in Phase 1 findings (see Section 3.2), as had the peripheral path of movement (as felt when drawing a line).

The pilot design was the hypothetical design of a sheltered seat situated in a family garden near Cape Town. However, the whole of this pilot design project occurred in my studio in Sligo, Ireland during a four-week period at the end of 2016 and the beginning of 2017, utilising film footage of the site near Cape Town that I had collected earlier. I was not physically in the site but used movement in my studio to imagine the space as-if-in it. During the trial I accomplished the following: -

1. At the start of the pilot-design trial I surveyed the physical design actions that I found fruitful during past design projects³⁹ when trying to imagine inhabitant experience. These actions included freehand sketching, physical modelling with behaviourally

³⁷ See Section 4.4.1.

³⁸ See glossary of terms.

³⁹ See Appendix 7.

analogous materials, and a hybrid of digital modelling with physical tracing. I also reviewed past designs for those aspects of design practice that had seemed most meaningful when designing for a sense of embodied engagement within place. This review highlighted the connection between the design and the natural site. Therefore, during both design trials, I trialled new movement practices that incorporate these media and design concerns.

2. I also revisited literature related to past architectural and movement experiences and influences, realising that the way that I understood movement was inevitably informed by these contexts. These influences included Laban Movement Analysis, Gabriel Roth's 5 rhythms and Contact Improvisation.⁴⁰
3. Then I conducted preparatory/priming tests that facilitated the design that followed. These were influenced by prior dance experience of warming up to a theme or type of movement at the start of a session or project:
 - a. I tested a small selection of media, software, and devices, to find an intuitive way of recording my body's movement. Conventional film and photography proved to be the most intuitive, so I used these during both the pilot and main design trial.
 - b. To consider and become accustomed to embodying the themes found during Phase 1, I enacted movement which highlighted the sensations of varied densities, tempos and rhythms, revisiting related movement characteristics such as sudden and sustained tempos (Laban, 1948), flowing, staccato, chaos, lyrical and still rhythms (Roth, 1998); point fix and modulated paths (after Batts and Laubli of Echo-Echo Dance Theatre Company). These tests involved free improvised movement to music and site-sounds with a range of rhythmic qualities. It also involved making marks into varying densities of medium (such as clay)⁴¹.
4. Finally, **I conducted a simple pilot design trial of** a sheltered garden seat, accompanying the following representational methods with whole body movement and attention:
 - large scale drawings,
 - modelling with behaviourally analogous materials and
 - design ideation using improvised whole-body movement.

⁴⁰ Further discussion of these influences is integrated within Sections 4.4.2, 5.3.1, 6.2 and 6.4.

⁴¹ Some of these exercises are included in Appendix 8.

I moved between testing practical and ergonomic experience with my body as-in the design (Figures 38 and 39) and testing qualities of the lines, forms and movement of site and design inter-subjectively as-if it (Figures 38 and 41). Reflective observation was recorded in design and process journals.



Pilot design trial: Layering sensory stimuli (movement responding to sound and backdrop view of site)



Pilot design trial: (modelling in response to sound, movement footage and site drawing).

Figure 41: Layering embodied experience during the pilot design trial.

The following aspects of the pilot design trial proved promising:

- Using gesture and drawing to trace qualities as-if and as-in (as-if-in) the imagined design.
- Use of large drawings that allowed me to mimic spatial relationship (as-in the site or later design) (further discussion in Chapter 5).
- Deliberate accumulative layering or priming of sensory stimulus (see Figure 40) both during events and from event to event through time (further discussion in Chapter 7).

- Taking design ideas out of the studio, to consider analogous experience of density and rhythm when walking through changing places (further discussion in Chapter 6).
- During the pilot design trial, I found it fruitful to move deliberately between open listening perception and decisive focussed perception to suit the nature of the design task. The manner I worked with attention would develop during Phase 2, but these experiences highlighted the potential of choosing perceptual modes to suit required types of design thought, (further discussion in Chapter 7).

These findings helped to focus the period of literature review and further exploratory movement experiences that followed during parts of 2017 and 2018⁴².

4.4.2 Focussing, contextualising, and framing the movement praxis (2017-2018)

The pilot study was followed by a period of preparation for the main design trial. This included a literature review and exploration of a small number of movement practices that seemed pertinent. Practices and literature reviewed were focussed by the need to develop a new and 'user friendly' movement praxis that would work in the context of architectural design.

Describing the role and nature of literature review in Practice as Research (PaR), Robin Nelson differentiates it from literature review in conventional research thus:

PaR is likely to be interdisciplinary and to draw upon a range of sources in several fields; and while it is not possible for a PaR student to equal the specialist in all disciplines drawn upon, the shortfall does not amount to a lack of thoroughness. Rigour in this aspect of PaR lies elsewhere in syncretism, not in depth-mining (Nelson, 2013: 34).

This section outlines the rationale underpinning the choice of sources from differing fields that would influence interpretation of Phase 1 and help to frame the original movement praxis trialled in Phase 2. Specific discussion of how the research, theories and practices from these sources were integrated into the movement praxis that became Place Trace is integrated into discussion in the chapters that follow.

The new movement practice needed to be intuitive enough to merge with or support the familiar processes of design; with focus remaining upon the design problem being solved rather than being unduly distracted by difficulties in using the new movement. Moreover, I hoped that I (and others) would choose to explore the praxis further in the future amongst the everyday pressures of architectural practice. To these ends the new movement practices needed to be readily accessible to me at times when embodied exploration suited the nature of the design problem encountered. I also needed to be sufficiently fluent or attuned to enacting like

⁴² This period included a study break.

movement to be able to engage in it in an intuitive and undistracted manner. Architect Sarah Robinson (2021) remarks on the design freedom afforded by instilling design 'habits into our unconscious repertoire' (Robinson, 2021: 200). Likewise, I needed to use an approach with enough prior embodiment of movement practices to facilitate freedom of thought during design, with the resultant decision to work out of familiar spheres of movement and architectural practice whilst forging and refining new connections, actions, and theoretical understandings. The following rationale and Figure 41 helped when framing and focussing this approach:

- Support an embodied and thus intuitive praxis by focussing the review of literature on the findings of Phase1 and the pilot design trial and therefore upon my own moving body-self's way of knowing place and experiencing design.
- Acknowledge and draw upon contexts that shaped my understanding of movement, body, and place, revisiting influential past practices and theoretical understandings that inevitably influenced the findings; and therefore, work out of movement contexts that both my mind and my moving body-self can grasp intuitively within movement.
- Transfer usefully to other architects by drawing upon contexts and theory that attend to everyday and gestural movement that could be used in the context of building sites and architectural offices.

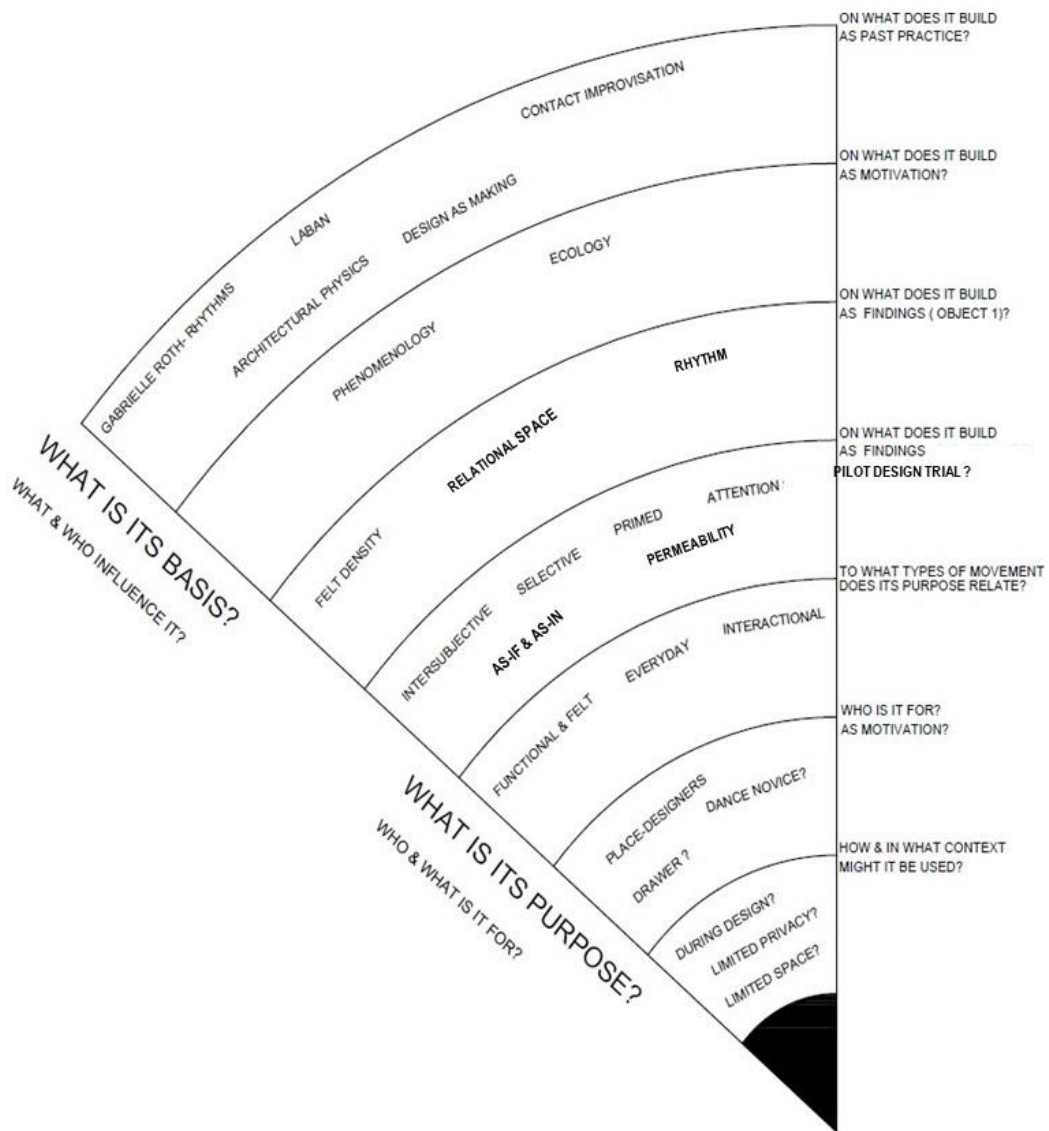


Figure 42: Narrowing the focus and contribution to architectural practice

As indicated in Figure 42 I drew upon literature and the ‘lineage’ of movement that was already part of or close to my prior embodied place experience (Nelson, 2013: 35). These movement contexts helped me to name and understand the qualities, affinities and implications of the movement enacted during all phases of the study. They also informed the practical approaches to movement and attention used during the design trials. An additional strength of these movement contexts was that I had prior experience of them in everyday or community dance contexts, so I knew that the underpinning ideas and practices of this research would be accessible to movers of any mobility level and with little or no prior dance experience. These movement contexts included the following: -

- Theory and practice originating from Rudolph Laban, experienced during training as a Laban community dance facilitator.

- Training in Contact Improvisation from Echo-Echo Dance Theatre Company.
- Gabriel Roth's five rhythms used as a personal recreational practice.

Recognition of similarities between movement descriptors that I used when describing movement during Phase 1 and those in Laban Movement Analysis (Laban, 1948) led to a review of sources describing Laban Movement Analysis (Laban, 1948; Fernandes et al., 2015; Eddy, 2016; Maletic, 1987) or connected to it such as Warren Lamb's movement profiling (Davies, 2006) and Irmgard Bartenieff's Developmental Movement Patterns (Eddy, 2016; Fernandes et al., 2015).

The focus was initially on a broad understanding of Laban Movement Analysis (LMA) as well as its applications and derivatives. Laban's planes of movement, conceptualisation of space as moving with the body, and observations on connections between posture with gesture would assist in me when framing how to employ relational space during the design trials (see Chapter 5). Laban's four pairs of effort qualities would influence how I interpreted experiential rhythms and densities (see discussion in Section 6.4). I found additional commonalities between my own Phase 1 findings, Bartenieff's Developmental Movement Patterns and theory relating to Non-verbal Communication (see Chapters 5 and 6). Applications within these contexts suggested possibilities when framing an approach to the movement praxis (Place Trace) in the lead up to the main design trial. Practitioner experience from Improvised Movement (De Spain, 2014), Site-specific Choreography (Hunter ed., 2015) and Mindful Movement (Eddy, 2016; Olsen, 2002; Reeve, 2011) proved helpful when considering how to engage physical awareness/attention for design.

Additionally, I wanted to better understand the movement-place experience of Phase 1; how the relationship between movement, expression, cognition, and communication worked in practice, and in terms that both my mind and my moving body-self could grasp and then embody with-in movement. Therefore, to aid interpretation of the findings of Phase 1, and to understand and frame an approach to working with movement and body-place awareness during the design trials, the study also drew on sources from the fields of Psychology, Anatomy, Movement Analysis and Neuroscience. Initially these sources related to the anatomy of movement (Calais-Germain, 1993); ecological and differential theories of environmental perception (Gibson, E. 1969; Gibson, J., 2014); Previc's model of 3-D spatial perception (Previc, 1998); Non Verbal Communication (Argylle, 1998; Pease and Pease, 2008; Knapp and Hall, 2013); Rhythm Analysis (Lefebvre, 2004); movement analysis (Maletic, 1987; Moore and Yamamoto, 2012) and Bartenieff developmental movement (Fernandes et al., 2015).

The review process was part theoretical and part physical as I also enacted/practiced any new or unfamiliar approaches to movement and attention that might prove helpful during the main design trial, or that might sensitise me to place during movement. This movement included:

- A weeklong body-landscape workshop in Cornwall guided by Frank van De Ven
- Exploration of movement qualities from LMA
- Andrea Olsen's (2002) body-earth exercises
- A range of relevant online presentations involving movement from the 2020 International Embodiment Conference

During this period, I used the Phase 1 word-clouds as guides to practice movement that accompanied differing imagined densities⁴³. As discussed in Section 6.2.3, I also drew on a combination of the Phase 1 findings, the effort qualities of LMA and Bartenieff's developmental movement exercises (after Fernandes et al., 2015) in an exploration of movement qualities associated with convergent and divergent experience, mobility, and stability. Physically practicing these movement patterns or qualities helped me to consider them and begin to understand how I might express them in movement during the design trial⁴⁴. During this phase I also initiated a regular walking and recording practice during which I attended to the interactions of my senses as I moved through and noticed the shifting qualities of my surroundings, especially surrounding rhythms, and densities. The intention was both to heighten my sensory attention to my surroundings, and to better understand how and what I noticed about my surroundings. This practice continued throughout the research period and main design trial (as discussed further in Chapters 6 and 7).

The decision to trial the following practices was influenced by my prior research as considered alongside the sources and practices reviewed during this period:

- To use walking, being still and sensing my surroundings outside of the studio as a deliberate practice (see Chapters 5, 6 and 7).
- To attend to place from the core/trunk of the body out (as both subtle and large-scale movement (see Chapter 5).
- To use gesture around the body with whole body attention to posture (see Chapter 5).

⁴³ See Appendix 5 and *Density Booklet* on website.

⁴⁴ Practicing Irmgard Bartenieff's Developmental Movement Patterns helped me to understand and feel the fundamental spatial experience of contraction and expansion as learned as infants (see also Appendix 13).

- To work deliberately with architectural experiences that move between stability and mobility, and dense and diffuse experience, and with shifting layers, rhythms, and intensities of place experience (see Chapter 6).
- To deliberately work with embodied memory and accumulative sensory priming (see Chapter 7).
- To allow the associative tendencies of memory, movement, and imagination to permeate between life and studio (see Chapter 7).

The movement practices outlined above are described in more detail in the following section. The influence of the above sources on Place Trace is discussed in more detail in Chapters 5-7.

4.4.3 The main design trial (2019-2020)

The main design trial occurred during the early stages of a live design project; a residence on a 1.3-hectare smallholding between the outer districts of Cape Town, and the protected Kogelberg Nature Reserve (see Figure 43). In contrast, my studio is in rural Ireland. Site analysis in South Africa occurred at midsummer (December-January 2018/19) and midwinter (June-July 2019). The design trial culminated in late 2020 at sketch-design stage, finishing before costings, design refinement and preparation for a council planning submission⁴⁵. The pilot design trial of a garden seat provided a relatively simple context in which to initiate the first techniques and ideas of Place Trace. In contrast, the main design trial occurred amongst all the typical considerations of the early stages of a live domestic design, thus revealing possibilities for application within the characteristic processes and contexts of architectural practice. Although my past use of architectural communication techniques (drawings, making etc.) informed the pilot design trial, a fuller set of architectural practices and motivations became relevant during the main design trial, allowing me to better understand the potential role of the new and original embodied praxis in the context of design.

⁴⁵ It is perhaps important to note that both the PHD, and my past architectural practice have occurred alongside my full-time lecturing commitments at Institute of Technology Sligo (now Atlantic Technological University, Sligo). This meant that design thought and processes were drawn out and sporadic with more intense periods of activity during holiday periods. The films accompanying this document include some footage of the final, as-built design even though changes and reductions were made in 2021 (after the design trial) in response to costings and negotiation with Cape Town City Council.

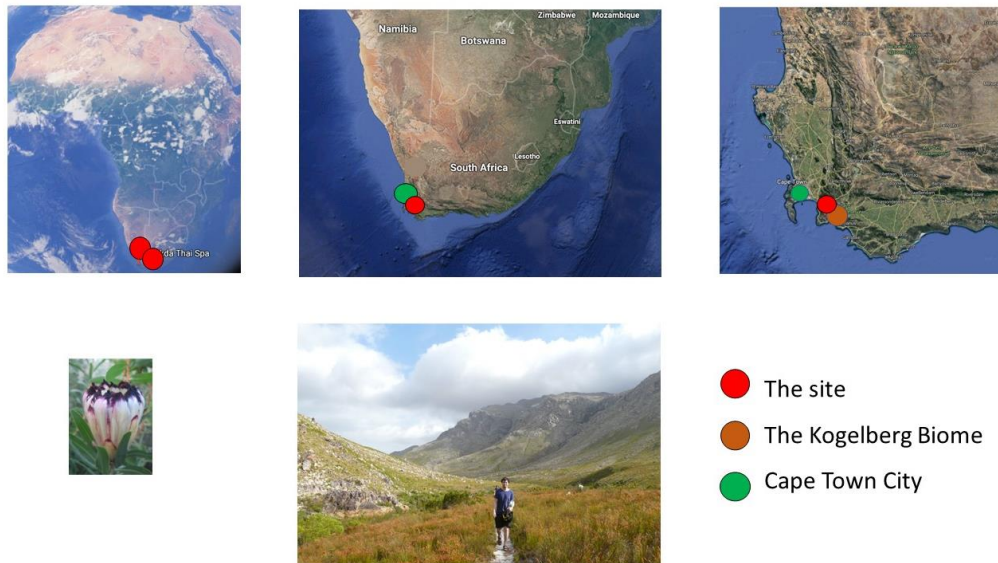


Figure 43: Location of site for pilot and main design trials

My design process typically aims to respond to both the programmatic and aspirational needs of the users, as well as to the demands of the location. To these ends a brief was established in consultation with future users before the start of the PhD phase⁴⁶. The future users of the building had the following requests:

- Use natural materials (possibly the clay of the site).
- Reduce traffic noise, fire risk, water wastage and provide wind shelter.
- Celebrate nature, landscape, and memories of area (see Figure 44).
- Evoke a sense of tranquillity with engagement.

These considerations were fortuitous as they provided motivation for an in-depth embodied investigation of the location and its natural qualities, as well as providing me with aspirational felt qualities to explore in movement, namely tranquillity with engagement.

⁴⁶ Ethical issues relating to participants are not applicable, as the research did not include or affect people beyond the researcher. However, in the interests of the needs and privacy of future inhabitants of the design, data relating to site, and users has been limited.



Figure 44: Memories of landscape for evocation in design

4.4.3.a What happened when and where.

The main design trial employed simple everyday movement; attending to whole body movement and body-place interaction during activities that involved walking and gesturing (with awareness of posture) both on-site and, in the studio and its surroundings. These seemingly disparate activities worked together to first build and then reinforce a felt multisensory picture of the existing and future site and design. New movement practices are outlined here and discussed further in Chapters 5 and 6:

4.4.3.b Moving with-in the site.

During midsummer and midwinter on-site analysis, the new embodied practices occurred in parallel with typical site and context related activities, issues and parameters that were beyond the scope of the PhD such as measurement surveys, climatic studies, accommodation schedule, budget, and legal parameters. I visited and moved in the site in a range of weather conditions and at varied times of the day, sometimes walking or remaining still, at others using gestural and whole-body movement around my body (see Figure 45). Walking provided site-specific knowledge of the range and position of site conditions life and morphology. During these walks, specific attention to the rhythmic fluctuations of densities⁴⁷ surrounding me and

⁴⁷ Definitions of density and rhythm are included in the glossary and are discussed in sections 6.2 and 6.3.

underfoot highlighted variations in soundscape, shapes, moisture content, and life on site. In this study I also used gestural movement around me. However, walking provided me with a different and complementary type of dynamic engagement with the site. As described by Olwig (2016) walking provided immersive and dynamic understandings of the site that could not be comprehended from a stationery position:

The walker experiences the material depth of the proximate environment through binocular vision and through the effect of motion parallax created by the blurring of near objects in contrast to those further away. The touched, smelled and heard proximate material world is thereby woven into the walker's sensory field, leading him or her to experience the landscape as a topological realm of contiguous places (Olwig, 2016: 84).

As illustrated in the following journal excerpt (and Figure 45) from summer site analysis, I found gestural movement to be a useful way of tracing and learning the varied sensory qualities of the site surrounding me. I could use movement to trace shapes, but also sounds and sensations (such as wind pressure). I could also echo and follow the movement of life and forces such as wind on site around me, as illustrated in the following journal extract:

I stand and start to describe what I see and hear in gestural and postural movement ... The sway of the wind and branches I feel in my whole torso [as well as] some near insect movement. The more distant forms of tree line, sealine and mountain line I trace with my hands and arms around my body (Journal excerpt 31/12/18).



Figure 45: Using gesture to read the rhythms of the site around the body -film record (31/12/18)

Movement with-in the site helped me in the following respects:

- To deepen engagement with the site's dynamic experiential qualities (rhythms and densities/intensities) from within the body
- To feel and remember spatial and rhythmic site qualities in three dimensions around the body in key locations of the future design

- To better understand the movement of life in the site, large and small, human and other
- To understand and prioritise issues that I would need to respond to later in design.

4.4.3.c Movement praxis in and around the Studio



Figure 46: Using gesture around the body as-if-in the design in studio (circa January 2020)

The studio phase of the main design trial occurred back in Ireland between July of 2019 and late 2020. Again, the new movement-based practices paralleled my typical architectural practices, sometimes connecting with them. These movement practices included the following: -

- Thinking about the design and attending to the rhythms and densities my surroundings whilst walking in the landscape surrounding the studio.
- Free improvised gestural and postural movement around the body exploring imagined design qualities, often whilst talking or thinking about the design.
- Attention to whole body sensation and material relationships, when modelling the site and design with material analogues (clay from the site and wood)
- Using gestural movement (or drawing) with postural awareness when spatially as-if-in the design, to trace and feel qualities of the emergent design (its rhythms and densities see figure 46).

Walking in varied places and conditions during the period of design served a twofold purpose. Firstly, I found that this experience ‘prime[d]attention because physically moving through a changing environment’ (journal excerpt 23/8/19) offered variations in sensory stimulus that were richer than those present indoors in the studio. Multisensory impressions of

place when walking acted as both reminder and catalyst when thinking about analogous qualities of the design and site, also recalling ‘awareness of the rhythmic experience of the inhabitants of the design as they [would] move through the building’ (journal excerpt 23/8/19). Secondly, walking provided space to think, space being useful for the emergence of design ideas (Lawson, 2005), and, as noted in Chapter 1, walking and whole-body movement has been found to support divergent thinking modes (Opezzo and Schwartz, 2014). I likewise found that walking helped me to find new perspectives on design.

In the studio I used gestural movement with awareness of posture (as discussed further in Chapter 5). Gesture was employed throughout the study as a way of expressing and reinforcing ideas, using previously implicit practices more consciously. I often talked to a recorder or a camera during this movement. Design practice in studio attended to the relationship between gesture and posture, (during actions of making, drawing, and gesticulating), to reinforce a sense of being spatially with-in and as-if-in the site and emergent design (see Figure 46) whilst tracing and feeling patterns in the rhythms and densities of the emergent design. Chapters 5 and 6 discuss employing body-relational spatial practices and reading rhythmic densities.

4.4.3.d An iterative, opportunistic, and improvised approach

During the main design trial, I considered or used applications of Place Trace when I wanted to (i) strengthen my physical sense of either being with-in the site to learn its qualities, or (ii) explore the emergent design ‘as-if-in’ it. A deliberately opportunistic, improvised, and exploratory approach proved to be intuitive, allowing me to find the design contexts in which the movement might work the best, repeating and building upon those experiences which seemed most fruitful. An underlying awareness of the themes identified during Phase 1, (namely the rhythms, densities, and spatial relationships of body-place experience) was combined with an approach that attended to connections between ordinary posture and gesture, and between core and peripheral movement as suggested by both findings and literature. During design I chose media to suit needful tasks or perspectives, with a background awareness of the possibility of embodied engagement. When a new design action or embodied approach seemed useful or effective, I tried to build upon it during the next opportunity. I employed a simple iterative approach of: -

- Reflecting on the design and the surrounding ideas considering the core themes.
- Trying to bring movement, and awareness of movement, into relevant design processes of the day in a way that seems useful and natural, and that related in some way to the core ideas.

- Reflecting during and between sessions (especially when walking or moving), on what I had done, what had worked, what was interrelated and what I might do next.
- Recording reflections with writing, drawing, talking or filmed movement.

The challenge was to maintain a balance between natural design flow and reflection on process.

The main design trial integrated movement within an architectural design with all the attendant concerns, practices and demands of a small, live domestic project, but also the simultaneous need to record and reflect on practice for research purposes, as documentation is a 'key dimension' of practice research (Nelson, 2013: 28). Consequently, recording methods needed to be flexible, accessible and unobstructive. Sketchbook journals were the central repository of design thoughts as well as reflections on research process and reference to the day's photographs, films and sound recordings. To support reflective practice, I left space next to all journal entries for later, 'double loop' reflection (Schon, 1987).

4.5 Conclusion of methodology chapter

This section has outlined the growth pattern of the emergent roots of Place Trace, describing the research sequence and parameters of Phase 2 of the research; as well the transdisciplinary practice-research methodologies employed, highlighting iterative, reflective, and experiential research methods. The term theoretical framework is used to describe the structure that supports academic research. However, in architecture, the word framework suggests a structure that provides support, but that also defines and circumscribes the structure's limits, generally with some rigidity. What supported Place Trace were resilient starting points that have emerged and grown corporeally and dynamically, in movement and within physical place. The roots of Place Trace, that also incorporated the research findings, synthesized ideas, and practiced movement from Phase 1 findings, a pilot design trial, and selected influences from architecture, dance-movement, and environmental psychology.

As outlined in Chapter 3, analysis of data from Phase 1 found clear relationships between movement experiences and the concurrent imagination of specific place qualities. As explained in chapter 3, the movement-place relationships identified during Phase 1 highlighted spatial relationship, felt density, and felt rhythm as important aspects of my moving body-self's innate imagination of place. Therefore, the praxis developed during Phase 2 use these three themes as the core focus of Place Trace. When developing the movement praxis during Phase 2, Phase 1 findings and developing interpretations of these themes became prompts to thought and action. Figure 47 outlines the framework or roots of Place Trace that were supported by Phase 1 of the research, as well as by the research sequence, actions, ideas and influences described in this chapter.

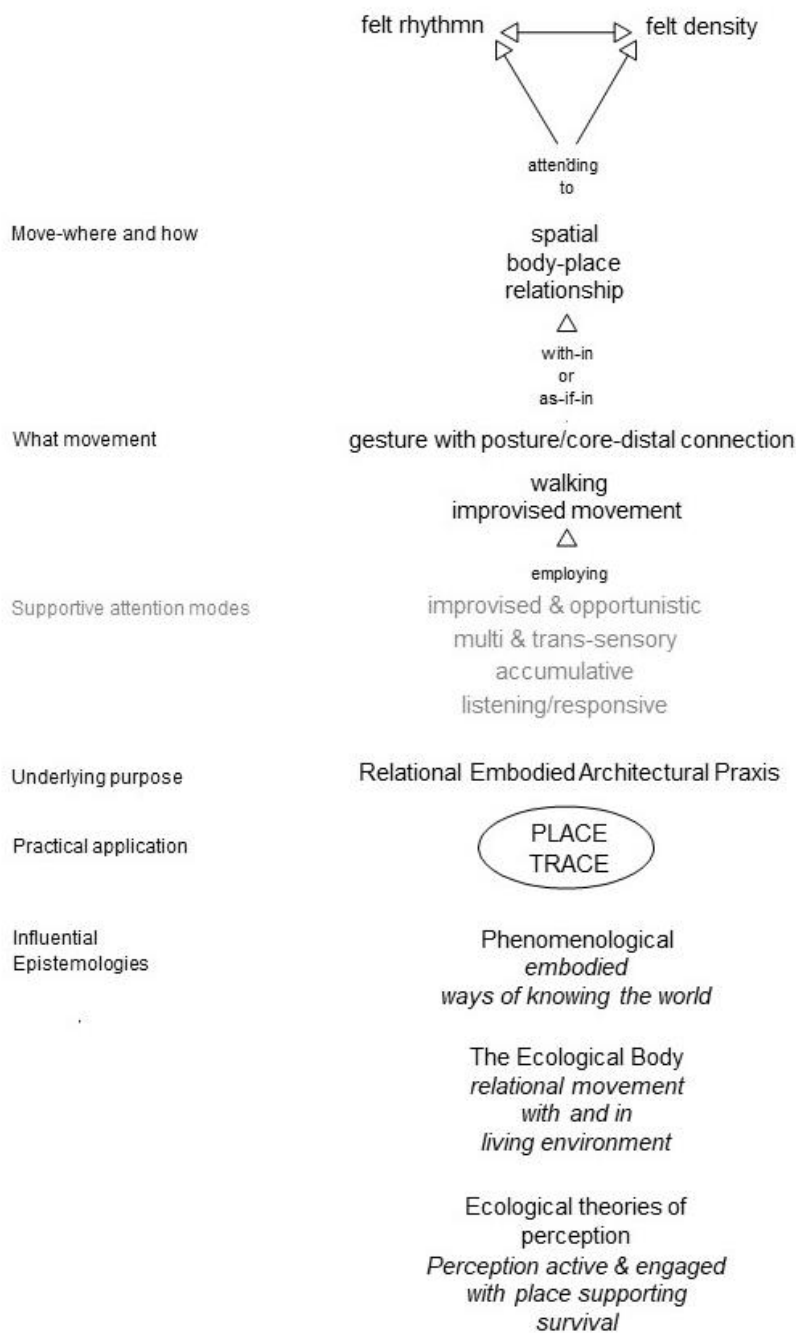


Figure 47: Roots or framework of Place Trace

The study was Phenomenological in that it was concerned with embodied ‘as lived’ experience. My (the researcher’s) body-self was understood to exist as a connected part of its living environment and the study aimed to find ways to harness and strengthen awareness of this extant relationship during the process of architectural design. Ecological theories of perception after James Gibson (2014) and Eleanor Gibson (1969) helped me to make sense of patterns found in the experiences of the study. For example, as discussed in Chapter 5, the idea

of perception being actively engaged during body-place encounter was useful when interpreting body-place perception as anticipatory.

The descriptors moving upwards from the box on Figure 47 outline the way in which the praxis of Place Trace worked. The praxis initiated during the research benefited from several ways of working with attention and perception. These were improvised and opportunistic; multi and trans-sensory; accumulative, and responsive approaches. However, the core approach during the thought and action of Place Trace was as follows: -When walking, gesturing (with attention to posture) or using improvised movement I brought my body-self into spatial relationship with the place explored, either with-in it if on a real site or as-if-in if exploring the emergent design in studio. Once, in such spatial relationship, I attended to the felt rhythms and densities of the places investigated, described, or imagined. Chapters 5 and 6 will illustrate and discuss the details of how and why each element of this practice was applied. As outlined in the central box of Figure 47, the purpose of the study was to strengthen the embodied relationship and understanding between the architect-researcher and the place being designed (both the living site and the emergent building design). The practical application developed during the research was a type of Place Trace, a way of tracing and embodying qualities of place in movement during design. As will be discussed in Chapter 7, the felt effect of the original processes trialled was a strengthened and lasting sense of closeness and import for those place qualities explored with movement.

CHAPTER 5: MOVING IN SPATIAL RELATIONSHIP TO SITE & DESIGN

5.1 Introduction

It would be helpful to watch Film 4 before reading this chapter⁴⁸.

This chapter will discuss the ways in which this study has employed spatial bodily experience of real and imagined surroundings relationally to support a movement-praxis (Place Trace) which enhances architectural imagination during design of being with-in the site and as-if-in design.

During the design trials I found the following:

Moving from within body-relational space, as if the body was inside the imagined place, evoked a sense of being part of or inside of the space imagined, rather than separate to and distanced from it. The three techniques outlined below all strengthened this insiders or 'bottom up' (Robinson, 2021) perspective, and the accompanying sense of direct relationship with, and closeness to, the real or imagined space, with-in it or as-if-in it:

1. awareness of body part-to-whole (connecting body core and periphery)
2. attention to the relationship between the path of bodily movement and the qualities of the edges of imagined or perceived space and forms.
3. spatial positioning of the body in relation to site or design representation (image, drawing or model).

This chapter will discuss each of these applications of body-relational space in turn. Discussion of what was found to 'work' (Nelson, 2006) when addressing the overall research aims, also considers theory and practice from the fields of architecture, dance-movement, and environmental psychology, to support beneficial actions and ideas. The primary focus of this chapter is on physical practices that reinforced a sense of being in direct physical and spatial relationship with-in the site or as-if-in the emergent design. Findings considering spatial aspects of body-place rhythms and densities are discussed in more detail in Chapter 6.

5.2 Interpreting Phase 1 findings for practice

The first Phase 1 finding discussed in Chapter 3 highlighted body-relational space (imagined place located outwards from the centre or core of the body), also linking the peripheral path (the edge) of movement with the edges of imagined bounding formations (see Section 3.2).

⁴⁸ Link to Film 4: <https://platinum-lizard-4njw.squarespace.com/work-1-1/project-four-5c8ly>

Finding from Phase 1: Whereas the overall **shape** of my body often illustrated **objects or agents** in space (such as birds, trees, aeroplanes), the shaped **path** of my movement tended to influence the shape and **body-relative** direction of **imagined boundaries and enclosure** of the setting I imagined being in (for example: room or landscape).

The second Phase 1 finding discussed flagged relationships between the material density of place and associated implications for the parts of the body (core or distal; centre or periphery) engaged with that density during imagined body-place encounter (see Section 3.3).

Finding from Phase 1: Two types of association appeared to exist between (i) the **path of the body's movement** and (ii) **the shape and location of the imagined boundary/enclosure**.

The distinction between these types of relationship related to the **body-parts** creating the **shaped path/periphery** and the **density** of the imagined boundary/enclosure.

- a. The shaped path and direction of the movement of **the torso** appeared to be echoed by the shape and location of imagined **hard, dense enclosures**.
- b. The peripheral shape created by the path of **hands and feet** appeared to be echoed by the shape and relative position (direction from body) of imagined **soft enclosures**.

This finding suggested an association between the movement of my trunk and head and an imaginative awareness of solid bounding forms (such as building elements), intractable forms with densities that my hands and feet could not move and that my whole body (including trunk) would need to negotiate. The peripheral movement of my body, the zone shaped around me by the edge of my movement was also found to be important to my moving, remembering, imagining, and anticipating body-self. Together these findings highlighted an embodied imaginative association between the zone or location of my movement in relation to my body core or centre, and the related position of nearby forms, as illustrated in Figure 48.

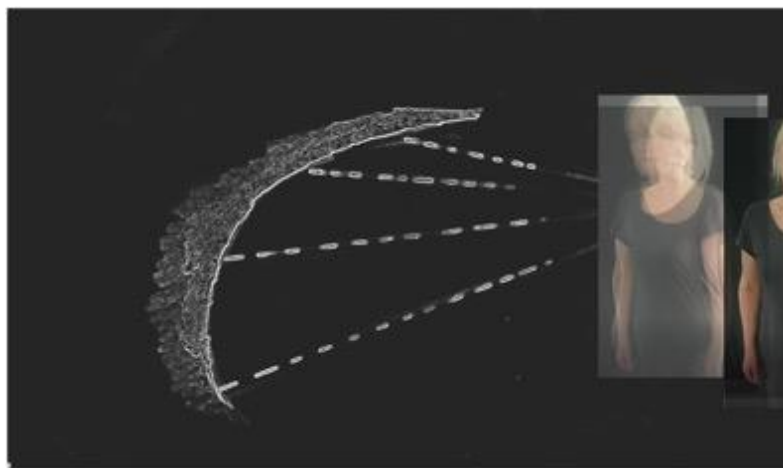


Figure 48: Spatial relationship of movement to soft and hard imagined boundaries

It is important to note that these findings did not necessarily suggest that I would imagine specific qualities of places better because of moving in a particular way. However, they did suggest a felt importance of solidness to my moving trunk and head, and that the direction or position of spatial formations were understood in movement outwards from my body's centre. They also suggested a connection between the felt path of my movement and the way my body-self understood and remembered interacting with the edges and forms of place. It made sense to me to capitalise on these relational spatial body-place associations during design. As outlined in Chapter 4, this design praxis started during the pilot design trial (2016-2017) when tracing large scale projected photographs of the site, with the traced projection positioned in relation to my body as if I was standing looking at the view on site. Drawing at this scale necessitated looking up, down, across and straight ahead as-if-in the location (see Figure 49). This large scale tracing involved movement of my whole body (most notably my trunk and arms as well as hands) increasing the felt experience of both the body relative spatial locations of site elements and the qualities of the lines traced.



Figure 49: Large site drawing (pilot design trial)

During 2017 and 2018 I reviewed theory and practices that helped me to contextualise the experiences of both Phase 1 and the pilot design trial whilst preparing for the main design trial. As referenced in Chapter 4, areas that influenced my interpretation of relational space included Laban Movement Analysis (LMA), Non-Verbal Communication and developmental movement patterns (after Irmgard Bartenieff), all suggesting a useful connection between the awareness of body core and that of peripheral or distal movement, between posture and gesture.

During the main design trial I built on the experiences of the pilot design trial, developing a number of variations of Place Trace which employed the three following relational spatial practices in order to enhance my perception of the site as with-in it and the design as-if-in it:

1. Awareness of body part-to-whole (connecting body core and periphery)
2. Attention to the relationship between the path of bodily movement and the qualities of the edges of imagined or perceived space and forms
3. Spatial positioning of the body in relation to site or design representation (image, drawing or model)

I applied these principles in the types of situations illustrated in Figure 50:

- Tracing spatial and dynamic place qualities around me on site (Figure 50, top -left)
- Locating building faces on site (top-middle)
- Finding spatial relationship when viewing models and drawings (top-right)
- Using small or large postural and gestural movement while talking to myself in studio to test ideas as-if-in the space (mid and bottom left)
- Combining and then drawing large physical and digital model views as if positioned within building locations (mid and bottom middle)

- Tracing the progressively layered patterns of forms along walkthroughs as if travelling through the building to consider dynamic experience (mid and bottom right)

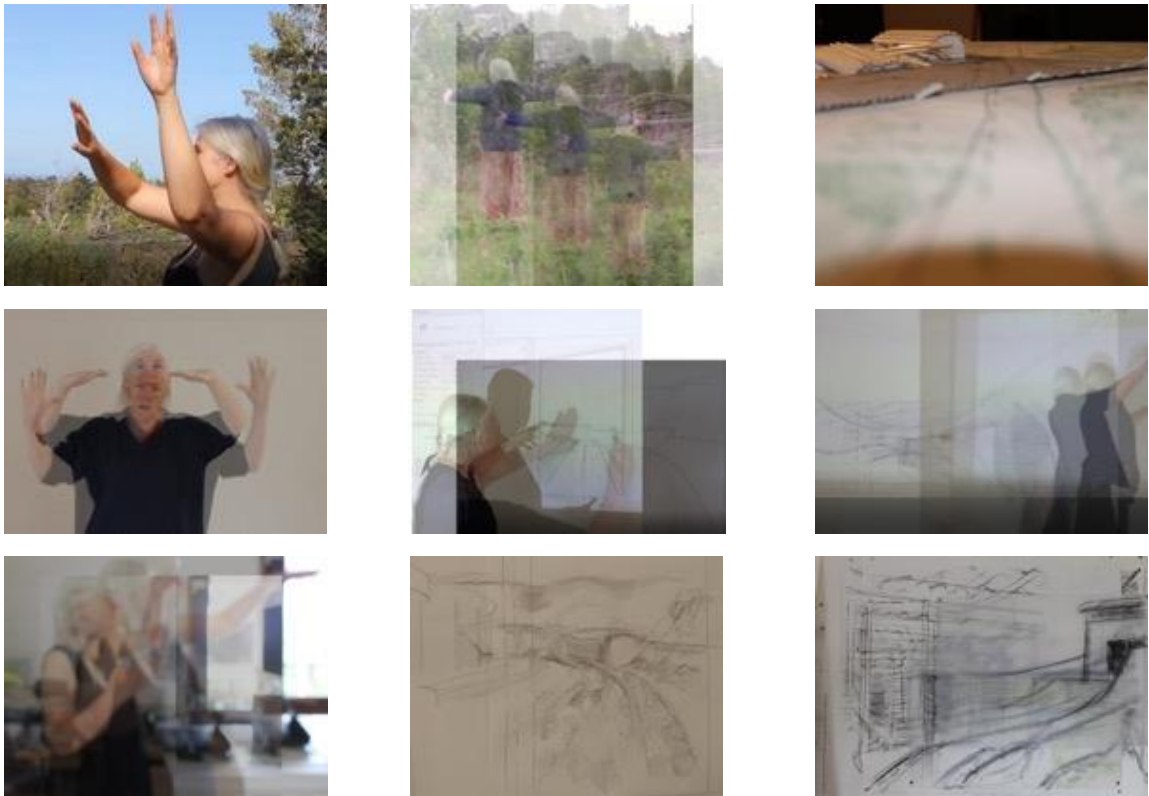


Figure 50: Variations of Place Trace using relation space

The three aspects of relational spatial praxis are discussed in turn, starting with the characteristics of Place Trace that connected posture with gesture, hands with body-core or centre with periphery.

5.3 Employing gesture with engaged posture: body part and whole

Arguably, architects' habitual spatial and bodily relationship to their imagined design is somewhat detached, and focussed primarily through the hands and frontal vision (Pallasmaa, 2005; 2009). In response to this problem, this study sought to engage the whole moving body and the concerted senses during design to reduce a 'subject-object' relationship (Auer, 2008) to both life on site and to future inhabitant experience. During the main design trial peripheral vision of what moved around in relation to my body was activated during the movement of trunk and head, mimicking the way peripheral vision perceives surroundings when moving through them (Arbib, 2015). I also employed multiple senses in concert during movement (Mohler et al., 2013) in response to the dynamic, spatial qualities of place perceived; thus highlighting life on site and myself as connected interacting part of it. Likewise, I found that attending to the whole body in concert when describing or responding to place in movement enhanced a felt sense of connection, of being within and part of the place qualities evoked.

This section describes why and how the useful processes of gesture were combined with awareness of posture, simultaneously attending to the experience of the centre/core of my body and its edges to support Place Trace.

Gesture and language are two foundational and frequently used architectural tools, with drawing and making developing out of gesture (Ganshirt, 2007). Augmented use of gesture within design is thus accessible and familiar (ibid). As non-verbal communication, gesture accompanies the spoken word to swiftly convey 'orientational and spatial information that would be more time consuming to communicate using language' (Knapp and Hall, 2013: 218). Additionally, gesturing hands assist in spatialising thought (Tversky, 2019; Knapp and Hall, 2013). The path of gesture is experienced visually but is also felt: The qualities of its timing, emphasis, shape, and texture are felt both by the mover and, intersubjectively, by those witnessing it (Sofia, 2013). Gesture can also surround a body spatially in a manner hard to achieve with a drawing. It can trace the shape and thus feeling of distant silhouettes of landscape and imagined built forms, reading their rhythmic continuities, stops and starts, smooth or rough edges (as will be discussed further in Chapter 6).

Arguably, the palms of the hands and the pads of the fingers have a different relationship to place and thought than other parts of the body-self such as the backs of arms, feet, trunk etc. When gesturing during life, or drawing whilst designing, the hands' actions can be independent of a larger surrounding setting, with their movement describing or responding to things which are not necessarily physically present or impactful for the rest of the body-self. Our hands are distal, peripheral to our core, they can test, manipulate, and protect. For example, we put out our hands to guard us and to test objects before we let them near to our core. These attributes of gesture and the hands may explain why gesture can involve feeling in an exploratory way, but with some felt and emotional distance retained (see also Chapter 7).

During non-verbal communication, posture and gesture are innately connected to expression (Argyle 1988; Knapp & Hall eds., 2013; Givens and White, 2021). Furthermore, within the movement used during non-verbal communication, posture has a powerful relationship to emotion and one that is familiar and universally expressed (Argyle, 1988; Laban & Lamb, in Davies, 2006; Knapp & Hall eds., 2013; Givens and White, 2021). Relatedly, Knapp and Hall (2013) assert that our gestures are more likely to differ from our feelings than our posture with Lamb suggesting that 'posture is something you have, and gesture is something you make' (Lamb and Watson, 1979: 22 in Fernandes et al., 2015:178). Therefore, if we want to

test how a place feels using movement, our emotional response is likely to be expressed and felt most clearly in the core of our body (our torso⁴⁹ or trunk) (Givens and White, 2021).

Pertinently, during **Phase 1** the movement events that highlighted a strong focus on my palms or one hand constituted exceptions to the findings (see Section 3.7). During post practice analysis, I noticed that in situations where the palms of my hands were active and engaged, leading the movement, they tended to describe the imagined formations in the scenes as if they were sculpting them in space. In these situations, the imagery followed the direction of my hands (especially my single right palm) and the associated feelings experienced by the rest of my body were less influential. Furthermore, as described earlier (Section 3.3) engagement of the trunk of my body—self was associated with the imagination of solid boundaries (such as those in buildings). These Phase 1 findings suggested that although gesture promised to be a fruitful part of any Architectural Body Speech, postural awareness would be important if I wanted to feel the quality of experience as-if-in site or building.

Relatedly, Laban and Lamb contend that gesture tends to lead to posture (Davies, 2006; Eddy, 2016). How this might occur is illustrated in the anatomical drawings in Figure 51 below (Calais-Germain, 1993). These illustrate the hands and arms in different positions, as a reminder that simple subtle actions such as turning a hand over or lifting an arm, can change the sensation and configuration in the torso: opening, closing, protecting, exposing, rotating, stretching, constricting etc.

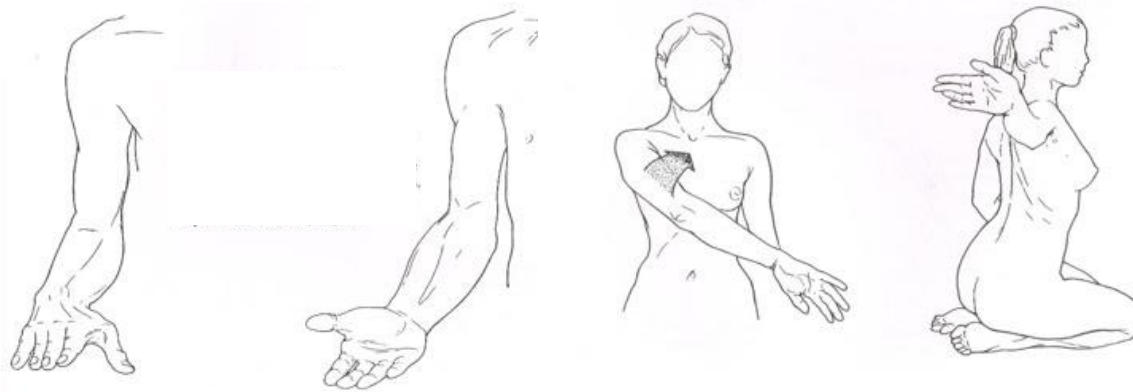


Figure 51: Gesture that changes posture (images from Calais-Germain 1993: 124,126,136,141)

These observations suggested that I might not need to change the actual gesture to feel it in my torso, but rather attend to the interrelated sensation of gesture and posture. Likewise, during the design trials I attended to the subtle shifts, changes, and sensations in my torso (the centre of my body) as the edges of my body (hands and arms) gestured around me in space

⁴⁹ The terms trunk and torso are used interchangeably in this document.

either describing the real life and formations around me on the site or gesturing and drawing large in studio to better feel the qualities of the emergent architectural design. This practice had similarities to mindful somatic practices during which practitioners attend to 'the relatedness of any one part of the body to the whole body' (Eddy, 2016: 134-5). During the design trials walking and gesturing each focused most intensely through feet-and-legs or through hands-and-arms. However, during both types of movement, awareness registered the movement of these body-parts as well as the concurrent sensation through the whole body. This whole-body awareness strengthened both the impression of being with-in the site and as-if-in the design. Additionally, whole body awareness brought the torso (the centre of the body) into active engagement within a dynamic whole.

The following subsections outline some aspects of movement that influenced the felt connection between gesture and posture during the design trials to enhance a felt understanding of site and design. These included (i) locating the centre of movement, body and place, (ii) the active use of both arms; (ii) standing for an impulse towards mobility.

5.3.1 Locating the centre of movement, body and place

During applications of Place Trace awareness of the centre and space of the body-self was accompanied by awareness of the space of the imagined 'surrounding' building. During both gesture and drawing the hands and arms described, and to an extent represented, the qualities of the emergent design. The core of my body became both a location within the imagined building and simultaneously the centre of my body-self. The awareness of looking, feeling and moving outwards from inside my own feeling and seeing centre (trunk and eyes) had some similarities to the understanding of space in Laban Movement Analysis (Davies, 2006 and Fernandes et al., 2015) in which the point of reference (centre of space) always starts and moves from within the shifting location of the body-self. The spatial association between being and perceiving from inside our bodies (our home-place) and knowing from inside our homes (Hunter 2021) is not new, neither are associations between buildings and bodies, for example between windows and eyes (Bloomer et al., 1977).

The layered subjective embodied experience of interiority is also familiar. As argued by Gozo (2015) life incorporates successive move outwards to another inside-ness or interiority, outwards from egg to the inside of womb, outwards from womb to the inside of mother's arms and family, outwards from family to successively larger spheres within which we become insiders. Familiar visual experience of spatial interiority is similarly layered as illustrated by Jane Rendell in the imagery of Embellishment Purdah (see Figure 52). Eyes, purdah, and window are

layered thresholds between inside and outside through which the self can view and be viewed (Rendell, 2015).



Figure 52: Looking out from within and in eyes, purdah, window (Rendell, 2015: np.)

During the design trial two spatial conceptualisations were helpful when seeking to understand-

- (i) the directions from my body-self out and
- (ii) the quality and central loci of movement that expanded out from and contracted into my body during movement.

Both LMA (Davies, 2006) and physiotherapy (Calais-Germain, 1993) define the body relative directions in which movement occurs in terms of its relationship to three notional planes which cut through the centre of the body, as illustrated in Figure 53 below. These three axes also define the mobile mental framework from which we interact spatially with the world. Tversky (2019) describes this mental spatial framework thus:

The mind creates a mental spatial framework, an imaginary stick figure extending from the three axes of the body, front-back, head-feet, and left-right and hangs what's around the body on extension of those axes. As the body moves and turns, the mental spatial framework is updated. It goes with you (Tversky, 2019: 60).

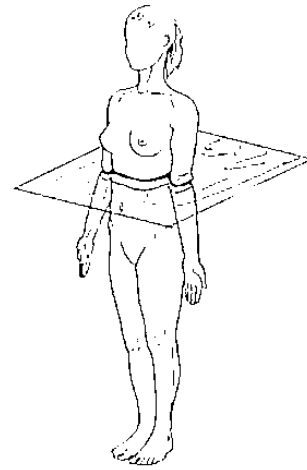
The intersection of these planes or axes forms a notional centre of the body. This conceptualisation was useful during the movement of Place Trace, when perceiving movement as moving outwards (as illustrated in Figure 53), forward and backward, up and down, side to side from the mobile junction of these central axes at the centre of my body.



Mid sagittal or median plane
Sagittal or wheel plane
(Laban)



Frontal or coronal plane
Door plane (Laban)
Divides body into anterior and posterior parts



Tranverse or horizontal plane
Table plane
(Laban)



Forward flexion
or backwards extension



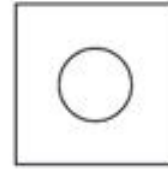
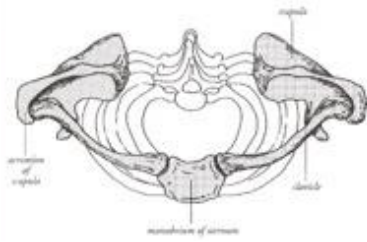
Adduction towards median plane,
abduction away from median
plane



Lateral rotation (e.g hip)

Figure 53: Movement around central planes of body after Laban (Davies, 2006) and Calais Germain (1993 pp.2-4)

The perceived centre of my body hovered within the trunk of my body and was felt to move a little upwards or downwards depending on the locus of the strongest movement. Relatedly, Laban Movement Analysis refers to a centre of gravity and centre of levity (Fernandes et al., 2015) with the centre of gravity in the lower belly and the centre of levity in the area behind the solar plexus, with related symbols represented in Figure 54 (right).



CENTRE OF LEVITY



CENTRE OF GRAVITY

Figure 54: Left-Representations of centres of the body: shoulder and pelvic girdles (Calais-Germain, 1993: 40,105); Right-Symbols for centres of levity and gravity (after Laban in Fernandes et al., 2015: 131).

For example, when gesturing my centre tended to seem higher in the areas of shoulder girdle and rib cage (see Figure 54-top left). When walking or kicking it seemed lower, in pelvic girdle and abdomen (see Figure 54 bottom-left) with peripheral or distal movement felt in directional relationship to its area of origin in my trunk, and with additional repercussions through the rest of my body felt most intensely when on my feet or using both arms⁵⁰.

5.3.1 Using both arms around the body core.

Use of both arms to strengthen the spatial sense of place experience started on-site, with two practices. The first was a deliberate tracing of site experience around me, as illustrated in detail in *Film 4*. Here I needed to use both arms and my trunk when moving to trace and respond to the movement, qualities life and forms of the site around me (as illustrated in Figure 55).



Figure 55: Using both arms to trace the qualities of place -Film record (31:12:18).

⁵⁰ The difference between the centre of gravity and levity, and the shoulder and pelvic girdles, will be discussed further with referenced to changing experiences of density, mobility, and stability in Chapter 6.

The second application happened almost accidentally when I was trying to find a good angle for the face of the main living area on site. I opened my arms to my sides to create a building face or façade and swivelled to find a 'facing angle' that seemed to work with the sea view (see Figure 56, left). This angle was then recorded as part of the site measurement survey for use in studio. By widening both arms, I brought them into alignment, flanking my central torso, head, and visual field. Similarly, I used the backs of my arms as a visual shield to work out what views of neighbouring buildings I needed to block where (see Figure 56-right). This was the first time that I consciously used my arms to represent elements such as walls that flanked the experience of the imagined inhabitant, looking out from body centre.



Figure 56: Using trunk and arms on site to find facing angles and blocking positions -Film record (17:07:19)

The use of both arms developed further during gestural exploration of design ideas in studio. Figure 57 illustrates three ways in which my arms were engaged when gesturing and talking about the imagined entrance area. Rough summarising sketches were made immediately following the gestural explorations (Figure 57-bottom). In Figure 57-left I am imagining coming into the entrance, describing the experience as 'heavy and dark and low [with] a feeling of compression coming into that space ... of being surrounded and of perspective coming down and in' (journal excerpt 16/06/20). My arms described the surrounding walls and roof as I imagined them converging above me on entering. The movement of my arms activated my peripheral vision, as if I was inside the perceived moving forms and the movement was felt around my trunk.



Figure 57: Using both or one arm to imagine the entrance experience -film and journal records (16/06/20)

This relationship of being inside was straightforward in this instance, as was the contrasting use of one active arm only when describing the bedroom which was 'off to the left'(ibid) in Figure 57-right, with my body core and eyes outside and separate from and slightly above the moving arm. Figure 58 illustrates a more complex use of both arms. Although the initial imagined experience of entering the building was simple, once in it there were to be paths of movement to three locations. I used both arms actively to represent the walls and enclosing elements that slid past me as I moved through the entrance space, with the dominant presence of the walls on each side shifting as my body navigated the space. The use of my arms was exploratory as I tested distance, dominance of elements and sequence of enclosure.



Figure 58: Using both arms to test dynamic experience of entrance area -film and journal records (16/06/20).

In both illustrated examples of this short conversation with self, my arms represented the building elements with my trunk, head and eyes representing an inhabitant inside the building. I was inside my arms, but the static building elements that they represented around me were experienced relationally and dynamically as if I was moving past or through them. In contrast, I sometimes also used two hands together to explore relationships between elements but did not experience the design *as-if-in* the space. In these instances, the position of my head and trunk tended to reflect this difference. For example, during the event illustrated in Figure 59 I reflected on the relationship between the floating roof and the directional walls below it, talking about 'separation [from the walls] that allow[ed] the roof to float over them' (journal excerpt 15/02/20).

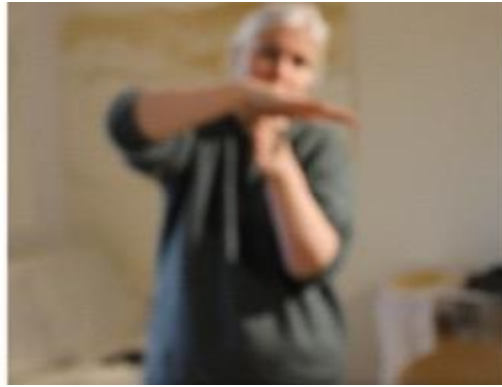


Figure 59: Two hands describe connection between roof and wall -film record (15/02/20)

In this example, neither my body-self nor inhabitant experience was represented and the position of my hands in relation to my body (slightly below my head) bore no relation to the position of my body-self as-if-in the building. Instead, I simply used my hands to spatialise an idea, the relationship between two building elements that passed each other. Impacts of the spatial relationship between the eyes and moving body parts on design thought and torso-sensation are discussed further in Chapters 6 and 7. However, this section has illustrated simple ways of using the arms to bring the core of the body into spatial relationship as-if-in an imagined space.

5.3.2 Standing for impulse towards mobility and whole body connection through feet

During the pilot design trial, I found that I was more mobile when on my feet; and it was thus easier to feel the motion of my hands when modelling clay or drawing as the repercussions were felt more easily through my whole body from hands through trunk to feet. Additionally, the simple action of shifting weight from one foot to another when standing automatically engaged the whole body in movement, and thus in whole body sensation. This realisation occurred during the main design trial. During the pilot design trial most design time was spent either modelling in clay, moving to sounds, or drawing large scale drawings of the site, and during these actions I was already on my feet. In contrast, the design of a dwelling during the main design trial necessitated comparatively longer periods of time engaged in conventional computer-based activities, necessitating a deliberate choice to move away from these when activities involving movement might aid my imagination of an aspect of inhabitant experience. During long spells at the computer in July and August of 2019, I experienced a period of back and ankle pain and concurrent spells of 'stuckness' during design tasks. These problems prompted a change to a working mode with a higher desk, more time standing and the discovery that I felt more willing to change modes and explore movement when already mobile and on my feet. Additionally, as noted in my journal and in *Film 4*, 'awareness of feet and of rhythm moving through my feet connects awareness from the supporting ground up through

the centre of body to hands, eyes and head. It also evokes awareness of the rhythmic experience of the inhabitants of the design as they move through the building' (journal excerpt 23/08/19). The permanent move to working on my feet at a higher desk was perhaps responsible for subsequent engagement in more frequent, briefer gestural and postural explorations of design ideas, such as those illustrated in Figures 57, 58 and 59. I also found that small, subtle almost invisible movements of feet, torso and head, and of breathing could evoke sensations of a wide range of larger movements within the design such as of turning, moving, looking up and down, expansion and contraction⁵¹ etc. This discrete movement was useful during periods when the studio was shared and busy, also reinforcing the adaptability and general accessibility of the praxis.

5.4 Working with the path of movement and the edge of imagined form

The second aspect of spatial relational practice employed for Place Trace is discussed in this section. which will also highlight the importance of edge-line/silhouette in the comprehension and recognition of the forms surrounding us.

As discussed in Section 3.2, Phase 1 findings identified an association between the path of my movement and my imagination of the edges of surrounding forms. Relatedly, during the design trials I found that using free and drawing-based gestural movement to trace and explore the movement of life around me (on site), and the edges of forms present in both the site and in the emergent design, helped me feel the site and building both as-if them (intersubjectively) and as-in them (subjectively surrounded by them). The repeated motion of tracing these paths allowed me to accumulate an understanding of place through time, as if the inhabitant of site or design⁵². Awareness of the path of my hands when tracing the edges and lines surrounding or in front of me was accompanied by awareness of sensation in the whole of my body (but most noticeably in my trunk and hands). The first experience of this practice was the large site drawing during the pilot design trial (see also Sections 4.4.1).

⁵¹ These movements were not recorded.

⁵² Please note that Chapter 6 will develop the discussion of path, line and edge further, explaining how the experience of the path of my movement helped me to read and understand the characteristics of the edges of site and design, interpreting these in terms of rhythmic experience.

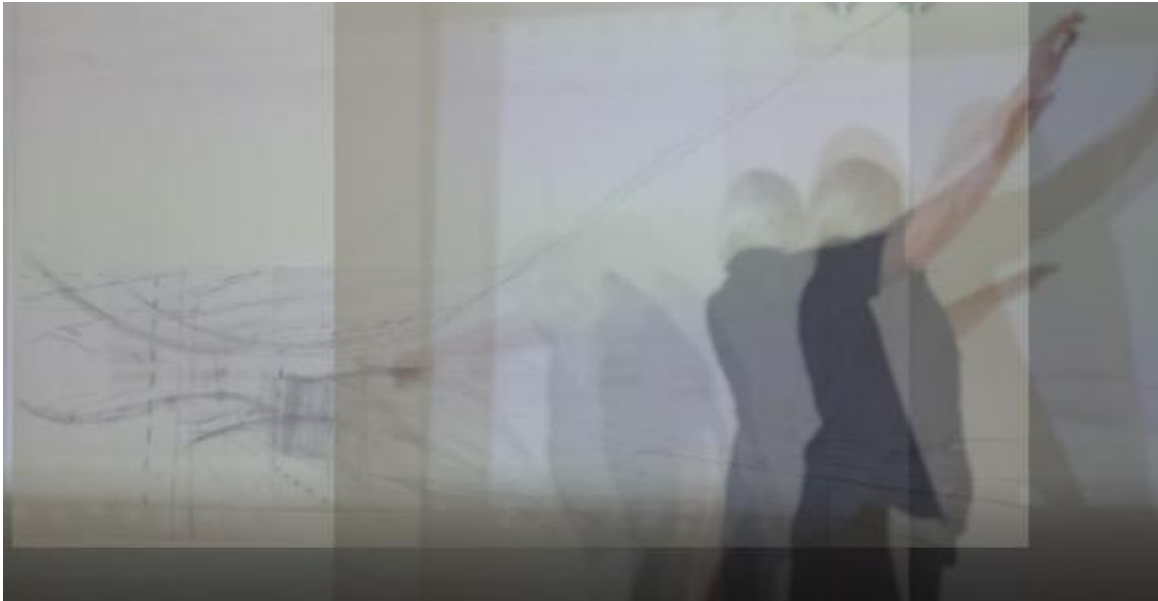


Figure 60: Long smooth arcs as coming into sitting room

Previous sections and Films 3 and 4 described how I traced the silhouettes of forms and the paths of movement on site (see also Chapter 6). In studio, for example I traced the lines of the edges of forms as-if-in them exploring how the ceiling would be experienced when entering the living area from the dining area (see Figure 60). I traced digital walk-through projections of the roof profile still by still, and layer by layer, one upon another, thus revealing the accumulated experiential quality of the long smooth swooping lines of the ceiling edges when entering this space. During this event I moved back and forth between drawing and large gestural movements, to sense the qualities of the gliding lines of the roof edge as it might be perceived to rotate at the far edge of the space. This practice of layering the experience of one moment over the last, revealed dominant forms and trajectories (rhythmic impulses/tendencies) that could be reinforced or downplayed in the design.

As outlined, the decision to work with path, line and edge drew upon the findings of Phase 1, as well as from the familiar architectural practices of sketching and drawing. Through the length of the study, the parallel experiences of drawing lines and describing paths in movement merged and became interchangeable when applying the familiar associated practice of describing forms by their silhouettes or perceived edges. The large drawings provided a useful way of amplifying gestural and postural experience, also fruitfully recording the gestural experiences of the moment whilst attending to relational spatial experiential accuracy as-in the design (see following section). Furthermore, the efficacy of this approach is validated by research in the field of environmental perception (Gibson, 1969; Gibson and Pick, 2000) which finds that the primary visual or tactile investigation of new or 'different' factors in our surroundings involves a rapid visual or tactile trace of the *edges* or *contours* of the objects that

surround us (see Figure 61). In *Principles of Perceptual Learning*, Eleanor Gibson (1969) explains that recognition is generally connected to the shape of objects rather than their texture or colour. Accordingly, I anticipated that inhabitants would automatically pay attention to the edges of spaces and formations when moving through and comprehending their surroundings. I paid particular attention to moments of change such as entrances and transitions or where the environment would be changed and thus noticed (Gibson, 1969). Discussion of how I interpreted the qualities of these paths and edges in terms of their rhythmic qualities is developed in Chapter 6.

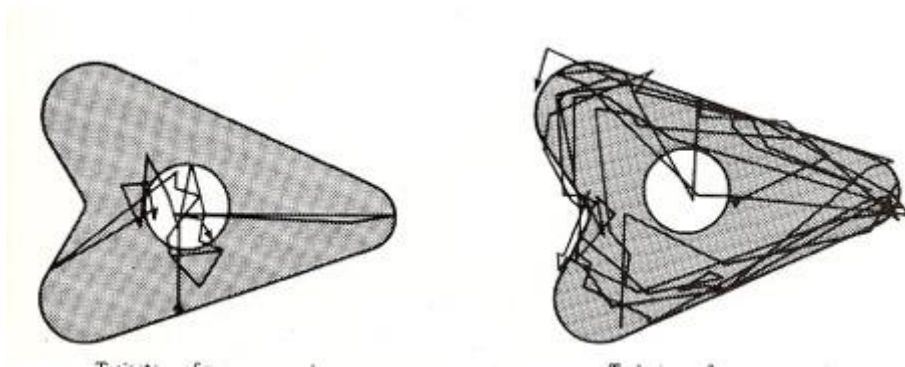


Figure 61: 'Path of eye movements ... examining the edge of an unfamiliar design' (Gibson, 1969: 457)

5.5 Locating relational spatial embodiment with-in and as-if-in the site

Whereas the last section discussed spatial experience which connects body core and periphery, this section discusses the spatial relationship between body and real or imagined place.

Turn your ... head! When I turn my ... head, I have this perspective on reality.
And when I turn my head again, I have this one, and how effective it is in
immediately transforming my cellular body (dancer and choreographer Deborah
Hay, 2020: np).

Lakoff and Johnson's (2003) linguistic study of the 'metaphors that we live by', finds that many of the metaphors for life states and experiences originate in embodied spatial experience. The usage of the expressions 'high', 'low', 'forward thinking' 'backwards', 'under', 'above' and 'woven into' being examples of spatial metaphors for life situations. These examples illustrate the way in which physical spatial experience informs our understanding of other less tangible aspects of life. Likewise, Body-Psychotherapy (BP) and Dance Movement Psychotherapy (DMP) work from the premise that 'beliefs, thoughts and feelings are reflected in the body and affect gesture, posture, and breathing patterns' (Payne et al., 2016: 148). and new movement is used to loosen the hold of habitual movement also relieving the hold of associated emotional patterns (Dychtwald, 1977).

To similar effect, choreographer and dancer Deborah Hay's key piece of advice for participants of 2020's International Embodiment Conference was 'to turn your ...head' (Deborah Hay, 2020: np) meaning that simple changes in our body-self's physical view on its surroundings, alter our physical and experiential state (our perspective).

As argued in Chapter 1, this study proposes that the flattened and birds eye views of orthographic projection are useful but that they encourage a distancing subject-object perspective on the experience of future inhabitants, further removing architects from the imagination of life within the site and future building. For these reasons, during Place Trace for the design trials I adopted an insider's perspective when using models, drawings, or projection by attending to accurate heights and body-relative perspectives that would mimic those of experience in or around the design. Several applications of this practice are illustrated in Film 4, such as exploring the view out of the study window positioned *as-in* a room inside the design physically looking out of this window (see Figure 62) and layering accurately positioned photos of models into this view (see Figure 63).



Figure 62: Aligning projection to position experienced in building 07/07/20

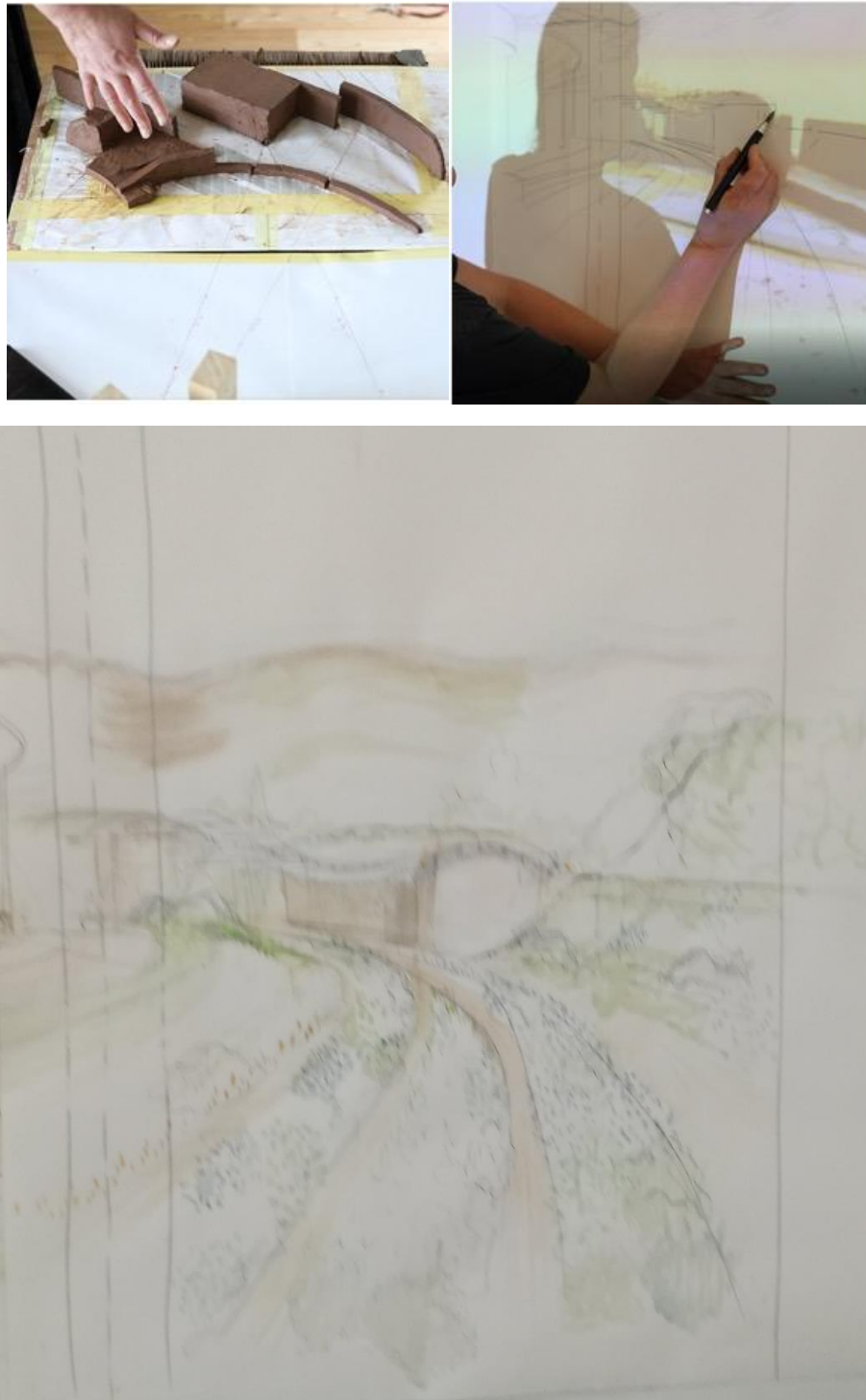


Figure 63: Matching physical model view to digital model view (16/7/20; 17/07/20)

Explorations that layered moments in projected ‘walk-throughs’ or perspective views accurately positioned and scaled as if I was in the design, were employed when I wanted to test experiential qualities such as the qualities of repeated or dominant rhythms when looking-out-at, or moving-through a space (as illustrated in Figure 64⁵³). This process allowed me to trace

⁵³ The rhythm of edges and lines is discussed further in Chapter 6.

lines and forms, film-still by film-still, as they emerged and disappeared through time. During this process of learning by tracing, the repeated movement of my arms and emergent lines on the page, together highlighted tendencies and patterns in the experience of the design. For example, when 'walking up' the external ramp for example (Figure 64), I noticed a distant banking that could be pulled up and around the building. I also realised that horizontal trellising on the sides of the pergolas would reinforce a visual pull towards the sea as the ramp swung around to the left.

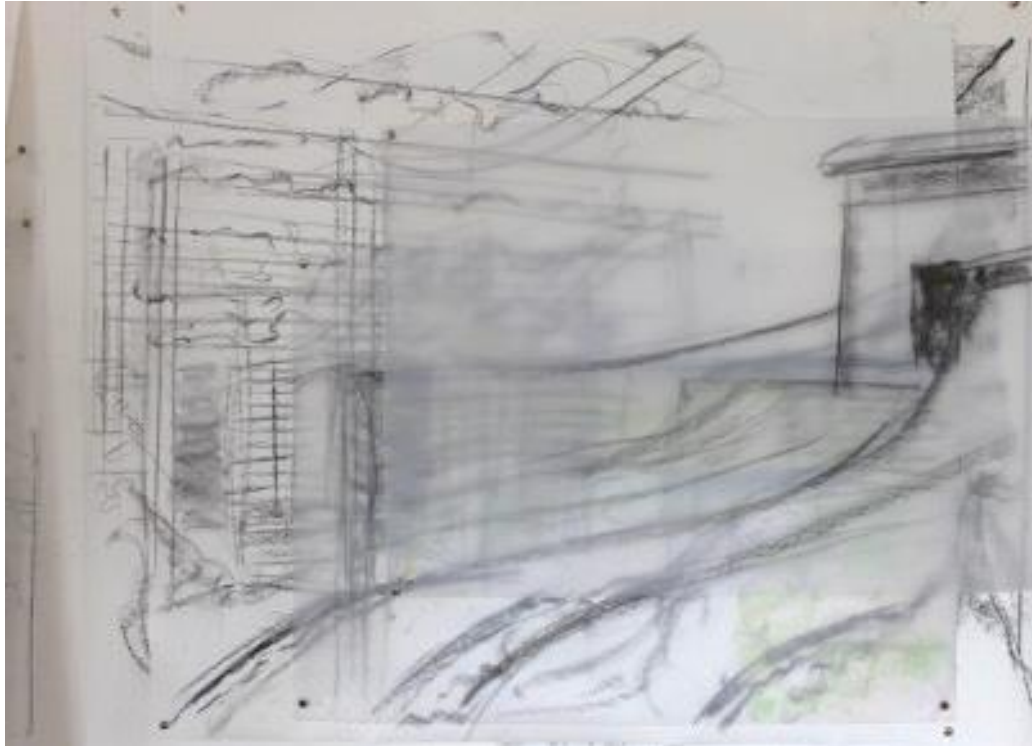


Figure 64: Tracing experience through time and during motion large -wall drawing (27/09/20)

5.6 Summary

This chapter has discussed the methods and impact of bringing the body into spatial relationship as-if-in the design when practicing Place Trace during the design trials. Developing upon Phase One findings, an original architectural movement praxis evolved which attended to the relationship between gesture and core posture, working with the spatial relationship between body and place as well as the shifting rhythms of path and edge. These practices were combined during movement both with-in site and in studio to better communicate and understand the rhythms and spatial relationships present within both the site and the design. As will be discussed in the following chapters these practices also strengthening a sense of direct relationship with, and closeness to, the real or imagined space

CHAPTER 6: WORKING WITH RHYTHM AND DENSITY

It would be helpful to watch Film 5 before reading this chapter⁵⁴.

This film provides a brief illustrated introduction to some of the design thought and movement that was employed when attending to the rhythm and density of place experience during the design trials. Additional detailed discussion of key ideas and practices relating to rhythm and density is included in this chapter. Chapter 7 will further develop discussion of relational space, density, and rhythm, focussing on the implications of the affective qualities of this praxis for architectural discourse and design.

6.1 Introduction

Chapters 4 and 5 discussed how the embodied movement techniques used during the design trial brought me into spatial relationship with-in the site and as-if-in the space of the design; discussing the use of walking on site and outside the studio to perceive, feel and consider multisensory experience. These chapters also discussed the use of gestural movement around the body with whole body awareness that connected gestural and postural movement. However, once I was walking or gesturing, using the relational spatial methods discussed in Chapter 5, what I focussed on were the rhythms⁵⁵ and densities⁵⁶ that I felt, perceived, and imagined surrounding me (see Figure 65). Whereas the findings concerning relational space tended to influence what I did, attending to rhythm and density tended to influence the qualities and characteristics that I attended to during movement in the perceived or imagined place, as well as how I thought about inhabitant experience. Thus, design decisions arising out of the new movement praxis considered dynamic architectural experience in terms of its rhythms and densities.

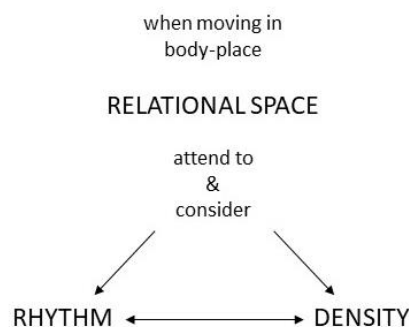


Figure 65: Attending to and considering rhythm and density.

⁵⁴ Link to Film 5: <https://platinum-lizard-4njw.squarespace.com/work-1-1/film-5-designing-with-rhythm-and-density>

⁵⁵ See definition in Section 6.2.1.

⁵⁶ See definition in Section 6.2.2.

Furthermore, attention to the rhythm and density of place experience within movement shifted my perceptions and priorities as a designer, highlighting dynamic and relational aspects of body-place experience with an accompanying increase in the perception of both (i) my surroundings being alive, dynamic and in flux and (ii) of being a connected part of my surroundings. Arguably, this connected, dynamic, and relational experience of site and design addressed the following main research question and sub-question:

Main Question:

How might movement be employed as an aid to architectural design to enhance the experience of designing with-in the animate site and as-if-in the future design?

Sub-question:

How can movement be employed with-in an animate site to enhance knowledge regarding the still and dynamic qualities of the site including natural life within it?

6.1.1 Structure of chapter

First this chapter will define the interpretations of felt body-place rhythms and densities developed during the PhD, referencing the Phase 1 findings that influenced these understandings. Throughout the chapter, discussion of what is meant by the rhythm and density of body-place encounter will incorporate influential and useful ideas and practices from dance-movement, environmental perception, and rhythm analysis. Secondly, the new movement praxis will be discussed, considering the ways I attended to, traced, and considered the spatio-temporal and material densities and rhythms within the existing site and as-if-in the future design. Discussion of the way rhythm and density were considered in the design of spaces follows. Examples of action and thought (movement practices and design decisions) demonstrate the approach trialled.

6.2 Interpreting rhythm and density as felt experience for the design trials

6.2.1 Interpreting the feeling of rhythm (Phase1 and Phase 2)

Rhythm: In this study, rhythms are defined as the qualities or patterns of change in a place experienced through time by the designer or future inhabitant. Like densities, rhythms can be 'read' with any of the senses and can relate to many aspects of place experience including a place's temporal, spatial and material properties. These rhythms might be experienced physically and directly when moving or interacting with-in the building or feeling changes in air pressure or texture under foot, or intersubjectively when moving through and viewing one's surroundings, for example listening to birdsong, viewing the rhythmic forms of edges or silhouettes.

During Phase 1 contrasts between sharp-and-smooth, large-and-small changes in the rhythmic quality of movement were noted, as illustrated in Section 3.4 and Film 5. The following experiences of Phase 1 influenced how I understood and employed rhythm during the later design trials:

- (i) felt differences in the rhythmic sensation of paths of movement were noted in journals (see discussion in Section 3.4)
- (ii) differentiations between sudden, sharp, and quick versus smooth, sustained, slow rhythmic movement qualities influenced the closeness or farness of boundaries in imagined scenes (see Section 3.5).

6.2.2 Interpreting the perception of density and immediacy.

In this study, the term density or felt-density of experience is used to refer to the perceived expansion or contraction of physical body-place encounter with-in a place, considering both spatio-temporal and material experiences of density. As discussed in Sections 3.5 and 3.6, the density of experience was highlighted during post practice analysis of the events of Phase 1 which revealed the following associations: -

1. The **expansion and contraction** of felt **time** (sudden immediacy versus continuity) was associated with **spatial**_expansion or contraction (close immediacy versus spacious continuity) of imagined surroundings (see Section 3.5).
2. **The physical sensations of density and gravity** (both inside and in contact with the body) signalled the dominant **material**_characteristics of the imagined surroundings (see Section 3.6).

In this study the term 'density' is used in relation to temporal, spatial and material body-place encounters (the perceived closeness or farness, immediacy, or continuity of space-time), and the solidity, fluidity, or diffuseness of material body-place encounter. During the design trials I designed with consideration of the temporal, spatial and material rhythms, or textures of place experience, as tested intersubjectively within movement. I considered these rhythms in terms of their felt density and the related sense of body-place immediacy that they might engender. I understood this sense of immediacy or density to act both as a catalyst for perceptual arousal, but also as a way of evoking a felt sense of like states of being. The many words that could describe states of body-place density suggested that density might prove useful as an embodied concept when considering architectural experience (see Figure 66).

ILLUSTRATING EXPERIENTIAL DENSITY: Some synonyms and antonyms describing time, space and material	
<i>immediate, direct, abrupt, fast, close, near, pressing</i>	distant, detached, loose, lax, gradual, continuing
condense, shorten, abbreviate, shrink, summarise, reduce, edit, contract, concentrate, compress, squeeze, consolidate, converge,	expand, extend, spread, prolong, stretch-out, delay, lengthen.

Figure 66: Some descriptors of density

As mentioned earlier, this study was informed by Eleanor Gibson’s *Differential Theory of Environmental Perception* (Gibson, 1969; Gibson & Pick, 2000), and James Gibson (2014) and Eleanor Gibson’s (Gibson and Pick, 2000) *Ecological Theories of Environmental Perception*. These theories connect the impulse to perceive/sense our environment with the needs of the moment as motivated by the demands of life and of survival. The Phase 1 finding that first supported this interpretation identified a direct connection between the degree of pace or suddenness of my movement and the narrowness of concurrently imagined spatial boundaries (possible limitations in space afforded for my body). This finding suggested a connection between the anticipated degree of immediacy of body-place encounter (in time) and the related spatial immediacy or nearness of solid boundaries around my moving body; the density/closeness of imminent body-place encounters, and relatedly the anticipated expansion and contraction of **available/affordable** time and space. The second Phase 1 finding informing my understanding of experiential density highlighted a feeling of contraction and expansion in my moving body that was connected to the density of the dominant **material** focus in concurrent mental imagery (in for example dominantly airy, fluid, or solid imagined scenes). Together, the two findings suggested that the perception of spatial, temporal and material density (or closeness) might be associated with feelings of immediacy or continuity in the interactions between my body-self and my imagined surroundings. This conclusion is illustrated in Figure 67 that connects immediacy in space with immediacy in time, and materiality with the experience of space.

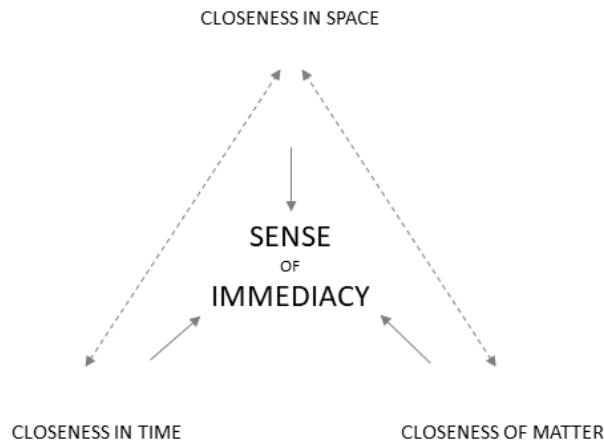


Figure 67: Spatial, temporal and material immediacy

For these reasons, a focus on body-place encounters and relationships informed my approach to the new movement-based practices. This design approach highlighted the way I, or an inhabitant of a design, might be physically present within an immediate environment and perceive it because of anticipated physical demands or related embodied associations. For example, when approaching a wall, perceiving it in terms how soon I might have to move to avoid it; or when viewing a journey or road surface, perceiving it in terms of whether it will be a smooth or bumpy ride; or feeling a subtle recognition of resistance when looking at a rough surface.

6.2.3 Density and rhythm as a type of feeling

During the design trials, working with density and rhythm did not provide me with a way of working with strong universal positive or negative emotions such as sadness, joy, anger, fear, or revulsion (Ekman and Friesen, 1971). Accordingly, the Phase 1 events had rarely included strong emotional descriptors. The events did, however, reference felt states of being that had direct affinities with the physical experience of movement, such as calmness, expansiveness, steadiness, hardness, and softness, smoothness, fluidity, indeterminacy etc. Many of the movements and concurrent mental images were described in terms of their rhythmic quality and bore strong affinities with words that evoked the felt density of experience. Recognition of such affinities may have been influenced by prior movement experience of Gabriel Roth's Five Rhythms. Roth (1998) proposes that when moving through the five rhythms of flowing, sudden, chaos, lyrical and still, the body-self practices like states of being. For example, moving in a flowing rhythm incorporates an attitude or impulse of 'going with the flow' (Roth, 1998:51), whereas moving in staccato is decisive and direct with clear stops, starts and intended directions. Similar felt rhythms such as still, flowing, or sharp, hard rhythms were referenced in many of the movement events of Phase 1 also bearing similarities to sudden versus sustained

tempo effort qualities in LMA (Davies, 2006; Maletic, 1987; Fernandes et al., 2015) as discussed more fully in Section 6.4. The following section describes how I re-interpreted rhythms and densities perceived around me within movement during the design trials.

6.3 Tracing rhythms and densities on site and in the studio

During the design trials I found that conceiving of architectural experience in terms of its relational densities and rhythms provided me with a movement approach that could work with multisensory impressions of spatial, temporal and material qualities, thus strengthening my capacity to design with-in my surroundings when on site, and as-if-in the design when in studio. Firstly, I could also use postural and gestural movement to trace, embody and thus feel the shifting qualities of place-density-rhythms surrounding me. Secondly, I could move or walk-through changing places (outside the studio and on site) to feel and thus understand the experience of the multisensory rhythmic densities within these environments (see Section 4.4.3). In these working modes, movement acted as an interpretative bridge to help me feel, read, and reinterpret the felt, heard, and seen qualities and movement in the site and studio (trans-sense qualities quite easily re-interpreted in movement). Movement could also be used to echo and communicate trans-domain embodied qualities (qualities that crossed spatial, temporal and material experience). This interpretative capacity of movement was not surprising when considering the abundance of spatial and embodied metaphors found in language (Lakoff and Johnson, 2003; Tversky, 2019). For example, the words 'high', 'light', and 'smooth' can all be expressed or perceived through movement, sound, vision, touch, and emotion. Perhaps the associations across sensory meanings relate to the multisensory way in which we perceive the objects, elements and creatures around us, focussing on the many linked sensory properties what we perceive rather than on the perceptions of separate senses. For example:

This morning the wind is almost **inaudible** in the vegetation. I can't hear it now, but it is often really loud. I can **feel** it cooling my face and I can **see** it more than hear it blowing the delicate grasses around me, and softly moving the leaves in the weeping pepper tree. When I hear it, it is mostly against my ears and hair (journal entry on-site 23/12/18).

As illustrated in *Film 4* I used a gestural practice on site to trace the qualities of place around my body, accessing an immediate method of understanding and remembering the site's rhythms, densities, and spatial relationships. This practise focussed on those aspects of place-rhythm that could be achievably traced in real time using my moving body's 'metronome' (Lefebvre, 2004: xii). I interpreted the rhythms and densities surrounding me as felt qualities which included attributes of shape, tempo and intensity. A felt rhythm could, for example be

strong and sharp; or smooth, slow, and strong; or light, sharp and quick. The growl of the traffic, for example, was experienced as strong rumblings (tumbling with tension in hands and arms) that moved in a sweeping horizontal linear action, following the path of the vehicle. The cheeping and darting of birds were traced as quick, light, flicking actions that flitted around my body following the path of the birds, traced with a light, airy quality. The movement qualities used were reminiscent of Laban's effort qualities, including qualities of path, tempo, and force (as discussed further in Section 6.4).

The act of tracing the silhouettes of the landscape around me evoked direct experience of similar sensations of rhythm and density. For example, long smooth curved profiles would feel different to edges that stopped and started. When gesturing around my body both the suddenness of path changes and the scale of the form described contributed to the intensity of the sensation felt in the trunk of my body (see *Film 5*). For example, the changing bodily sensation when describing small sharp changes in foliage was lighter, felt mostly in my fingers. In contrast, when tracing the angles of a near building, my arms and torso would become more involved with an accompanying amplification of sensation.

In the studio most of the perceived movement and change was my own as I traced paths along static edges, except for the dynamics that I heard in recorded sounds of site or music. Outside of the studio, movement and rhythm was everywhere, both in perceived changes as I passed through places, and in the life and forces around me, understood with all senses. Lefebvre suggests that we can analyse the rhythms of a place, and test how the emergent experiential rhythms feel by using our bodies as a type of 'metronome' (Lefebvre, 2004: xii), a gauge of length or scale. Awareness of rhythms in the studio remained within the scale of my body's readings. Outside of the studio, awareness of time and space expanded outwards to incorporate awareness of vast and minute scales of life and movement. During the main design trials, walking and attending to the rhythms of place, often and during two seasons, shifted my understanding of the site as static to that of a living constantly changing situation. This practice also fostered awareness of being a small part of a much larger and longer rhythm, and of all surroundings including architecture as dynamic and in flux (see *Film 5*)⁵⁷.

6.3.2 Space is not empty: material densities when moving and walking

During the design trials, attending to the material densities in contact and exchange with my moving body-self foregrounded 'the underlying continuity between [my] body and the world' (Hale, 2017: 5) and thus facilitated an 'ethical ecology' - a reminder' of my 'ultimate dependence

⁵⁷ Appendix 11 illustrates this point with experiences from a Body-landscape workshop led by Frank van de Ven in 2018.

on [my] surroundings' (Hale, 2017: 5). The findings of Phase 1 emphasized embodied understandings of the material densities surrounding us, foregrounding physical encounters with air and fluids as well as solids, and emphasizing that 'space is not empty' (Hay, 2020: 1). As an architect, much of my past focus on the materials of my surroundings has been dominated by the fixed, and seemingly permanent, solid matter of building materials such as wood, concrete, stone, and glass. In contrast, the experiences and imagery evoked during Phase 1 of the research drew my attention to my whole body-self's dynamic encounters with the varied densities of matter surrounding me, from the air moving in eddies around me as my body disturbed it in movement, through to the impact of my feet on the solid ground or floor. As architects, it is perhaps easy to focus on the material qualities that we habitually manipulate directly (such as wood, stone, concrete, glass etc.), and for these materials to dominate our design concerns. However, as suggested by Phase 1 of the research, even my architect-body's imagination of place in movement experienced solids as one of many material densities, each with their own felt states and associations. Arguably, the users of buildings also experience and know embodied associations from the many densities that characterize life experience. Furthermore, as suggested by architect Jonathan Hill (2013) even buildings, that are more solid than human bodies, change in their density through time and in exchange with their surroundings, for example with the weather. Thus, the interplay between the building's densities and those surrounding it can potentially become part of architectural experience. It can for example, absorb moisture, funnel air, or create echoes in encounter with falling water.

During the design trials, walking in shifting weather and surroundings provided me with sensory analogues, prompts and comparisons with the experience of future design inhabitants, facilitating recognition of multisensory design possibilities. For example, attending to the interplay of rhythms and densities in place when walking helped me to recognise the opportunities offered by shifts and flows in sensory dominance and intensity (see Section 6.4). Such discoveries when walking became memorable 'marker' experiences, that could prompt current or future design ideas and opportunities. Perhaps most importantly, this practice strengthened ongoing awareness of the permeable and continually changing relationship between the densities of my own body and those of all other bodies and elements in my surroundings. As illustrated in Figure 68, I better realised the degree to which the boundaries between my body and my surroundings are both permeable and soluble.



Figure 68: Permeable soluble -journal entry (March 2019)

Therefore, attending to rhythm and density when walking through places heightened awareness of the multisensory, animate, and relational nature of body-place experience. The 'boundaries of [my] body' were highlighted as 'fluid and permeable, through processes of engagement and immersion' (Hunter, 2021: 249).

The walking and gestural practices on site altered my conception of the rhythms and densities of place. In my new praxis, place is now read through time, and on a range of occasions, and these are not understood to be finite or complete. As advocated by Lefebvre (2004), in this movement praxis, the overall rhythmic quality of a place is understood to be layered and amassed through time. At any one time, it has an orchestral musicality. The multiple rhythms of agents and elements are layered across each other, moving in and out of dominance in the overall felt composition as, for example, the wind dies down and surges, or light illuminates a particular land mass. Through time spent on site my understanding of tendencies in these rhythms began to support a better understanding of how the rhythms on site might be orchestrated to calm or invigorate, to draw attention or soften focus. When I returned to the studio (in Ireland), these experiences remained memorable during the design processes that followed and would influence the way I designed in consideration of the dynamic experience of future inhabitants of the design.

On my return to Ireland during the studio design phase, walking outside the studio continuing to act as prompt and reminder of the relational and shifting qualities of place and the gestural way I described rhythm and density around my body on site was adapted to in-studio design activities. In studio (as illustrated in Films 4 and 5 and Section 5.4), I used gestural movement around my body 'as-if-in' the emergent design, working with the accumulated felt rhythmic quality of 'traced' lines and edges of the design⁵⁸.

Earlier discussion (in Sections 3.4, 3.5 and 6.2.1) referenced the way in which lines, paths and edges are perceived through their rhythmic qualities, perceived for example as flowing and continuous or jerky and staccato with sharp stops and starts. During the domestic design of the main design trial, similar density-rhythm associations were tested during gestural movement and used to reinforce the sense of tranquility and engagement requested by the future users. Earlier, on-site I had used the path of my hands around my body to trace and interpret both the delicate small sharp rhythms of birdsong, leaf movement and flight, the varied spatial rhythms of plants lines and the larger contours of mountain and sea. This remembered movement informed the decisions back in studio⁵⁹.

In studio, as described in Chapter 5, tracing large projections from physical and digital models allowed me to feel, test and refine the quality of immediacy and continuity, openness and closure, repetition and change in the perceived rhythms of the edges that future inhabitants would experience when moving along important routes or gazing out from places of rest. For example, as described in Chapter 4, I tested the felt flow of the shallow curves of roof as inhabitants might pass from kitchen into the living room (Figure 68 top), the smoothness of the curve of the terraces were felt in the gestural movement of drawing (Figure 68 bottom left) and a need for increased horizontal lines in the central garden area was felt when repeatedly drawing the long smooth lines of a walk-through view⁶⁰(Figure 69 bottom right).

However, design decisions made as part of the new movement praxis were influenced both by the movement (what I did), and the ideas underpinning the praxis (how I thought about it). The following discussion of body-place densities explains how ideas relating to the physiological experience of expansion and contraction, stability and mobility helped me to consider, sequence and shape the experience of density in the design.

⁵⁸ I also worked with material analogues for the real future building materials (such as the clay of the site and muslin) to consider the perceived material densities of the design (see Appendix 12).

⁵⁹ Later, planted roofs promised small light, sharper textures that would recall and invite the presence of the light, sharp but engaging textures of bird song and small life present in the site⁵⁹.

⁶⁰ See example in film on rhythm and density.

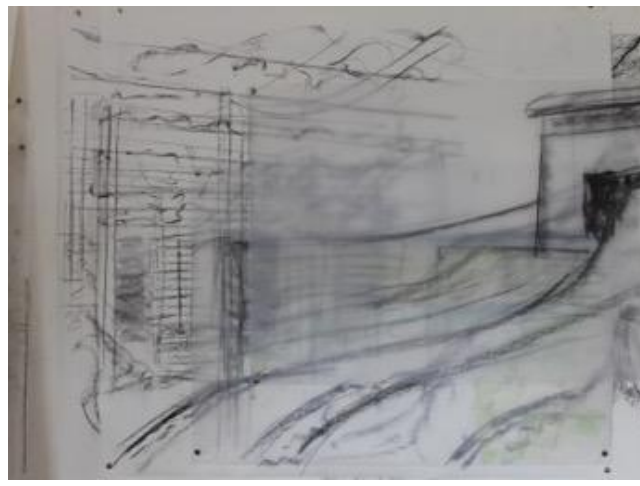


Figure 69: Feeling rhythmic quality of edges when moving and drawing

6.4 Considering and modulating states of felt density for design.

During the main design trial, interpretation of the body-place experience of rhythm and density was influenced by comparisons between (i) Phase 1 findings relating to the contraction and expansion (density) of experience, (ii) consideration of related word clouds (see Section 3.6.6) and (iii) a selection of movement sources that explored similar experiential qualities of movement⁶¹. These affinities were particularly evident when the findings of Phase 1 were compared to Warren Lamb's interpretation of Laban's Effort Qualities (Davies, 2006; Fernandes et al., 2015). Effort qualities are defined as impulses to movement that shift along a scale rather than as fixed polar states, becoming for example quicker(time) or more direct (spatial path). They are defined in terms of the following pairs of movement qualities: -

⁶¹ Similar comparisons were made between my Phase 1 findings relating to density, Irmgard Bartenieff's Developmental Movement Patterns and a range of typical postural stances used during non-verbal communication (see Appendices 12 and 13).

- FLOW: Bound Free
- SPACE: Flexible..... Direct
- WEIGHT: Light..... Strong
- TIME: Sustained..... Quick (Fernandes et al., 2015; Davies, 2006).

COMPARING EXPERIENTIAL DENSITY		
DIVERGENT THINKING ←-----→	CONVERGENT THINKING	Oppezzo & Schwartz (2014)
MOBILITY ←-----→	STABILITY	Bartenieff (Fernandes, 2015)
INDULGING ←-----→	EFFORT CONTENDING	Laban Effort qualities After Lamb (Davies, 2006)
INDIRECTING ←-----→	SPACE DIRECTING	Laban Effort qualities After Lamb (Davies, 2006)
LONGEVITY CALM/CONTINUITY ←-----→	SPACE-TIME SHORTNESS IMMEDIACY	Phase 1 finding
DECELERATING ←-----→	TIME ACCELERATING	Laban Effort qualities After Lamb (Davies, 2006)
DIMINISHING PRESSURE ←-----→	WEIGHT INCREASING PRESSURE	Laban Effort qualities After Lamb (Davies, 2006)
EXPANDED-AIRY/LIGHT ←-----→	FELT-MATERIALITY CONTRACTED-DENSE	Phase 1 finding
FREEING ←-----→	FLOW BINDING	Laban Effort qualities After Lamb (Davies, 2006)
OPENING/OUTWARD & UP BRIGHTENING ←-----→	LIGHT CLOSING/INWARD & DOWN DARKENING	Phase 1 finding

Figure 70: Comparing Phase 1 affinities of experiential density with Laban's effort qualities (after Davies, 2006: 43; Oppezzo & Schwartz 2014)

A graphic comparison between my own findings and those of Lamb and Laban (Davies, 2006) is provided in Figure 70. Here I have grouped pairs of Lamb's effort descriptors above and below similar findings of my own. All qualities down the left or right of the table respectively seem to illustrate similar experiential states. The summarised polar relationships seemed to illustrate either divergent or convergent polar experiential states which together described qualities of experiential density. The bottom section of this graphic comparison includes a minor finding of Phase 1 that was that during brighter mental images I tended to be looking up with an open torso and during darker images looking down with a closed torso, as illustrated in Figure 70.

These comparative sliding scales helped me to conceptualise the experiences of expansion and contraction, stability and mobility suggested during Phase 1, comparing

experiential attributes highlighted during Phase 1 with the movement attributes of Laban Movement Analysis (LMA). Although this process seemed somewhat crude, it helped me when considering affinities across movement modes, also considering the possibility of associated behavioural dynamics and feelings. Enacting such qualities before the trials (see Section 4.4.2) supported intuitive and site-responsive movement and thought during the main design trial, which was informed by some of these ideas and modalities.



Figure 71: Demonstration of opening-up to light (circa 2018)

As illustrated in Figure 71, the Phase 1 findings for light had affinities with that for material density (see Section 3.6). Upward-outward physical movement was associated with both bright or airy places, and downward-and-inward movement with darkness or solids. Similarly, both Laban and Bartenieff used the centres of levity and gravity as constructs to describe the qualities and functions of the thorax (with shoulder girdle) and abdomen (with pelvic girdle) respectively. As shown in Figure 72, the centre of levity is empty suggesting air, lightness and mobility (Fernandes et al., 2015). Correspondingly, the symbol for the centre of gravity is 'filled as if it were full of earth' (ibid loc. 2208-2219).



Figure 72: Symbols for centres of levity and gravity (Fernandes et al., 2015: 131)

Correspondingly, the shoulder girdle is light and mobile in comparison with the pelvic girdle in which the bone fusions constituting the iliac bones and sacrum support stability and

the ability to sustain the body's weight (see Figure 73). Differences between the ligaments of pelvic girdle and scapular girdle and between the structure of feet and hands further support a functional division between stability for standing and walking, versus mobility with fine gesticulation (Calais-Germain, 1993; Fernandes et al., 2015). Thus, downwardness becomes associated with compression (inwardness) in the lower body and upward-ness with expansion (outwardness) in the upper body through the experience of standing, moving upright and gesticulating. In other words, the base of the body is designed to provide stability whilst the upper body achieves mobility. However, stability and mobility, are mutually dependent and concurrent within movement (after Bartenieff in Fernandes et al., 2015), with attention likewise moving between stability and mobility.

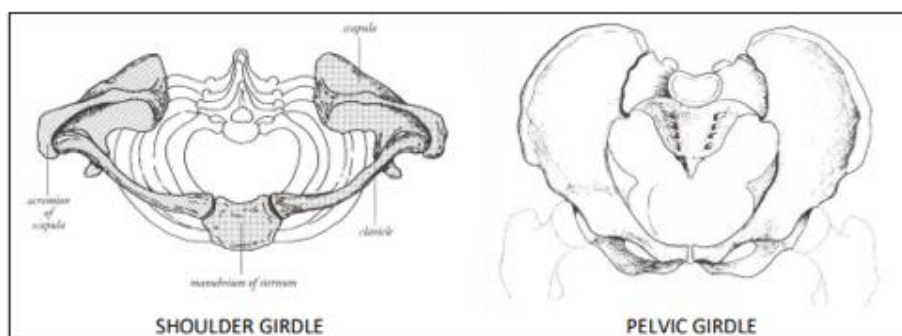


Figure 73: Shoulder and Pelvic girdles (Calais Germain, 1993: 40;105)

During developmental movement as babies, we use one part of our body to brace and provide support while another reaches or explores (ibid). In homologous movement, for example, during which we begin to differentiate between the top and bottom halves of our body, we might reach with the top half of our body whilst bracing against support with the bottom half (or vice versa) (ibid). When walking one foot stabilises against the ground while the other reaches forward through space. This experience is not limited to body-environment relationships, but also functions within the muscles, bones and sinews inside the body. We experience both contraction and extension within the body simultaneously, with internal resistance and oppositions between muscles maintaining bone or joint stability (Calais-Germain, 1993).

Having considered the expansion and contraction of body-place experience, the dynamic and interdependent relationship between mobility and stability (Fernandes et al., 2015) also became a useful construct during the design trial when thinking about my own movement and the experiential needs of the inhabitants of the design. During the design trial, I considered that just as the body-self needs a concurrent experience of stability and mobility within movement, so too does it need to experience both stability and mobility, safety and

freedom, expansion and contraction, ‘an inhalation and an exhalation of being ... We need both the cave and the panorama but cannot have one without the balancing of the other’ (Robinson, 2021: 239). In the design, for example, the back walls of the living room are earthen, simple, solid, providing a secure background (see Figure 74). However, they exist in the same space as the roof, anchoring the slow gentle curve of the ceiling towards the sea, as well as a gentle undulation towards the kitchen. The softer lighter canvas ceiling (a breathable ribcage) gently sweeps up and out with a lifting towards the feathered undersides of the rafter edges that frame the sky, with the gaze encouraged to expand and drift out across the near and distant ripples of garden and landscape towards the sea.



Figure 74: Concurrent stability and mobility in living room (July 2022)

Both material and spatio-temporal densities work together in this space to suggest concurrent stability and mobility. Working with dynamic and balancing experiential polarities is not new to architectural design. As explained by Jonathan Hale (2000), architect Aldo van Eyck worked with ‘open-closed, dark-light, inside-outside, solid-void and unity-diversity ...

inseparable pairs', with architecture 'mediating' to keep such polar states in "equipoise" (Hale, 2000: 157). Similarly, architect Steven Holl (2013) describes perception of a building developing from 'an aggregate' of rhythmically contrasting experiences, such as 'up-and-down movement, an open-and-closed or dark-and-light' (Holl, 2013: 23-24). During the design trial, the way I conceived of such shifts and rhythms of dynamic architectural experience was influenced by experiences outside of the studio.

6.4.1 Ranking

During walks outside the studio and on site, I noticed that aspects of my surroundings would move in and out of sensory dominance or intensity. For example, gusts of wind felt and heard in foliage would draw attention away from traffic noise. These observations suggested that a similar dynamic could operate in the experience of architecture. For example, when moving through a building simultaneous, sometimes differing, offerings and demands of light, space, time and material-density can be simultaneously present, but are perceived in turn as dynamic awareness is drawn from one aspect of place to another. Changes in the perceived intensity or usefulness of our surroundings can move attention from one aspect of place to another.

Drawing on concepts from movement phrasing, I began to explore how aspects of architectural experience can be combined in varied and shifting rhythmic emphasis as experienced through time. In the context of movement phrasing, Fernandes (Fernandes et al., 2015) highlights the use of 'ranking.'

In the same way that the motion factors have different intensities, their combinations might imply equal or unequal emphasis. The differentiation into unequal intensities is called "ranking" (Fernandes et al 2015:213).

Similarly, ranking can be used when considering how to interpret and hone an architectural phrase, shifting closeness or diffusion of attention, from modality to modality, sometimes foregrounding materials, sometimes working with the pace of change or with the spatial rhythm of an edge, or overall volume of a space. Fernandes describes 'movement phrasing for Laban [as] the dichotomy of the ebb and flow of movement as a continuum within the whole' (Fernandes et al., 2015: 29). In an architectural context, the experiential influence of ranking and sequence is illustrated in the following example from the design trial. As I open the door of the car and step out into the shallow bowl of the car park, the form of the surrounding embankments lifts up and out towards the bowl of the Helderberg mountain range beyond (also see Film 6). The immediate overall impression, around my whole body, is of a safe but open bowl (see Figure 75). However, as I approach the small, shadowed entrance in the flank of the building, I cross noisy gravel and then pass between large stones and my attention is pulled

in and down to the ground beneath my feet (see Figure 76). Both the gravel and the bowl of the carpark embankments and mountains beyond coexist in the same space of experience. However, there are moments in this journey and usage of the space where one element (and related aspect of experience) outranks another as I move through the space noticing change⁶².



Figure 75: Ranking elements of experience- sequence on entry 1



Figure 76: Ranking experience -sequence on entry 2

This approach to dynamic architectural experience is inherently relational, implying that perception changes during and because of interaction (Gibson and Pick, 2000; Gibson, 2014) between body and place through time. During the design trial I tried to use movement affinities, alongside the imagination of people's needs and activities to explore how to combine, modulate, and highlight experiential qualities to support the needs of the moment. Hopefully, the way these experiential elements were combined, emphasized, and sequenced refined the rhythm and density that will be felt by inhabitants when moving and interacting within the space. Importantly, the original praxis developed during this PHD has allowed me, as designer, to feel and recognise these material states, rhythms, and interplays of density as a body-self

⁶² Further notes on ranking in Appendix 14.

feels them, and thus to design with their affinities to support a rich and engaging embodied experience for the future inhabitants of this and future designs⁶³.

However, place is complex and alive as implied in the introduction to Film 5. For this reason, dynamic architectural experience is unreliable, hard to anticipate or shape. During the design trial I responded to a few of the opportunities offered by the site and design. I made a few small moves (some common architecturally) such as closing and opening volumes and views, countering traffic noise with natural sound (trees for birds), modulating the strong rhythms of the roofs with small sharpness's of vegetation, working with the felt shapes of volumes and the sensory contrasts of materials. However, Place Trace provided the architectural moves I did make with an enriched understanding of the dynamics at play on site, and a surer felt sense of the dynamic experience of moving through and perceiving space.

6.5 Summary

This chapter has explained how the findings of Phase 1 relating to rhythm and density informed the architectural movement praxis (Place Trace) initiated and trialled during Phase 2. Rhythms with-in the site and as-if-in the design were traced and revealed through time during gestural movement which sometimes incorporated drawing; attending to felt rhythmic qualities such as sudden sharpness or smooth continuity and small- and large-scale impacts on the moving body-self. Auditory, visual and haptic sensory experiences were reinterpreted in movement. Experience of the rhythms and densities with-in place and event were understood to incorporate multiple diverse layers (like an orchestra), with a fluctuation of dominant impressions through time as the designer or future inhabitant might move through a space or shift around.

During this movement praxis, attention and design consideration were paid to the spatio-temporal and material densities of such rhythmic experience, with considerations of the ebb and flow of embodied experiential states such as stability and mobility, immediacy and continuity, expansion and contraction, hardness and softness. As will be discussed further in Chapter 7, attention to the rhythm and density of dynamic body-place experience of place foregrounded a connected and ecological awareness of place that highlighted life, change and relationships within place.

⁶³ Importantly, the examples discussed in Chapters 5 and 6 have been abstracted from context to illustrate specific formative ideas and practices. The manner that movement influenced the design through time was more complex and fluid than could be described in this document. *Film 6* illustrates how movement events and influences became layered and synthesized in the design as discussed further in Chapter 7.

CHAPTER 7: RELATIONAL DYNAMICS OF PRAXIS

7.0 Structure of chapter and introduction

By the end of Phase 2 it had become clear that although the new praxis certainly addressed the aims of the research in terms of enhanced perception with-in the site and an extended ability to design as-if-in the imagined building design, there were additional and perhaps more profound changes to my architectural practice. These affected my overall attitude to my designs as well as how and when I will or won't use Place Trace during future design projects. This chapter discusses these meta changes, also reflecting on what differentiated the overall experience of the new praxis on site and in studio from typical working modes during architectural design, and relatedly some important characteristics of the original contribution of this study to architectural discourse and embodied design processes. Such qualitative changes in architectural praxis found during the design trials related to: -

- (i) the perceived closeness, immediacy and import of those aspects of place described in movement, considering qualities of sensory awareness that result from immersive whole-body movement and attention to rhythm and density/intensity,
- (ii) a less fixed and more permeable attitude to change and time that engages with embodied memory during design and is supported by a porous divide between design work and outside life; and
- (iii) a strengthened and engaged ecological awareness of local life and dynamic relationships on site.

*Film 6*⁶⁴ discusses some of the above changes in practice in relation to decisions, practices and attitudes embodied in the near-complete building. This chapter discusses the ways in which I understand/conceptualise these changes and their contribution to architectural discourse.

7.1 Place Trace evoking closeness and a sense of immediacy to site and design.

The purpose of the movement in this PhD was to engage my body-self with the real site and imagined design in a manner that allowed me to feel and perceive as-if-in it. By the end of the trials, a core finding relating to the new movement-based design processes as compared with my habitual design processes, was of an increased sense of **immediacy** and **closeness**. The

⁶⁴ Link to film 6: <https://platinum-lizard-4njw.squarespace.com/work-1-1/film-6-impact-of-movement-on-design>

diagram in Figure 77 explains how I have conceptualised some underlying reasons for this sense of closeness and immediacy. This diagram highlights that movement continually causes changes in my body-self's relationship with its surroundings, and therefore movement necessitates an engaged awareness of my moving body-self's relationship with its environs. Consequently, real or imagined surroundings feel more immediate during movement. Relatedly this section proposes that movement strengthens both a sense of the present/now and of presence/here in my real or imagined perception of place, a heightened sense of the spatio-temporal and material closeness or immediacy of body-place encounter.

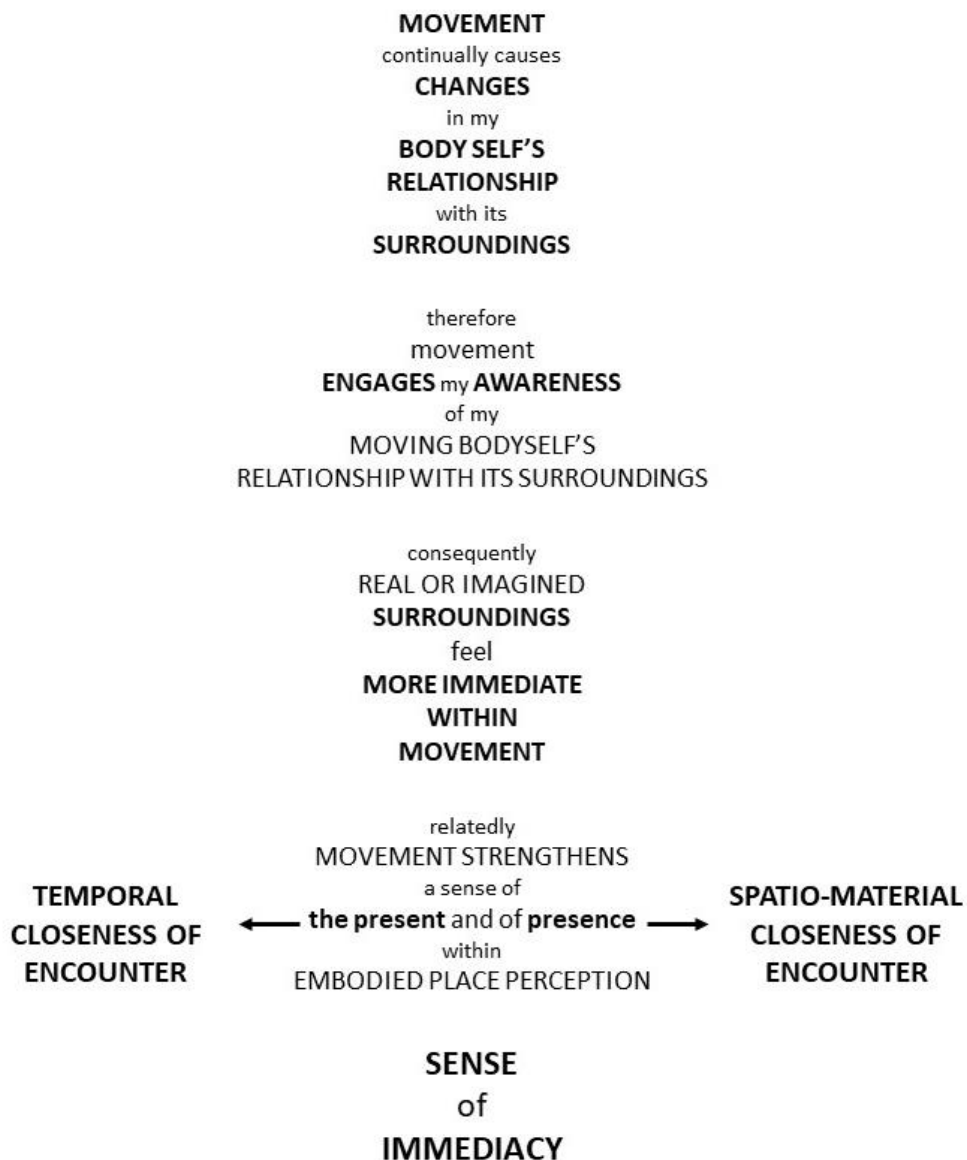


Figure 77: Model of how movement affects a sense of immediacy of here and now

A sense of immediacy in body-place encounter is understood here to describe a sense of the body-place encounter being or seeming close and immediate in space (right-here), and concurrently close and immediate in time (right-now), and therefore foregrounded and engaging of attention. A sense of closeness refers to body-place closeness in time, space, and material, but also to the closeness of emotional identification; to a sense of the aspects of place described in movement mattering to my moving body-self. This is perhaps not surprising, Chapter 1 of this document argued that movement is an inherently direct and engaging way of understanding and working with the tone or feeling of a place, strengthening awareness of our relationship with our surroundings in interaction. It also highlighted connections between movement, emotional identification, and spatial cognition. Chapters 5 and 6 explained how I employed spatial relationship, rhythm, and density during design with-in the site and as-if-in the design. During the design trials I found that moving with attention to relational space, rhythm and density strengthened a felt sense of being in close relationship with place, together addressing spatial, material, and temporal body-place experience.

- Firstly, moving from within body-place relational space, as if the body was inside the imagined place, evoked a sense of being part of the space imagined, rather than separate to and distanced from it. The techniques described in Chapter 5 all strengthened this 'insiders' perspective, and the accompanying sense of direct relationship with the real or imagined space as-if-in it.
- Secondly, awareness of the densities of body-place encounter highlighted the dynamic and relational exchange between my body-self and the material, spatial and temporal qualities surrounding me. Furthermore, awareness of the material densities surrounding me meant becoming aware of my body and the building as both porous and soluble; for example, becoming aware of the particles of my body-self and its surroundings becoming mixed when breathing.
- Finally, attending to and echoing or tracing the rhythms of place around me, meant embodying them, feeling how it was to be as-if them, imprinting their amassed patterns upon my body and embodied memory through time. An awareness of rhythm also engendered awareness of the passing of time, and with it the change, and dynamic interactions of my own and surrounding life.

Thus, all three components of this original praxis strengthened an embodied sense of relationship and closeness with-in place. Therefore, I propose that the emergent praxis that is *Place Trace* has provided me with new conscious but intuitive ways of accessing and utilising

formally implicit embodied ways of understanding place that characteristically facilitate a sense of closeness and immediacy to the place-qualities thus explored.

In addition to alerting us to the here and now (place as close and immediate), movement that echoes or traces the qualities of another fosters a sense of identification with them (Moore and Yamamoto, 2012; Stern, 2010). When identifying emotionally with others, for example, we entrain to their movement (Moore & Yamamoto, 2012), echoing its dynamic qualities, such as its tempo and intensity (Stern, 2010). Describing the interpersonal world of the infant, Stern (2010) explains how this echoing of the dynamic or 'vital' qualities of another's movement and sound is an intuitive way of identifying emotionally with them. In other words, entraining to the dynamic qualities of another supports feelings of closeness. The dynamic qualities thus echoed between person and person include tempo, space and intensity; the same qualities that I echoed in movement when responding to site dynamics surrounding me.

Furthermore, Stern describes the echoing or entraining of movement and voice as transferrable across modalities or senses. For example, a baby can make a long waving gesture and its carer can make a noise that echoes the tempo of the baby's gesture also rising and falling as the baby's arms move up and down. This entraining is very similar to the on-site practices I developed during the design trials where I used movement to echo or trace the multimodal, rhythms and densities of life on site surrounding me, likewise using tempo, space and intensity. These experiences felt immediate, remaining close-to-hand, clear and memorable throughout the design, suggesting that the sense of closeness to place experienced during Place Trace may be attributed in part to the implicit and pre-existing developmental communication behaviours identified by Stern (2010).

7.2 Contribution of Place Trace to architectural discourse and practice

The ideas and experiences of this PhD contribute new viewpoints and layers of possibility to phenomenological architectural discourses, and particularly to those concerned with the nature of embodied engagement during design acts, as well as the effects of perceived closeness versus distance during design processes. The new perspectives, opportunities and caveats of this research are consequences of engaging the whole body in design acts rather than the hands alone, as well as of attending to relational space, rhythm and density from within movement during design. This study was prompted by personal architectural design experience which was limited and dominated by the physical, perceptual, and imaginative distance between site and studio, computer model or drawing and inhabitant experience (see Chapter 1). However, this section will discuss why rather than advocating the replacement of existing methods with the embodied methods of Place Trace, this study advocates augmenting 'the inevitable use of

computer design with embodied methods of discovery' (Robinson, 2021: 204), also arguing that Place Trace lends itself to particular but not all moments in the design process. The practices of this PhD will be discussed considering the following three types of physical and perceptual distance, referencing related architectural discourse:

- Spatial vantage point
- A type of open attention that accompanies corporeal immersion
- Types of sensory information available to architects before abstraction through selection

The chapter will then go on to discuss the impact of the movement praxis on relational ecological thinking.

7.2.1 Spatial vantage point

The first type of distance discussed is the impact and design-role of spatial distance and top-down positioning with an associated distanced perspective. In Chapter 1, I cited Robins Evans (1986) who discussed the opposing qualities of designing by making versus designing by drawing, with 'one emphasizing the corporeal properties of things made, the other concentrating on the disembodied properties in the drawing'. He proposes that these modes 'are diametrically opposed ... but not necessarily incompatible' (Evans, 1986: 6), suggesting that 'architects might conceivably combine, [making and drawing] in such a way as to enhance both, the abstract and the corporeal aspects of their work' (Evans, 1986: 6). Furthermore, Jonathan Hale (2017) suggests practical benefits of the simplification and scaling provided by drawing, pointing out that 'the architectural drawing offers a safe way of simulating and testing new solutions, providing a realm of innovation and experiment without the expense of working at full size' (Hale, 2017: 104). However, the perceptual implications of both shrinking and looking down at the representation of a building involve a particular type of embodied relationship with place. Robinson (2021) argues that 'vantage point biases not only a certain way of seeing, but a whole array of behaviours, thinking, cultural habits, economic values and policy decisions' (Robinson, 2021: 203). She cites the organisational principles proposed by Rudolph Arnheim who distinguishes 'a top-down approach, [where] the overall schema determines the individual variables while the latter [a bottom-up approach] balances the individual variables that strive for dynamic equilibrium within the whole' (Robinson, 2021: 203).

This PhD has provided alternative 'bottom up' (Robinson, 2021) ways of experiencing the site and design. As discussed earlier, I noticed during the design trial that the spatial relationship of my body to representations of the design affected both the physical perspective and the experiential state with which I approached the design, and similarly that spatial

metaphor helped me to conceptualise this experience as engendering feelings of closeness or distance. However, during the design trials I found that I needed to think and design from both vantage points, moving between close and more distant perspectives. Much of the time during the main design trial, a detached perspective with a 'broad view' and some 'distance' helped me to regard and negotiate the multiple, functional demands that arose as the building design developed, and in these situations the over-view provided by conventional graphic modes suited the task at hand. At other times, however, it helped to me to find physical spatial relationships and perspectives to the design which strengthened my understanding of dynamic, multisensory inhabitant experience immediately/closely 'as-if-in' the scene when I wanted to test and feel emerging patterns and experiential qualities from within. So, during the design, I moved back and forth between conventional actions and design perspectives and the more immersive explorations of Place Trace.

7.2.2. Immersive whole-body attention

During the design trials felt-distance versus closeness during conventional and movement-based design acts was a function of the degree of engagement of my moving body in the act of describing the place around me; both the directness of that physical engagement (whether mediated through palm, pencil or computer); but also, the degree of whole-body immersion in the related movement. In comparison with conventional architectural design processes, the bodily experience of my surroundings involved different qualities of subjective embodiment, different parts of the body, and different senses to those habitually highlighted in the architectural design process. This process is most typically focussed through hand and eye, with the hand-pencil, mouse or stylus crafted image separate from the trunk, a little lower and to the front where there is the finest visual and manual motor-control (Previc, 1998: 126-128) (see Figure 78). In contrast, the new methods of this study traced place-qualities around the body and trunk, stimulating perception in a manner that was arguably closer to that experienced when moving within buildings. The methods trialled incorporated whole-body movement, activating both peripheral-vision, the trunk, and awareness of place around the body-self, with associated felt qualities that were different to those commonly engaged when crafting architectural representations with the hands⁶⁵.

The quality of attention employed during Place Trace was also distinct from that employed during the rest of my design practice, with a larger proportion of my attention

⁶⁵ Interestingly, in analysis for Phase 1 I discovered that the mental imagery that occurred when movement was focussed through my hands (particularly my right hand) often proved an exception to the movement-place patterns found (see Section 3.7).

focussed on tasting/sensing the qualities of site and emergent design experienced during movement rather than on crafting or changing them. This attention was found to have a softer and open quality and a more permeable intentionality.

Describing the Neuropsychology of 3-D Space, Previc (1998) explains how fine motor skills and the head-hand-eye co-ordination needed for concentrated physical tasks with 'head-tracking' and 'smooth-pursuit' eye movement function better in the lower frontal visual field, whilst the higher and wider visual field around the body supports increasing gaze distance and ambient perception (Previc, 1998: 126) (see Figure 78).

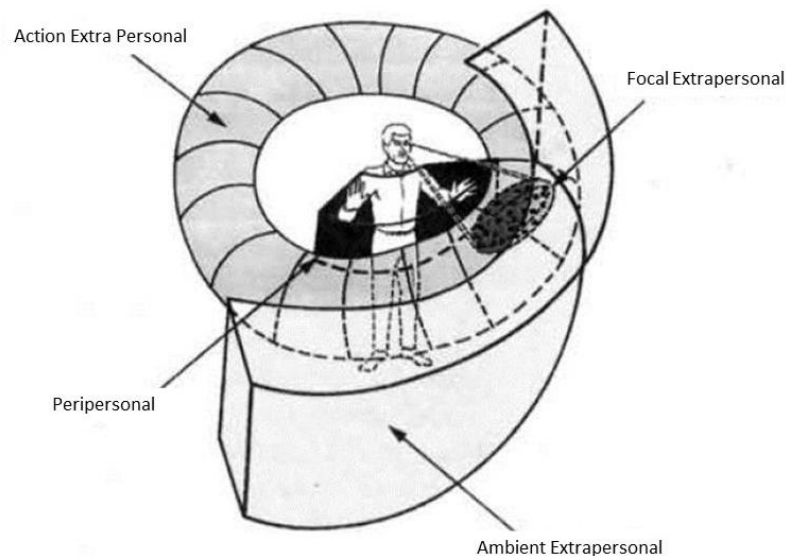


Figure 78: 3-D spatial interactions (Previc, 1998: 126)

Both my own experience of the difference between frontal hands focussed attention and whole-body surrounding attention, and Previc's (1998) model, seem to accord with a type of double attention that Ian McGilchrist (2015) argues is necessary for survival as we get on with the tasks of life; whilst maintaining a background or peripheral awareness of danger or change in our surroundings.

In order for a bird to survive, it has to be able to manipulate objects to pick up a twig to build a nest, to pick out that small seed ... But if the bird focused only narrowly on what it was already interested in, it would not last long. While it was getting its lunch, it would become somebody else's. Survival depends on paying two kinds of attention at once: one kind is narrowly focused and committed to a single end, while the other is broad, open, sustained and vigilant for whatever might be, without preconception. (McGilchrist, 2015: 101-102).

Mc Gilchrist's description of 'broad, open, sustained' attention and 'a form of attentiveness characterized by a receptivity' (McGilchrist, 2015: 113) resonates with my own experience of the type of attention used during movement, both on site and in studio. In both situations I let my perceptions be drawn to attend to things in the environment or design that

stood out as I echoed or traced them in movement. I followed the demands of the place surrounding me. Describing awareness of place and body respectively, Hunter (2015) and Eddy (2016) use the word 'listening'. Hunter describes 'multi sensorial listening through which movement responses to the landscape begin to emerge' (Hunter, 2015: 303). Eddy (2016) explains how Nancy Topf uses 'languages like listening, waiting, accepting and allowing ... to contribute to present moment awareness' (Eddy, 2016: 120). On site, the gestural act of place-tracing demanded a responsive, listening state, as I traced and imprinted the qualities of life and site around my body. This state was also employed in studio when physically tracing over projected lines of 3-D walk-throughs or clay-model photos to better feel emergent patterns and edges. Also, as discovered during the pilot trial, the listening mode and open physical awareness required for movement-based and felt realizations seemed more fruitful when undisrupted by other types of problem solving. However, after a responsive state of recognising a site quality or a pattern in the design, movement would become more decisive as I followed through on decisions⁶⁶.

7.2.3 Abstraction, selection and richness of information

During Phase 2 both new and habitual design praxis progressed (as ever) via many snippets of partial information, ideas, and design artefacts (sketches, diagrams, models, literature, notes etc.) that were gathered and sifted, and gradually transformed into the design. Similarly, El Bizri (2007) describes 'architectural conceptions and constructions' as consisting of 'multi layered fragmentary processes of realisation' (El Bizri, 2007: 37). Also, Starkey describes all architectural representation including digital modelling, as 'mediated realities' and as such 'abstract and partial' (Starkey, 2007: 236). Likewise, Hamel (2007) explains how the process of architectural representation inevitably involves selection:

In the process of drawing away from experienced reality; abstraction is the basis of interpretation. To abstract is to select, to select is to make a choice, to choose one thing is to disregard others "(Hamel, 2007: 206).

The trialled movement praxis of Phase 2 affected the following changes in this process of accumulation and selection. Firstly, the characteristics of the accumulated fragments differed from those in my previous design projects. Secondly, attention to the dynamic collection process influenced what became foregrounded during design.

⁶⁶ During the pilot design trial, I found that the responsive state worked best when I had organized the situation so that I could stay in this mode, uninterrupted, by pre-resolving technical issues that might arise. However, by the end of the main design trial, the shift back and forth from responsive and active states had become more intuitive.

Any selection process first necessitates a collection of information, concerns, and approaches from which to choose. In Chapter 1 I argued that amongst the many factors that need to be synthesized in a design, we are likely to foreground the information of which we are most aware. This study proposes that because existing representational techniques and site records tend to favour the static image (photograph, sketch or diagram) much of architectural design is based on impoverished information; failing to foreground the life and movement on site, and inadequately capturing site experience as it is perceived from within. The study argues that Place Trace provides a way of strengthening the capacity of the architect's body-self to feel and mark both the life within the site and inhabitant movement within the future design. Throughout the design trial, a key difference was that, unlike the information available during my prior design experiences, the bits of partial information from which I could select and abstract, included new movement focussed experiences. These movement experiences were also partially abstracted, but they added a new dynamic and multisensory dimension to the information gathered, and notably they included information about the patterns of movement and life on site.

7.3 Embracing time, change and permeability for embodied memory.

Previous sections have discussed employing awareness and ways of perceiving place that bring the designer into direct whole-body physical engagement with perceived surrounding qualities of place. During Place Trace I traced qualities around my body and simultaneously such qualities of place became traced upon my embodied memory. During this process, the relationship between my moving body-self and the characteristics of place traced/echoed in movement was dynamic (it changed). My moving body-self was receptive in that I allowed myself to be surrounded and moved in ways that were unpredictable, and permeable as such movement and qualities of place were felt both around and inside my body, emphasizing that rather than being 'discrete individuals' our bodies (and embodied experiences) are 'never really autonomous' (Neimanis, 2019: 2-3). Such embodied experiences of site and design were amassed through time⁶⁷, with an inevitable 'dynamic process of continuous interaction between new experiences and existing memory' (Mallgrave, 2010: 164). In Phase 2, I started working with embodied memory during the pilot design trial, deliberately layering both (i) physically present artefacts and (ii) remembered experiences to support a successive distillation of embodied design ideas (see Section 4.4.1). Rather than influencing the design in isolation, each artefact produced, and process enacted appeared to add a layer to the sensory (room-based) and cognitive (memory-based) backdrop that informed the developing design, heightening my

⁶⁷ See Chapters 4 and 6.

sensitivity to selected qualities of place and design (see Figure 40). During the two months of the pilot design trial, accumulative sensory priming supported increases in design clarity and nuance. Noticing this gradual unfolding of embodied experiences and design ideas suggested promising opportunities when conceptualising and approaching the design process.

Furthermore, noticing how many design realisations happened outside of the physical studio and working hours suggested that deliberate life-design permeability⁶⁸ could also aid design-thought. Consequently, throughout Phase 2, openness to both unexpected and deliberately accumulated experiences was useful and fruitful, enriching and refining the way I read the site and enacted and imagined the design.

Chapters 4 to 6 discussed taking the design process out of the studio and back, walking to both think and to stimulate a multisensory awareness of changing place qualities. This allowed the design process to bleed into life outside the studio. During the design trials, life-design permeability partnered with associative embodied memory (Mallgrave, 2010). In a similar manner to the events of Phase 1, any movement might evoke embodied memories of associated forms, places and ideas.

During the main design trial, the design process permeated life outside the studio both with and without intentional action. In *How Designers Think*, Lawson (2005) describes the common occurrence of 'eureka moments', unexpected moments in which important design ideas occur. My own design experience was similar. Although deliberate movement has been helpful, some movement related design insights occurred spontaneously, outside the studio and without intentional connection to the study. For example, a big sigh with shoulders releasing downwards and outwards was recognised as the experience of homecoming, stimulating recognition of affinities between relief from tension and gentle downwards and outwards angles with a long horizontal emphasis, suggesting rest and release when entering the central communal space (see Figure 79 and Films 4-6). Similarly, the repeated attention to breath when beginning an online meditation course (in my personal life) coincided with reworking the roof in the central space and the gradual recognition that the rise and fall of the roof beams 'felt' like a breathing ribcage (see Figure 80 and Films 5 & 6).

⁶⁸ See Glossary: Life-design permeability refers to a soft and porous boundary, with cross-over and mutual influence between the activities and thought processes of design and the activities and thought processes of the rest of life.

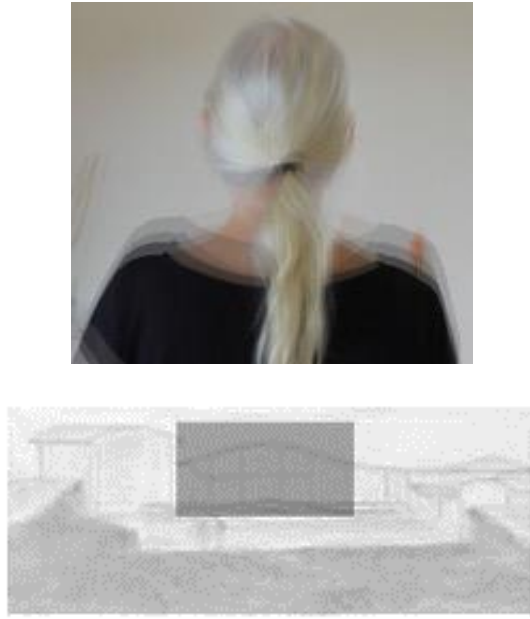


Figure 79: Breathing out feeling like coming home

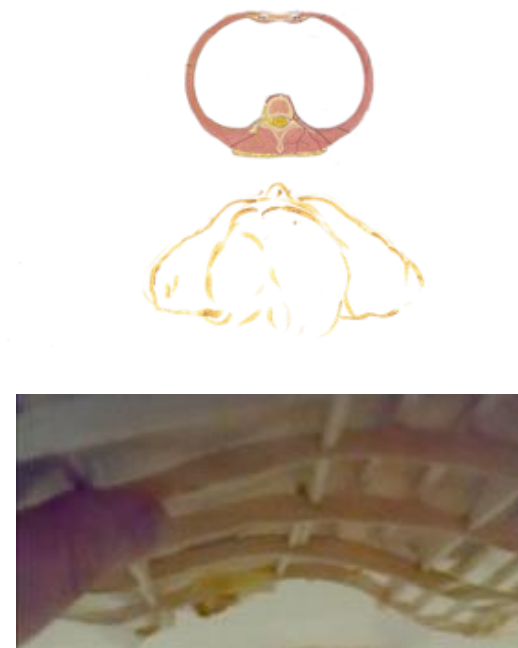


Figure 80: The roof like a ribcage (watercolours and model image)

The example in Figure 81 illustrates how the ‘associative’ (Mallgrave, 2010: 163) and interactive functions of my embodied memory facilitated a useful permeability between my everyday physical experience and design, with the accumulation of ideas and embodied experiences through time becoming synthesized within a design idea. Kahnemann (2011) and McGilchrist (2015) emphasize how each new experience or perception successively ‘reinforces what might be noticed or foregrounded next, supporting connections and associations’ (McGilchrist, 2015: 100). In the following example, life outside the design process prompted design change, and then movement assisted in evoking and connecting memories to reveal

solutions: A series of break-ins on-site prompted consideration of security in the design; and while moving radially within space in the studio the idea of a radial plan for visibility and a perceived sharing of space converged from the following memories and ideas (also see Figure 80):

- Memory of Laban’s table plane being known as plane of communication when moving radially in studio (from Laban training circa 2004), (Figure 81-top)
- Earlier elliptical plan forms
- Past awareness of round defensible vernacular ‘boma’ and kraals (childhood)
- The expansion and contraction of Bartenieff cellular radiation (Fernandes et al., 2015) (movement exercises executed previous year)
- Awareness of horizontal expansion of ribcage during breathing for meditation
- Anatomical images of intercostal space drawn in 2014 (Figure 81, bottom left).
- The resultant conceptual sketch at the bottom right informed the design development that followed (Figure 81 bottom right).

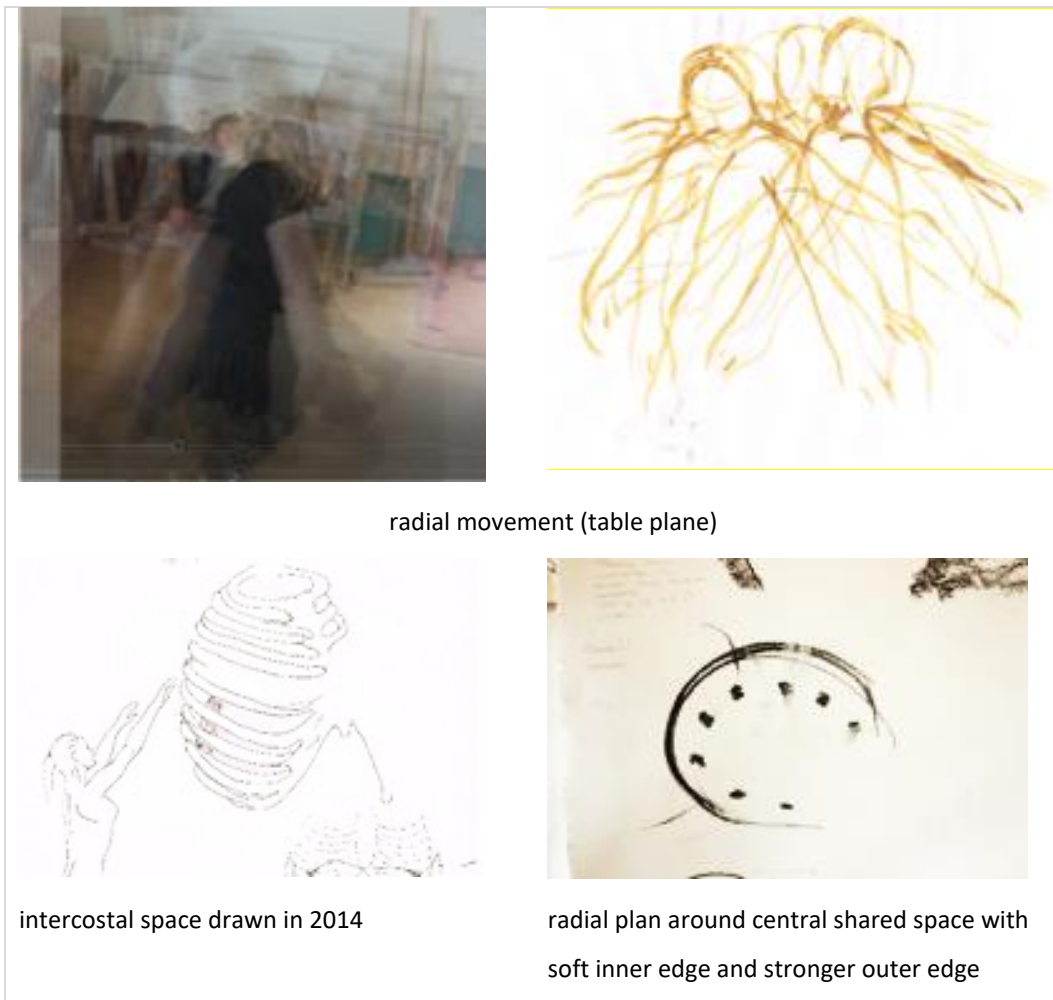


Figure 81: Ideas converge over time - radial plan

The above event illustrates how physical movement experience and associative memory can be interwoven with ideation, together colouring imagination; with memories that have built upon each other evoked within the moment of movement, to converge as a design idea. Similarly, speaking of dance, Barbara Dilley (in De Spain, 2014: 150) states that: “memory is not a process of being in the past. Rather, it is a process of allowing the past to enter present circumstances”; and architect Sophia Psarra (2009) highlights the role of short-term memory in the experience of moving through buildings as the interplay “between patterns which we hold in our mind and those which we grasp gradually through movement” (Psarra, 2009: 4). Consciously embracing and feeding the life permeable, iterate and associative quality of embodied memory has been both fruitful and liberating. In the context of movement improvisation, De Spain (2014) suggests that ‘you can organize your attention to bring certain things to the foreground and turn down the psychic volume on the rest’ (De Spain, 2014: 2). Thus, the emergent embodied design praxis has exploited both ordinary life and deliberately enacted experiences to build and enrich embodied design awareness, memory and imagination, deliberately working with the dynamics of attention and embodied memory. Both what I attended to (in the site and design) and how I chose to attend to movement and place during the overall design process supported a movement praxis which reinforced willingness to be in relationship, to change, to listen and to entrain to the life and world around me.

7.4 Ecological and relational attention

The praxis of Place Trace was characterized by responsive movement with-in surrounding place through time. Thus, movement harnessed the dynamic and relational character of our body-selves, alive with-in our surroundings; ‘both composed of and nested within contextual networks of dynamic and reciprocal relationships’ (Spretnak, 2011: 4). As argued by Peg Rawes (2013) such relational and relatedly ecological approaches to design are urgently needed to protect the biodiversity of the sites of architecture. This study supports *Ecological Thinking* (Code, 2006) by offering ways of paying attention to the diverse particulars of life on site:

Ecological thinking ... conceives of human interventions throughout the world, both physical and social, as requiring sensitivity to, and responsibility in relations to, specificities of diversity and detail, placing respect above mastery, preservation before control, understanding for what is and has been before predictions of what might be (Code, 2006: 32).

Using the themes and practices of Place Trace on-site affected two underlying shifts in my attitude to both the life on site and my understanding of architectural design practice.

The first change was a sense of closeness or belonging alongside the life on site. As outlined in previous chapters, the movement with-in the site and as-if-in the emergent design incorporated

both subjective and intersubjective descriptions/tracings of place. On the site, I moved **in** it, walking through it and feeling its impact on and relationship to my body-self. But I also moved **with** it, I traced and entrained the forces, sounds, shapes, and movement that surrounded me as they happened, echoing the dynamic and spatial properties of the life and morphology surrounding me. This process was intersubjective and empathetic; I was moving **with** or in sync with my surroundings, feeling and recognising patterns in its character through time. In the studio, the process was very similar. Though the place had not yet been built, I explored both the subjective experience of being **as-in** the place. But I also explored its desired or emergent qualities intersubjectively, **as-if** and **as-in** it. I moved **as-if-in** it.

As argued earlier, embodying and re-enacting the density rhythms around me brought my body-self into a twofold relationship with place. Firstly, my body was spatially immersed with-in these densities and rhythms and thus felt affected by them. Secondly, the intersubjective act of moving as-if them (in-sync-with or attuned-to them) was very similar to entraining behaviours that commonly occur in non-verbal communication between people that care for each other (Stern, 2010), or between people who agree or identify with each other (Moore and Yamamoto, 2012). Therefore, moving with-in and as-if the rhythms and densities of place, strengthened felt engagement and identification with the qualities of place and life described, strengthening a relational awareness of and engagement with the ecology of the site.

Combining the densities and rhythms of place experience also helped me to incorporate time, change and movement into my conception of architectural experience. Describing a distinctive practice-research methodology 'that mobilises particular modes of knowing' (Nelson, 2013: 56), performance practitioner Robin Nelson argues that 'artistic praxis is "performative" in that it impacts upon us, does something to us, changes us in all manner of ways (aesthetically, perceptually, ethically, emotionally)' (Nelson, 2013: 56). One of the strongest and most pervasive impacts that the research has had on my praxis is a change in the way that I habitually consider/perceive the site and building. Repeated attention to the dynamic life of place from within movement has altered my habit of perceiving the site and building within it as something fixed, solid and foreseeable, to something more fluid, changing and relational. Likewise, observation of the layers of rhythm and density on-site has moved my architectural attitude to place, and the architecture within it, out beyond the scale and lifespan of human and building. For example, attention to the multiple layers of rhythmic movement and change on site incorporates noticing the very tiny and very fast (faster than myself), as well as traces

left by the huge, or imperceptibly slow⁶⁹. Moreover, attending with-in movement and through time to the porous and fluctuating body-place relationships of space-time and matter, has questioned my preconceptions of architecture as something permanent, insoluble and autonomous. Thus, the praxis that is Place Trace offers architectural praxis ways of perceiving, knowing and relating to the site and design that foster engagement with both future inhabitant experience and the existing life and biodiversity within place.

⁶⁹ Also see Appendix 11. (Reflections regarding rhythm, density, and scale after Body Landscape week).

CHAPTER 8: CONCLUSION

8.1 Outline of research motivation, aims and process

As discussed in Chapter 1, the research was motivated by the desire to use movement to close the perceptual distance between my body-self as designer, and both the physically remote site and the yet unmaterialised building design. During design processes, my predominantly distant, visually focused, and objectifying stance (from above) seemed far from the immersive, dynamic, and multisensory experience of future inhabitants of my designs and life on site. In contrast body-place experience during dance improvisation felt immersive and immediate. Relatedly, the research sought to address the following question:

- **How might movement be employed during architectural design to enhance architectural imagination of being with-in the site and as-if-in the emergent design?**

In response to this question, this research first identified (Phase 1) and then trialled (Phase 2) the first and foundational moves towards a movement-based design praxis, specifically aiming to employ movement to enhance the architect-researcher's (my) experience of designing with-in the animate site and as-if-in the future design.

Phase 1 (2014-2016) identified several of my own innate movement-place associations, to provide a starting point/foundation for an original and intuitive movement-based architectural praxis grounded in my own embodied movement-place knowledge and associations. These associations were revealed through post practice analysis of unexpected mental place imagery during improvised movement (see Chapters 2 and 3). Phase 1 findings discussed in Chapter 3 were coupled with reflective observations made during Phase 1 movement, to identify density, rhythm, and relational space as key factors in my moving body-self's imagination, sensation, and anticipation of surrounding place; suggesting that these three concepts might provide a fruitful foundation for the embodied design trials of Phase 2⁷⁰.

During Phase 2 (2016-2020) an original approach to embodied architectural praxis was **initiated** and **trialled**. Movement was employed to enhance the experience of designing with-in the animate site and as-if-in the future design. The movement-place associations identified during Phase 1 were interpreted and applied as ideas/prompts and movement-based design processes during architectural design to enhance sensory understanding of the site when with-in it, also aiding studio design processes when exploring the emergent future building as-if-in

⁷⁰ Interpretation of the Phase 1 findings and the possibilities they presented drew on research and practice pertaining to dance-movement, movement analysis, non-verbal communication, and environmental perception (see Chapter 4).

it⁷¹. As explained in Chapter 4, Phase 2 included a pilot design trial (of a garden seat), literature review, a period of preparation and a main design trial (of a dwelling near Cape Town).

8.2 Findings of the new movement praxis

Chapters 5, 6 and 7 have explained how attending to the densities and rhythms⁷² of real and imagined places, as I experienced them relationally and spatially from the centre of my moving body out, facilitated multisensory, whole-body readings of place during design. Firstly, I brought myself physically and spatially into relationship with the real or imagined place, as if inside it and then (once there) I moved and worked with the real or designed densities and rhythms surrounding me. As discussed in Chapter 5, effective methods of strengthening the feeling of being with-in and as-if-in the place explored included:

- (i) connected awareness of body part-to-whole, core-and-periphery,
- (ii) spatial positioning of the body in relation to site or design representation (image, drawing or model), and
- (iii) attention to the relationship between the path of bodily movement and the qualities of the edges of imagined space and form.

These straightforward but effective spatial practices located me so that I could read and thus work with the rhythms of the spatial, temporal and material densities ‘surrounding’ me during architectural design. Awareness and manipulation of the density and rhythms of body-place encounter surrounding me provided a means to work with spatial, material, and temporal qualities of body-place experience for future users of the design (see Chapter 6). This study also found that awareness of all three key aspects of this original architectural-movement praxis (Place Trace) strengthened a sense of immediacy, closeness and relational engagement between my body-self and the places described in movement (see Chapter 7). Chapter 5 has described how working in physical spatial relationship with-in or as-if-in the site or design, from the centre of my body-self out, bought me into a direct felt spatial relationship as if inside the design and thus directly affected by it. By moving with-in a place, or as-if-in a place during the design trials, I placed myself into spatial relational exchange and thus engagement with my surroundings. My real or imagined surroundings became more sensorily demanding during the change caused within movement, and this felt more pressing, more immediate. Time was perceived in motion, with the future and the past becoming more present and more dynamically connected within the shifting moment. Furthermore, the acts of tracing the rhythms and densities of the site, moving as-if them, and thereby entraining or imprinting their

⁷¹ The terms as-if-in and with-in are defined in the glossary and explained in section 4.2.

⁷² Density and rhythm are defined in the glossary and explained in chapter 6.

dynamic qualities upon my body-self, strengthened a felt sense of identification or engagement with those aspects of place and design described in movement. Thus, the static and dynamic place qualities traced with my body remained clear and memorable throughout the design. As outlined in Chapter 7, attention to relational space, rhythm and density affected a sense of closeness and immediacy to the places described in movement for the following reasons:

- Firstly, moving from within body-place relational space, as if the body was inside the imagined place, evoked a sense of being part of, or inside of, the space imagined rather than separate to and distanced from it. The techniques described in Chapter 5 all strengthened this ‘insiders’ perspective, and the accompanying sense of direct relationship with the real or imagined space as-if-in it.
- Secondly, awareness of the densities of body-place encounter highlighted the dynamic and relational exchange between my body-self and the material, spatial and temporal qualities surrounding me. Furthermore, awareness of the material densities surrounding me meant becoming aware of my body (and also the building) as both porous and soluble; for example, becoming aware of the continual exchange and mutual impact of the surfaces and particles and particles of my body-self and its surroundings.
- Finally, attending to and echoing or tracing the rhythms of place around me meant embodying them, feeling how it was to be as-if them, imprinting their amassed patterns upon my body and embodied memory through time. An awareness of rhythm also engendered awareness of the passing of time, and with it the change and dynamics of my own and surrounding life.

8.3 Original research contribution

This research offers the field of architecture an original praxis that employs movement to enhance dynamic, relational, and corporeal awareness of place during the communicative and representational processes of architectural design. I, and hopefully other designers, can employ this praxis to strengthen embodied communication with self in movement during or alongside a wide range of design actions (thinking, making, drawing, drafting). This approach includes prompts or foundational concepts that can be used during design processes to enrich a relational embodied awareness of the dynamic and static characteristics of a real or imagined place, thus foregrounding its existing life and ecology. As discussed in chapter 7, I have found that these practices of embodied attention to movement with-in the existing site and as-if-in future inhabitants’ experience of design, also work to strengthen a sense of immediacy or

closeness to, and empathy or relationship with, those qualities of place traced in movement. For the reasons discussed in this chapter and Chapter 7, I propose that despite an inevitably heightened sense of immediacy and engagement with site and design from increased time spent using embodied methods to read and describe them, the foundational components of Place Trace support an engaged, and inherently relational, experience of moving body-self with-in place.

This study has proposed that because existing representational techniques and site records tend to favour the static image (photograph, sketch or diagram) much of architectural design is based on impoverished information; failing to foreground the life and movement on site, and inadequately capturing site experience as it is experienced from within. This study argues that Place Trace provides a way of strengthening the capacity of the architect's body-self to both feel and mark the life within the site and inhabitant experience within the future design.

In contrast to conventional architectural practices, the practice of Place Trace involved a sense of immersion as-if-in the building. This close involvement was affected by:

- the position of the place described in relationship to my body-mind (all around me rather than below or at a distance)
- by the parts of my body engaged in movement (my trunk as well as my hands)
- by the engagement of peripheral vision, hearing, and the haptic senses
- by deliberately engaging a soft, open and listening awareness
- by deliberately engaging in a subjective and intersubjective relationship with-in the site and as-if-in the design.

The experience was thus less detached, and more involved with an increased sense of immediacy and thus of sureness. Although the degree of immersion varied in response to the design needs of the moment, I found that most of the decisions that I made using movement tended to stick, return, or feel more sure or real. The inclination was, therefore, to pay greater heed to those design decisions confirmed in movement than those arrived at through other means. Therefore, it was important to develop an understanding of how and when Place Trace would aid and clarify, rather than obstruct or distort, the overall design process.

The contribution to architectural discourse is thus a practical and original way of using movement to engage with and communicate the qualities of place. Moreover, Place Trace capitalises on pre-conscious or non-conscious ways in which we already perceive and attend to our surroundings. The study does not suggest that the new methods are a replacement for more conventional architectural practices. Instead, it highlights that it is possible for architects and creative practitioners to use Place Trace in a manner that naturally aligns with the design

perspectives and media that suit the design or creative task at hand. Place Trace provides ways of accessing engaged and immersive embodied perspectives that are currently sadly lacking in current practice. As argued in Chapters 1, 6 and 7, the practices of Place Trace also provide an accessible way of mapping or tracing the dynamic and living forces on site, fostering much-needed relational and ecological awareness during architectural practice and thus foregrounding and positioning existing life (and thus biodiversity and habitats) before seeking to alter them.

The original praxis that is Place Trace contributes to design contexts such as architectural, interior and landscape design, offering an accessible ‘way in’ to movement for design. However, Place Trace also contributes to fields such as site dance, embodied movement enquiry, dance improvisation and ecological movement practice. The praxis of Place Trace illustrated in the document and supporting website, offers movement scores/guidance, design activities, demonstrations of practice, and graphic and written explanations of underpinning ideas. The new practice-based knowledge thus offered could be employed or adapted by creative practitioners such as movement artists, dance educators, dance students, architects, architectural educators, and architectural students. However, Place Trace could, plausibly, be used by any creative practitioner to investigate felt and embodied qualities of place. At Atlantic Technological University (ATU) for example, I have already shared some of the emergent methods with master’s students from diverse creative fields as tools to enhance their imagination and perception within imagined and real surroundings. Some of these students (with no prior dance-movement experience), chose to continue to practice and adapt Place Trace to enrich their own methods of perceiving place for sculpture, writing and graphic design. Although anecdotal, their experience validated the accessibility of Place Trace, also suggesting that they found it to provide an enriching ‘way in’ to using movement to read the qualities of place.

8.4 Limitations, validity and reliability

I propose that the findings of the overall study have been revealed through innovative, thorough, and reflexive practice-research methodologies, informed by precedents from appropriate research contexts⁷³, whilst operating within aligned epistemological frameworks (see Chapters 2 and 4). The findings are underpinned by a phenomenological epistemology,

⁷³ These research contexts include Arts Practice Research or PaR (Barret and Bolt, 2007; Nelson, 2006, 2013; Sullivan, 2010), research for design and architecture (Collins, 2010, Groat and Wang, 2013) first-person research methods (Price and Barrell, 2012; Varela and Shear, 1999) and Interpretative Phenomenological Research (Smith et al., 2009; Van Manen, 1990).

seeking to know or understand an aspect of embodied experience as it is lived, from the 'inside out' (Sullivan, 2010).

Similarly, the practices of Phase 2 were developed by repeatedly testing, reflecting on, and building upon those actions that worked in practice, within the context and challenges of a live design project. As first-person practice-research, related findings do not offer universal conclusions. Instead, they offer a reflective interpretation of what happened and what worked within one person's experience when exploring original practices in the context of a live⁷⁴ design project. The new knowledge produced is thus 'working' (Nelson, 2006) or 'functional' knowledge (Biggs, 1999).

As remarked previously, the data examined for this research is naturally limited by the corpus (a single subject). These limits apply to the nature of the movement, the terms used to record and understand the movement, the architectural and dance history of the subject-researcher, and the life experiences of the subject-researcher. These limitations do not invalidate the study, but they do frame what will be found within a defined set of ontological, epistemological and experiential parameters. As has been discussed in previous chapters, some aspects of the researcher's experience were personal, other aspects might arguably be shared with other humans and even other species. Therefore, these findings contribute to an original architectural movement praxis, or embodied Tracing of Place and the praxis developed during the study can be adopted by others but adapted to suit their own embodied knowledge and preferences.

8.5 Areas for future research

So far, the focus of the PhD has been on identifying, and initiating an emergent praxis of my own. However, Place Trace as a praxis is already being shown to have the capacity to be shared with and enjoyed by other creative practitioners. The new knowledge and contribution to practice is an original, emergent type of architectural movement praxis, that incorporates an expandable range of actions underpinned by a few useful foundational ideas/prompts (namely relational space, rhythm, and density). This embodied Place Trace can arguably be used to bring designers and creative practitioners into a closer felt experience of being with-in a location or as-if-in a design or imagined place. The prompts and findings underpinning this practice arise out of personal but arguably commonplace embodied understandings of space, material, time, anatomy, and movement. These simple and accessible underlying principles (or prompts), and the everyday movement employed, could allow people with little or no prior

⁷⁴ 'Live' meaning a building that will be built rather than a hypothetical 'paper project'.

dance experience to improvise with and develop the ideas and practices to suit their own creative needs. Moreover, like non-verbal communication, these original practices can be scaled to adapt to a range of physical environments, mobility levels and design needs; ranging, for example, from awareness of subtle changes in posture, to expansive whole-body movement. Thus far, exploration with other designers and creative practitioners has been tentative and informal, but enthusiastically received. This research has been experience-driven, employing bottom-up, 'on the ground' and 'embodied' methodologies. So, it seems fitting that the next phase of this practice-research should include further development of my own praxis alongside a sharing of ideas, and 'on the ground' physical exploration with other practitioners. It would be beneficial and interesting to see how Place Trace might be adapted by other body-selves in the context of other personal design approaches, and such exploration could inform the evolving characteristics of a more broadly shared praxis.

Additionally, there are several aspects of the research findings that might be worth further investigation in collaboration with researchers from other disciplines, especially as advances in scientific research (in for example neuroscience) map connections between movement and the way in which we perceive and imagine place. I believe that the findings of Phase 1 relating to proprioceptive imagination, might be worth considering in the light of further developments in neuroscience, embodied cognition, and environmental psychology. Much of the useful working knowledge gleaned during the design trials related to ways of working fruitfully with my own action and perception. It would be interesting to revisit and reflect on the developing praxis considering ongoing research developments in the natural and human sciences. Although I believe that this study is essentially phenomenological and relationally ecological in nature, (benefitting from writers such as Pallasmaa, Robinson, Hale and Olsen) it has not explored these connections exhaustively, focussing more closely on the particular and detailed workings of an emergent and original embodied praxis. I believe the continued growth of this praxis would benefit from a deepened concurrent engagement with both phenomenological and ecological thought.

Finally, I believe that although immersive virtual reality software is intended to make designs more real and accessible to the wearers of headsets and viewers, there may be gaps in the users' conscious haptic engagement and physical appropriation of such environments within movement that would benefit from the practices and ideas of Place Trace. During this research, I explored a hybrid use of crude walkthroughs, using movement and drawing to engage with, appropriate, and alter the given information. However, the focus was not on the software but on how my moving body-self attended to and interacted with the imagery made

visible by the software. It would be interesting to explore and inhabit such hybrid environments and media further with-in movement; to collaborate in finding ways of using some of the principles from Place Trace so that designers can enjoy digital plasticity while maintaining personal visceral and material encounter, and awareness of direct embodied agency when interacting with the digital design representations.

8.6 A beneficial and accessible praxis

However, perhaps the most important personal test of the praxis of Place Trace is whether I will choose to use it again, outside academia and during the hurried everyday processes of architectural design. For the following reasons I will: I have found that the praxis is enjoyable because it helps me to feel closer to the site and design. It also feels immediate and intuitive because its foundations (revealed during Phase1) originated in ways of knowing place in movement (embodied memories) amassed during a lifetime of everyday body-place relationships. Another strength of the praxis is its flexibility. For example, I have found that the movement and prompts helped me even when not attending to my whole body, improving when I did. The experience could be as immediate as any movement. It could be used instantaneously with or without a projector or drawing tools, with or without large pieces of paper, notebook or projector (with design decisions being confirmed in a more detailed way later). It could potentially also be used to augment digital visualisation processes, to better feel and engage with the developing three-dimensional experience of the design from within the body.

Place Trace is potentially most useful to designers of buildings, interiors, and landscapes, both on site and in the studio. In the studio, movement from within relational space with the imagined design, while attending to rhythm and density, can add sensory richness, physical immediacy, and a sense of being close to the emergent design, as if one of its inhabitants. Also as discussed in Chapter 5, movement provides a direct, relational, and empathetic way of tracing, locating, embodying and memorising the specific dynamic and living aspects of the habitat that is a site. Thus, the original praxis initiated during this research offers the field of architecture accessible ways of using and attending to the whole body-self's movement to trace, embody, and thus feel and remember, the surrounding qualities of real and imagined place. The praxis of Place Trace brings the designer's body-self into a closer dynamic body-place relationship with-in the site and as-if-in the design.

GLOSSARY OF TERMS

Animate site: The term animate site refers to the site or location of a future building wholistically, incorporating all its characteristics and components, both in-animate and animate, static and dynamic.

As-if: The hyphenated combination of **as** and **if** (as-if) is used when referring to the intersubjective experience of being or moving ‘as if’ an aspect of the site or design; tracing or re-enacting its qualities to embody and thus sense/perceive them (see Chapter 4, Section 4.2).

As-in: The hyphenated combination of **as** and **in** (as-in) is used when referring to the subjective enactment of moving ‘**as in**’ the site, enacting physical movement of future inhabitants in the site and/or design (see Chapter 4, Section 4.2).

As-if-in: This term situates the designer in the future space of the design. The hyphenated combination of **as** and **if** and **in** (as-if-in) is used when referring to movement which incorporates both intersubjective readings/tracings **as-if** site or design with the movement of potential future inhabitants **as-in** the site or imagined design (see Chapter 4, Section 4.2).

Attention and awareness: Both attention and awareness of body-self and place supported the movement practices used during the design trials of Phase 2. The use of these terms was somewhat like De Spain’s definition:

Attention is an intentional focus on a specific thing, or closely observing the relationships and interaction of more than one thing ... Awareness is a state of being open to stimuli, of being receptive to what comes your way (De Spain, 2014: 165-166).

However, as illustrated in sections 4.4.3, 5.3, 7.2, 7.3 and 7.4, during the design trials I used the word awareness to describe a background, open and semi-attentive awareness to both (i) sensation throughout my moving body-self, as well (ii) to opportunities and perceptions relating to key thematic prompts such as relational space, rhythm and density and whole-body engagement while I deliberately attended to the design problem in the foreground.

Attunement: In this study, embodied 'attunement' is understood as a state of dynamic alignment to one's animate environment, but also as a process of sensitisation, of becoming aware of, or akin to, an aspect of existence or place by, for example, moving with-in it or as-if-in it.

Body and body-self: The body is defined as a holistic, non-Cartesian body-self after Sheets-Johnstone (2011) and Fraleigh (1996):

Our body is our very basis of knowing and is already a mind. Applying pressure in this way, our understanding might swell and enlarge commensurate with the marvel that is the dynamic body (Robinson, 2021: 8).

This study focusses specifically on those aspects of embodied or bodily experience that involve physical movement within the world.

Closeness: A sense of closeness refers to body-place closeness in time, space, and material; but also to the closeness of emotional identification, to a sense of the aspects of place described in movement mattering to the body-self (see Chapter 7).

Density and felt-density: In this study, the density or felt-density of experience is used to refer to the perceived expansion or contraction of physical body-place encounter with-in a place. This term is used in relation to temporal, spatial and material body-place encounters (the perceived closeness or farness, immediacy or continuity in space and time/space-time); and the solidity, fluidity, or diffuseness of material body-place encounter.

Density-rhythm: A sequential pattern (rhythm) of body-place encounter that incorporates experiential qualities of both rhythm and density (its own density-rhythm) as experienced subjectively through the lived-body (Fraleigh, 1996).

Environmental perception: In this study the term environmental perception is used to describe the body-self's somatic and sensory perception of its surroundings.

Feelings: The words 'feeling' and 'felt' are used in this study to describe affective perceptions that have their origin in the sensation or experience of movement.

Immediacy: A sense of immediacy in body-place encounter is understood here to describe a sense of the body-place encounter being close and immediate in space (right here), and concurrently close and immediate in time (right now).

Interdisciplinary research: In this study research is defined as interdisciplinary if it 'operates between and at the edge of [practitioner's] discipline[s]' and in doing so question the ways in which they usually work' (Rendell, 2013: 126). This research has interdisciplinary elements informed by practices from architecture and dance. However, as defined below and in chapter 1, the research is probably more transdisciplinary than interdisciplinary.

Permeability: In this study, the words permeable and permeability refer to soft and porous boundaries between the material body and its surroundings allowing mutual absorption. **Life-design permeability** refers to a soft and porous boundary, with cross-over and mutual influence between the activities and thought processes of design and the activities and thought processes of the rest of life.

Place: The word **place** is used variously across disciplines such as Architecture, Environmental Psychology and Geography. In the context of this study, the word **place** is defined as the **situation** or **setting** within which a body-self is moving (or imagines itself to be moving). This definition incorporates the concept of **placement** or **placed-ness** that includes a 'participatory quality' (Rodaway, 1994: 54) as 'a site...where an activity 'is located' or 'a setting' for 'events' (Agnew, 2011: 23). Importantly, the type of place referred to in this study changes from Phase 1 to Phase 2. In Phase 1 place refers to the proprioceptive movement-place associations evoked during movement as mental imagery of 'places'. In Phase 2, place refers to real places that I move within such as the physical surroundings or site of a building, and to the imagined future place that is an architectural design.

Place Trace: This PhD research has developed a way of embodying site and architectural experience through a movement praxis which is called *Place Trace*. *Place Trace* provides a way of using movement to communicate with oneself during design both with-in the site and as-if-in the future building; affectively tracing the steps and postural movement of future inhabitants and using the moving body-self to trace the qualities of real and imagined place. During movement the qualities of place are understood to be traced upon my physical body-self, as embodied memory. This praxis is also conceived of as an original type of para-communication,

in that it involves using movement to enhance and augment my embodied communication with self during architectural design when exploring the qualities of either the site or the imagined design. Like non-verbal communication, colloquially known as body language (Argyle, 1988; Knapp and Hall, 2013), the movement of *Place Trace* is similar to a paralanguage as it augments rather than replaces conventional ways of communicating with oneself during design, such as drawing, modelling, talking, writing and thinking (Ganshirt, 2007).

Praxis: In this study the word praxis describes an architectural practice that incorporates both actions and ways of thinking during architectural design. Praxis is thus ‘theory imbricated within practice’, or ‘intelligent practice or material thinking’ (Nelson, 2013: 5). In this research, the ideas underpinning the praxis are not understood to constitute a theory, as I have not sought to prove or justify them as such, but rather as an approach, a way of thinking about embodied experience of place that I have found to be helpful during design. Both the actions and thought constituting the praxis are supported by beliefs, values and the research of others that are discussed further in this document.

Rhythm: In this study the word rhythm is used to describe the shifting qualities and patterns of change in a place, experienced by the designer or future inhabitant through time. Like density, rhythms can be ‘read’ with any of the senses and can relate to many aspects of place experience including a place’s temporal, spatial and material properties (see also Section 6.2).

Transdisciplinary research: In this study, research is defined as transdisciplinary if it includes movement beyond ‘combinations of existing disciplinary approaches to generate new topic-based domains’, new hypotheses for research’ and ‘integrative theoretical frameworks for analysis of particular problems’ (Klein, 2006: 77). This document will argue that this PhD research works with ideas and practices that draw on a range of fields (including but not limited to architecture and dance) and that the praxis and ideas developed during this PhD can likewise support a diverse range of disciplines (see Chapter 8).

With-in: The hyphenated combination of **with** and **in** (with-in) is used to emphasize the relational experience of being physically **with-in** the site with heightened awareness of the site as a living place as opposed to a blank canvas, a place that I am both physically **in** as well as in relationship or in sync **with** (see Section 4:2).

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Appendix 1: Example of Quantitative Confirmation check

Figure 82 illustrates how a quantitative check across events from all spatial typologies (above, flat, concave, path like etc.) confirmed the finding that associated the movement of **my torso** with the imagined shape of **solid** bounding forms. The same type of confirmation check was applied to the movement of different parts of my body (with my torso) before confirming that the connection between torso and solid boundaries was clearly the strongest connection.

FLAT WIDE LANDSCAPE							
Association between shaped position of <u>solid</u> bounds of space and movement of <u>torso</u> :							
Overall number of relevant images	Images in which the orientation of torso relates to the imagined solid bounding form.	Images in which the locomotion of torso relates to the imagined solid bounding form.	Exceptions: orientation of torso	Exceptions: locomotion of torso	Inconclusive orientation of torso	Inconclusive locomotion of torso	
Count/19	18	17	1	2	0	1	
%	95%	89%	5%	10%	0%	5%	
HIGH ABOVE LANDSCAPE (both grounded and in air)							
Association between shaped position of <u>solid</u> bounds of space and movement of <u>torso</u> :							
Track number	Orientation of torso	Locomotion of torso	Exceptions: orientation of torso	Exceptions: locomotion of torso	Inconclusive orientation of torso	Inconclusive locomotion of torso	
Count/16	16	16	0	0	0	0	
%	100%	100%	0	0	0%	0	
SHAPED PATH OR ROUTE - bounds flanking route							
Association between shaped position of <u>solid</u> bounds of space and movement of <u>torso</u> :							
Track no	Orientation of torso	Locomotion of torso	Exceptions: orientation of torso	Exceptions: locomotion of torso	Inconclusive orientation of torso	Inconclusive locomotion of torso	
Count/21	100%	100%		%	%	%	
CONCAVE OR SURROUNDING BOUNDS - sense of enclosure- (2 of double rhythms echo double spaces							
Association between shaped position of <u>solid</u> bounds of space and movement of <u>torso</u> :							
	Orientation of torso	Locomotion of torso	Exceptions: orientation of torso	Exceptions: locomotion of torso	Inconclusive orientation of torso	Inconclusive locomotion of torso	
/17 & 2	17&2	17&2					
	100%	100%	%+	%+	%		

AMBIGUOUS INTERIOR SPACE: CLEAR AWARENESS OF BOTH A BOUNDED SPACE AND A SPACE BEYOND						
	Association between shaped position of <u>solid</u> bounds of space and movement of <u>torso</u> :					
	Orientation of torso	Locomotion of torso	Exceptions: orientation of torso	Exceptions: locomotion of torso	Inconclusive orientation of torso	Inconclusive locomotion of torso
7	6/7	6/7			1/7	1/7

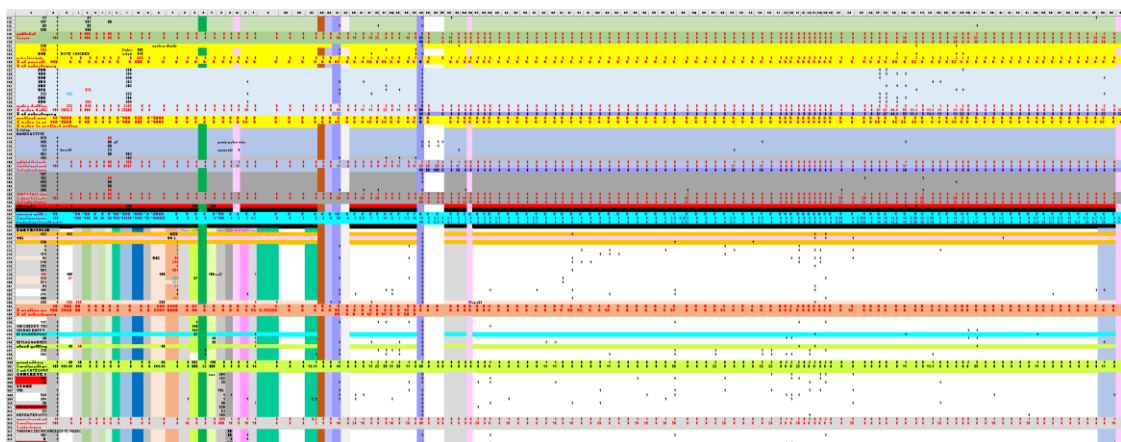
Figure 82: Table showing occurrence - body parts path echoing shape of solid bounds

Appendix 2: Excel excerpts of movement place 'mapping' for materials, colour and light

Figure 83 below is a scaled down screenshot of material mapping in excel. Horizontal colour bands represent events that have been grouped by their dominant material focus. Each event has its own row along which a numeric '1' is entered in the column that represents each movement quality describing that event. As outlined in Chapter 2, movement descriptors include:

- Sensations
- Emphasized body-parts
- Direction of movement
- Shaped path of movement
- Orientation of body
- Verbs used to describe movement (for example kick, splash, slide, float).

These movement descriptors and related categories emerged from the original journal words and images used to describe the movement.



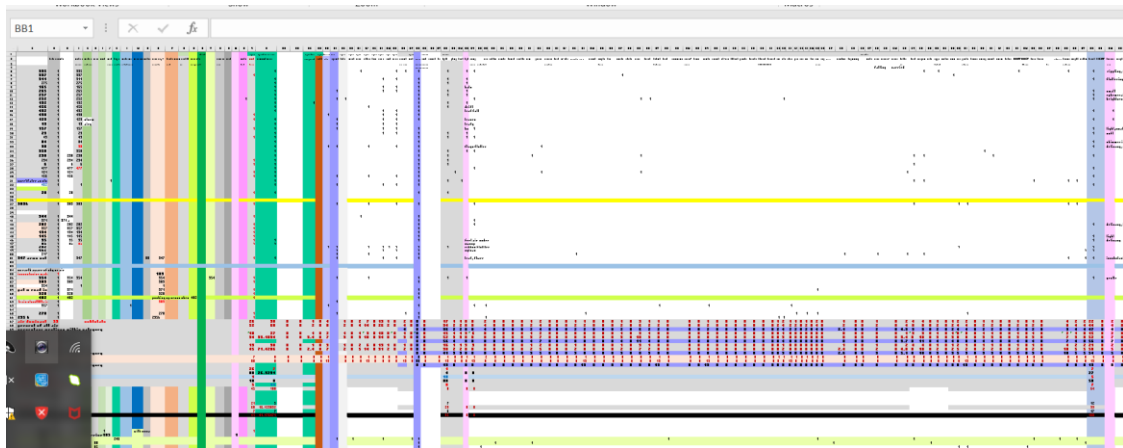


Figure 83: Screenshots of Phase 1 mapping-movement associations with material focus (above) and colour and light (below).

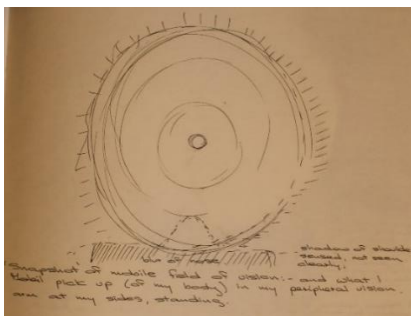
Figure 84 is a screen capture of types of spatial movement descriptors commonly evident in the event records. Each event was mapped to all relevant movement descriptors, such as the size/scale of the movement, the path of movement, the type of body orientation etc. when the mental place image occurred. For example, an event where movement was narrow or closing and rotational would have a 1 added under each of the relevant columns. Please note that the full list of the descriptors is not included in Figure 84 as some columns are obscured/hidden.

wide	narrow	size	path				path of movement	path of movement	path of movement	
wide/openin	narrow/closing	SMALL	CURVED PATH	curved path	sagital	ROTATION	SIDE TO SIDE	BACK & FORWARD	DIAGONAL	
ent						path of movement			orien:orientation	+
multiti direct	inwards	uni directional	INDETERMINATE PAT	INDETERI	SHARP EDGE	soft edge	up	downwrds	VERTICAL	assyr HORIZONTAL EN HORIZ

Figure 84: Spatial descriptors in Excel mapping

Appendix 3: Study of peripheral vision (Phase 1)

The images and transcribed words below are journal excerpts from a study of what was discernible in my peripheral vision during movement (see figures 85 a-e):



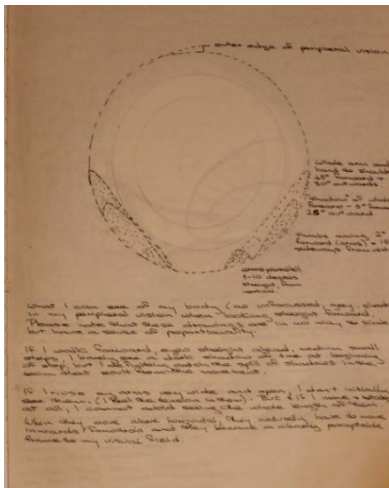
Event 239: A snapshot of mobile field of vision - and what I pick up of my body in my peripheral vision arms at my sides, standing:

- blur of nose
- shadow of shoulders sensed but not seen clearly.

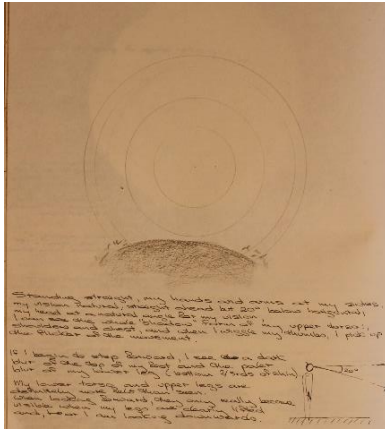


If I stand looking straight ahead (my arms at my sides and without moving my focus) trying to see my body, what I see is as follows:

- A vague translucent flesh-toned blur that intrudes into my field of vision (my nose, I imagine).
- A brown, flesh-toned frame of my vision that I imagine extends out and backwards. See diagram for my sense of it, like a round window in a curved room. The edges of this are vague.
- A weighted visual sense of a dark-grey mass just outside and below my field of vision that is my shoulders, this extends between a half and two thirds of the width of the field.
- Flickering 'worms' pale grey, that are hairs and eyelash trails.



I have noticed that the world under my eyelids is dark brown. What I can see of my body (as unfocused grey shadow in my peripheral vision) when looking straight and forward. These drawings are not to scale but are proportional. If I walk forward, using medium small steps, eyes straight ahead, I barely see a dark shadow of toe at the beginning of a step. But I catch the spill of shadows in the room that results from the movement. If I raise my arms very high and open, I don't initially see them (I feel the tension in them). But if I move or rotate at all, I cannot help seeing the whole length of them. When they move above the horizontal, they naturally tend to move inwards, forwards; and they become a clearly perceptible frame in my visual field.



4. Standing straight, my hands and arms at my sides (my vision natural, straight ahead but 20 degrees below horizontal, my head at a natural angle for my vision), I can see the whole shadow form of my upper torso shoulders and chest. When I wriggle my thumbs, I pick up the flicker of the movement. If I begin to move forward, I see a dark blur of the top of my foot and the paler blur of my lower leg (bottom 2/3rds of shin). My lower torso and upper legs are more felt than seen. When looking forward they only really become visible when my legs are lifted and/or when I am looking downwards.



5. When I dance, what I see is a juxtaposition of two shifting views. In the nearer scene, the shifting girdle of my shoulders, the cone like sweep of arm and forearm. The rapid trailing line, rhythmic like a ball at the end of a line or pendulum left behind the movement of my hands. The simpler, more rectilinear, appearance and disappearance of foot and sometimes knee or leg. When I leap or twist these curve too. When they come close to my face, the shapes of my hands are visible.

Figure 85: a-e: Study of peripheral view of body in motion.

Appendix 4: Tables summarising suddenness and contraction of space

The tables in Figure 86 below illustrate how the imagination of open types of space (such as wide, flat imagined landscapes, or situations imagined above the landscape), were evoked during calm steady rhythms or stillness. In contrast images of concave bounded spaces or high narrow spaces were more typically evoked during movement with sudden sharp changes and faster movement.

WIDE FLAT LANDSCAPE									
Number of events in landscape category	Still	Still with repetitive small rocking/jiggle no relocation	Torso still (hands gestural)	Even, calm rhythm/no surprises or sudden changes	Sustained, smooth movement	Summarising category: even calm rhythm/no surprises	Exception	Unknown pace or rhythm	Additional descriptor
Count /18	8	5	2	2	2	17	1		
%	44 %	27%	11%	11%	11%	94%	5.5%		
HIGH ABOVE LANDSCAPE (BOTH GROUNDED AND IN AIR)									
Number of events in landscape category	Still	Slow movement			Smooth, sustained rhythm & path	Summarising category: even smooth rhythm/no surprises	Exception	Unknown pace or rhythm	Additional descriptor-expansive
Count /16		6			7	10	6	1	Pace unknown
		38%			44%	63%	38%		
SHAPED PATH OR ROUTE- BOUNDS FLANKING ROUTE									
	Connection between narrow highness of boundaries and tempo (sharpness or suddenness)								Additional descriptor expansive
Number of events in landscape category		Speed		Sudden change	Sharpness/Suddenness of rhythm	Pace, sharpness & sudden change	Exception	Unknown	Narrowness of body's movement
Count /21		17.5		2	6	17.5	2		
		83%		5.6%	29%	83%	5.6%		58%
CONCAVE OR SURROUNDING BOUNDS SENSE OF ENCLOSURE									
Number of events in landscape category	Connection between scale and degree of dense enclosure/ bounds and tempo (sharpness or suddenness)								
/17&2		16.5	1+	5	13+		2		
		97%	6%+	30%+	76%				

Figure 86: Table illustrating association between suddenness and contraction/density of available space time

Appendix 5: Mapping/describing felt density using word clouds.

<p>Flight rising clear float suspended disembodied/insubstantial</p> <p>delicacy/lightness smoothness/softness loose/free/chaotic extension</p> <p>expansion/openness <i>(Sensations in events with air/sky dominant and a weak imagined awareness or connection to earth)</i></p>	<p>SHAPE AND SCALE: -</p> <p>Wide/opening narrow /closing small</p> <p>PATH: - curved rotating side-side backward- forward up down diagonal multi- directional uni-directional indeterminate</p> <p>vertical emphasis horizontal</p> <p>emphasis</p> <p>SHAPE OF PATH'S EDGE: - indeterminate sharp soft</p> <p>ORIENTATION OF BODY: vertical horizontal <i>(Spatial characteristics of movement)</i></p>
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Figure 87: Word cloud illustrating movement qualities when imagining airy scenes

In the preparatory periods of the design trials of Phase2 I wanted to understand and test the associations of place-densities in movement. To facilitate this, I mapped the movement descriptors collated in excel into word clouds for each type of material density, as in (Figures 87 and 88). Percentage occurrence of movement qualities or terms associated with each density were represented by font sizes. These word clouds are also used in the *Density Booklet* that uses sketch book records from Phase 1 to illustrate felt material densities. When entering *all* movement descriptors for events into excel, I found that movement was described in the following terms in the journals:

- **Sensations** such as delicacy
- **Scale and shape** such as becoming or feeling wide or tall (somewhat like shape in LMA (Laban Movement Analysis).
- **Spatial direction of path** such as curved or side to side
- **Felt shape of the path's edge** such as indeterminate or sharp or soft
- **Orientation of body** such as vertical or horizontal
- **Verbs** describing the movement such as spread, revolve or swing
- **Notable body parts** engaged in movement
- **Tempo of movement**
- **Visual focus** such as gazing (indeterminate), upwards or downwards.

<p>stand kneel rocking flutter revolve <i>(rotate- swirl –spin/whirl)</i> step gesture reach lift push-up stretch(ed)/spread swing swoop/sweeping glide float <i>(Actions described concurrent with scenes where air/sky is dominant)</i></p>	<p>Head (back) upper-trunk arms legs balls-of-feet knees wrists active- hands palms torso skirt <i>(Notable engaged body parts concurrent with scenes where air/sky is dominant)</i></p>
<p>fast rhythmic slow still <i>(Tempo of movement concurrent with scenes where air/sky is dominant)</i></p>	<p>eyes-gazing eyes-looking- down eyes- looking- <i>(Visual focus concurrent with scenes where air/sky is dominant)</i> up</p>

Figure 88: Further examples of word clouds representing movement when imagining airy scenes

The categories of movement descriptor bore some similarity to those included in Laban Movement Analysis. Laban Movement Notation includes descriptors for direction, spatial level, timing, and body part involved (Fernandes, et al. 2016). For example, Laban Movement Analysis includes the categories of Body, Effort, Shape and Space (ibid), with Space including types of shape or volume and directional movement within three planes (see Section 5.3.1). Laban’s Effort properties included qualities of weight, space, time and flow) would help me to conceptualise the idea of felt density (see Chapter 6). These similarities influenced the literature review at the start of Phase 2 (see Chapter 4).

Notably, unlike LMA and Laban Notation, neither the origins of Phase 1 descriptors nor the word clouds constituted full movement descriptors or accurate instructions. The categories and movement qualities mapped into excel included only those words and movement descriptions that seemed notable enough to record in my journals in the moments after a mental place-image appeared. The word clouds acted as evocative rather than precise guides. They combined original words from the journals to describe impressions (such as delicate or journey) and actions (such as flutter) to communicate the associated qualities of a broad grouping of physical experiences (such as airiness). They also included the type of information that it was possible to categorise a year later when reviewing these journals such as the body part involved, or the direction of the path of movement. Importantly, categorisation was

directed by the emphasis across the events themselves rather than by outside categorisation systems like LMA. Resultantly, unexpected categories such as visual focus and the quality of edges could emerge to enrich the study.

Appendix 6: Exceptions and less conclusive findings of Phase 1

6.a. Socialness of scenes as an exception

During Phase 1 mental imagery containing groups of people could be associated with social venues and milieus (sometimes associated with genres of music) and the characteristics of accompanying surroundings. Moreover, people and other animated agents within the scenes could be strongly influential. The imagined spatial relationships with people seemed as important to my moving and imagining body as the inanimate bounds of the imagined places. The presence of dynamic agents tended to widen the spaces imagined (for example bounded paths) or blur the edges of imagined interiors. Relatedly, scenes with people sometimes acted as an exception to the findings of Phase 1.

6.b. Notes on Tendencies

Chapter 3 described the main findings of Phase 1. However, this study also identified (i) some interesting experiential place associations that could not be directly connected to movement, and (ii) some interesting movement-place tendencies that did not apply to enough events to be included with the provisional findings.

The following tendencies will be outlined in this section: -

- an imaginative awareness of space beyond confines;
- feelings associated with the direction and height of enclosure;
- an association between light and upwards opening movement.

As highlighted in Appendix 2, a detailed mapping of the main material applications, colours and light qualities present in the imagery is available to me for further trial and investigation at a later date. Notes on the interrelationships identified between materials, colour and light are also included.

6.c. Emotion, direction of enclosure and awareness of space beyond imagined confines

The emotion-place patterns discussed here have not been connected to qualities of movement. However, they are architecturally interesting and may prompt further movement explorations. During analysis of the shape of bounded spaces, I noticed that approximately half of the images referencing interior spaces were experienced as **overlapping or alternating images** (ambiguous

spaces). These were imagined, simultaneously, as both an interior and an exterior scene (beyond the enclosure). Curiosity about this phenomenon led to a cross check of all bounded spaces. With one exception, all scenes referenced either an opening in the bounding form or a double-image of inside and beyond. Moreover, scenes without a clear view out tended to be characterised by difficulty of some kind. The emotional atmosphere also seemed to relate to the direction of the enclosing forms. An investigation of the emotional affinities of differing shapes and directions of imagined enclosure revealed the following tendencies (see Figure 89):

- (i) All scenes with positive feelings are open to the sky. Conversely, no scenes that feel positive are enclosed from above. Also, there are more negative scenes enclosed from above, than open to, the sky.
- (ii) Scenes with medium or shallow enclosure tend to feel more positive than negative. Conversely, scenes with steep, high enclosures tend to feel more negative than positive.
- (iii) Scenes which are grounded are neutral in tendency and scenes in which the body is imagined as suspended, or boundless, have a positive tendency.

It is important to note that I have a personal tendency towards claustrophobic rather than agoraphobic feelings.

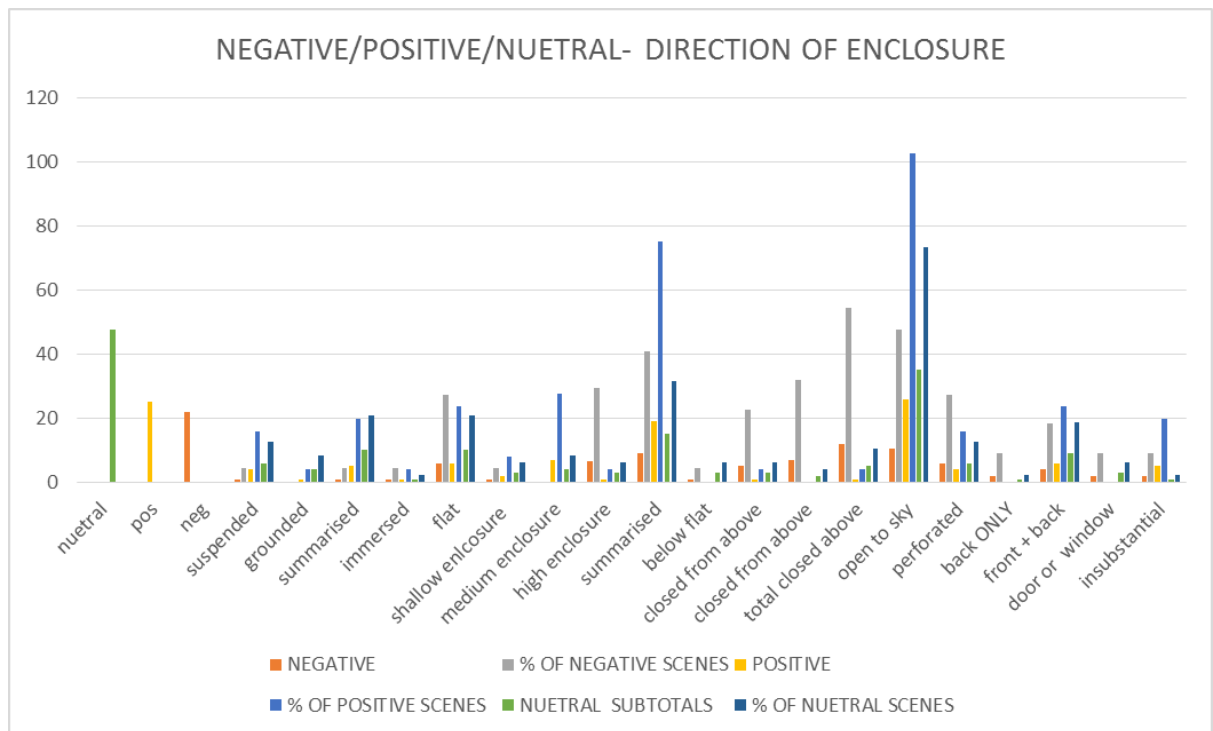


Figure 89: Graph of percentage correlation between emotional tone to direction of enclosure.

6.d. Opening up the body towards brightness.

A possible relationship was suggested between an opening torso (oriented forward or upwards) and the brightness of the scene. Scenes during which the body was moving from side-to-side or rotating also tended to be bright. Conversely, a narrowing stance (and downward movements) were more often associated with darker scenes. Opening, upwards, rotational and lateral movements of the torso all tended to open the front of the body, bringing the head and eyes upwards (see Figure 90). Arguably, most sources of light are above rather than below the body, perhaps accounting for both physical memories of light above the body and a like awareness of surrounding light levels during the movement events.

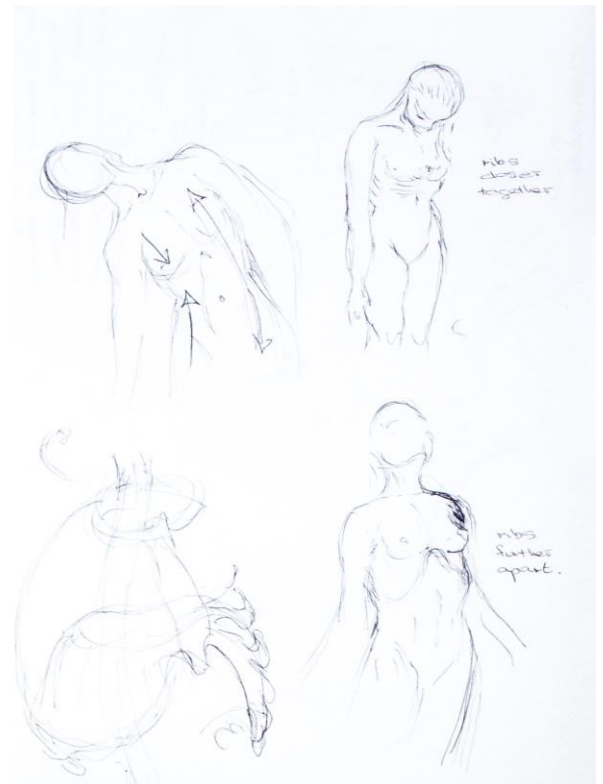


Figure 90: Movements that open upwards or close-downwards (drawings adapted from Calais- Germain (1993))

The strongest contrasting feelings recorded during scenes described as bright or dark are as follows:

- Bright scenes are described as positive, young, playful, delicate and open/expanding.
- Dark scenes are described as contained, empty or barren and threatening.

When compared to the associations of airy, watery and solid scenes, some affinities appeared to exist between brightness and expanding airiness, and between darkness and solidness.

6.e. Notes on materials, colour and light

The strongest patterns found connecting colour to movement appeared to relate directly to the materials and objects that the colours represented, with clear representational relationships between specific colours and materials.

Investigations of colour and light accompanied the investigation of materials for the reasons described here. As referenced earlier, the imagined scenes featured settings which were constituted of materials such air, tarmac, water etc., with scenes sometimes including active agents such as machines, people, creatures, moving lights, etc. Within these scenes, the embodied meanings of colour related directly to the identity of the materials, active agents and

objects present. For example, green represented and was thus associated with the characteristics of foliage. However, the meanings of colour also referenced the nature, role, and quality of light within the scenes. The representational meanings of colour were almost constant within the scenes, as illustrated below. These material-colours darkened without light or as shown, changed when they become lit or reflective. The following 'symbolic' material-colour associations characterised the scenes:

- Spring grass and foliage was green.
- Autumn or ripe grass/grains were golden.
- Earth was brown.
- Sky was a mixture of blue, grey and white.
- Concrete and stone were grey through brown.
- Large metal machines were dark grey.
- Blades and sharp or polished metal surfaces were silver.
- Most condensed water was a mixture of blue, green and grey.

However, light and animate agents changed and extend the colour palette of the scenes. Some typical examples of moving coloured light included: -

- colours reflected on the surface of water or cloud (such as pinks, oranges, blues, golds and white),
- fast moving streaks of light in night-time city scenes (multi-coloured),
- voices imagined as moving lights in the sky and,
- luminous flashes of light in foggy or underwater scenes.

Colours also appeared as glimpses of clothing in crowded scenes or as insects and birds. The few glimpses of vivid colour (red, pink, purple, lime-green) in interior scenes appear as fabric or clothing, with the background colours remaining neutral.

As described, the occurrence of colour was complex. Colours related to all three types of aforementioned contents/agents (subject, active agents and setting). Typically, there were several colours present in each scene. Furthermore, colours were often referenced as mixtures, such as grey -white, blue-green etc. Analysis included all the notable and thus documented colours in a scene rather than their dominance. So, for example, a whole scene with an imagined grey-white cloud within it is analysed in relation to the *presence of whiteness* and the *presence of greyness*, rather than in terms of the dominance of whiteness. Dissimilarly, materials, light and form were analysed in relation to the scenes in which they presented the dominant material or spatial quality. Not surprisingly, there were no conclusive findings relating to colour, beyond those already identified in relation to materials. As the **predominant**

colours in a scene relate to the setting rather than its contents, and this is what I was studying, the colour associations found tended to echo those of the settings' materials. However, colour as light and reflection constituted '*dynamic setting*'. When represented as coloured lights in city scenes and reflected light in watery scenes, the imagined colour in scenes become both vibrant and mobile. This type of colour-movement relationship has not yet been explored in full. For these combined reasons these reasons, I understood my personal body-place meanings of colour to equate to those of the material and light-qualities that they represent.

6.f. Tendencies summarised

The following **tendencies** were identified:

- Scenes featuring shallow enclosure, open views of the sky and suspension above bounding formations tended towards positive associations. Scenes closed from above tended towards negative associations and scenes in which I was imagined upon the ground had a neutral overall tendency.
- There was a suggested association between *imagined brightness, positive feelings* and movement which *opened the torso upwards*. The converse was also suggested. There was a like tendency for brightness to be associated with airy scenes, darkness with solid scenes and water with half-light and mixed light conditions.
- Colours of the materials in settings were fairly constant, though modified by light, and were thus understood to adopt the body-place meanings of the associated materials and light.

Appendix 7: Past architectural experiences and motivations.

The matrix in Figure 91 was completed at the start of the Phase 2 -Pilot Design Trial to better understand my pre-existing architectural practices in terms of the representational techniques that had best helped me to consider embodied inhabitant experience during past architectural design projects. I also included formative themes and concerns that had influenced my design approach. This process provided me with some idea of where there might be a potential connection between new movement and existing architectural practices.

Useful activities and concerns from past architectural designs.	COUNT	COUNT	Activities connected to new practices of trails highlighted in buff.
	PRACTICE	OVERALL	
SUNPATH & WIND	7.5	10.5	
MODEL NR BEGINNING (OVERALL FORM)	4	9	
EARLY 3 D SKETCHES	8	13	
CIRCULATION/MOVEMENT DIAGRAMS	5	8	
ROUGH SCALED RELATIONSHIPS IN 'LOOSE' PLAN	3	5	
LOOSE DIAGRAM PLAN & SECTION	8	13	

STORYBOARD (usage during day, and also sequential experience through space.	4	4	Informed sequential approach in both design trials.
DETAILED LINE OF SIGHT STUDIES	2	4	Informed relational spatial practices during both design trials.
REVIT OR ARCHICAD TO DEVELOP (3D software)	4	4	Would be combined with large images and movement in main design trial.
CAD (computer aided design) DURING DESIGN	4	4	
CAD FOR SURVEY	8	8	
SKETCHING for views	3	3	
3D SOLAR STUDY	1	1	
3D DIGITAL IMAGES	3	3	
THEMATIC CONCERNS			
CONNECTION TO NATURE	8	13	
CONCEPT DEVELOPED IN CONVERSATION WITH FUTURE INHABITANTS	5	5	
CONCEPT FROM SITE OR EXISTING BUILDING	8	12	

Figure 91: Survey of own past design practice

Appendix 8: Additional notes on pilot study, rhythm and density, models and walking.

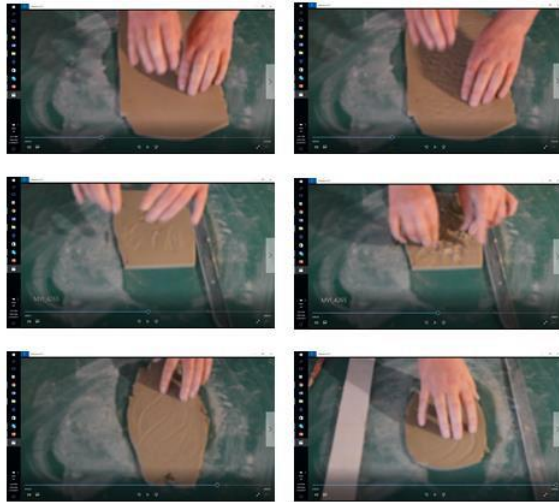
The pilot design trial followed Phase 1. With the purpose of better understanding influential experiences of rhythm and density from my past architectural and dance experience, I revisited prior dance experience of rhythm and tempo from Gabriel Roth's five rhythms (flowing, staccato, chaos, lyrical and still) (Roth, 1998) (see Figure 92), the differentiation between sudden and sustained movement from Laban movement analysis (Laban, 1948), and the experiences of modulation (continuous flow of movement) and point fix (abrupt stops and starts) from improvisation workshops with Steve Batts and Ursula Lauebli (Echo Echo Dance Theatre Company 1996-2010).



Figure 92: Revisiting Roth's Five Rhythms during pilot study

I reflected on my sketches from Phase 1, drawing associations between path, line and time from these sketches (see Section 3.4), also considering the experience of path, line and time in tracks, routes and musical scores. Although the experience was unplanned, it was possibly the related experience of tracing the lines of the site on a large projected photograph that was to prove to be one of the most fruitful experiences of this design trial (see Section 4.2; Figure 38; Section 4.4.1).





EXPLORATIONS OF RHYTHM AND TEMPO WHILST WORKING WITH CLAY (MAKING & FILMING).

Reflections:

Working with first soft and then slightly dryer clay, using the same impact and rhythmic hand movement drew attention to the impact of material densities on physical interaction and mark making.



Figure 93: Working with rhythm and density into clay

During the priming period leading up to the pilot design trial, I also revisited qualities of rhythm and density when moving freely and when modelling with clay (see Figure 93). Much of the experience of density during the pilot design trial was felt through my hands, rather than through my whole body. During the pilot design trial, I continued a pre-existing practice of model making using materials that had properties that were behaviorally analogous to those of the imagined building, originally influenced by an exercise that Richard West undertook with architectural students (West, 2001). In this design I worked with clay and willow twigs to echo the behaviors of the wattle and earth of the final garden seat. I wanted the seat to communicate the strong winds around the site, perceived in the movement of the wattle that echoed that of trees on site, whilst using the clay to bring users close to the earth and to provide shelter and support (see Figure 94). However, the experience of my hands and the clay exchanging moisture and dust provided one of the first indications that awareness of densities would highlight the connections, exchanges and relationships between my own moving body and the matter and elements in my surroundings.



Figure 94: Working with analogue materials to feel the densities of site and design

Similarly, during Phase 1 and the pilot design trial I became aware of the dance of air in relationship to the movement of my body and of the meeting of body and solid floor. Inside the studio for Phase 1 and the pilot study, shifts in body-place density relationships were largely driven by my own movement with limited changes in the air around me or the floor beneath my feet. During the pilot design trial, the interplay and exchange of dust and moisture between my hands and the clay of the models began to highlight the material densities of place as dynamic, in flux and relational. As I moved out of the studio, during the walking experiences following the design trial, shifts in the densities surrounding me became more intense, rich and demanding, and readily perceptible to all my senses. There was constant flux in the material constitution, movement and interrelationships between the surrounding solids, gasses, fluids,

and organic matter in contact with my walking or standing perceiving body. These shifting densities highlighted connection and the rhythms of density exchange. This experience also strengthened motivation to use regular walks to practice attending to the shifting rhythm and densities in the world outside the studio, and to feel and consider these shifting body-place exchanges with my whole body.

Appendix 9: Additional influences of presentations and early studies

The process of writing about the study for presentation and review by peers helped me both to consolidate my emergent understanding of the research, but also to acknowledge related influences and ideas. These presentations were as follows:

- Paper at the symposium Spaces of Attunement Dances of Encounter (2015);
- Pilot study exhibit as part of Design Research Exhibition (University of West of England, 2017).
- Presentation to the Environment and Movement Research Group (2020);
- Master classes with students of the MA in Creative Practice as Research (Atlantic Technical University)
- Formal PhD reviews at UWE and BCU.

Experience and practices during both phases of the study were further influenced by several live studies that I undertook before, alongside and between the two research phases, with the purpose of deepening my physical understanding of body, and body-place relationships. The influence of these supporting studies is recognisable in hindsight and is referenced in discussion of both methods and findings. These studies included the following:

- Drawn studies of species watched in context (2014-2015), these studies highlighted anatomical differences between these species and humans highlighting aspects of our anatomy that influence our connection to place. They also highlighted common trans-species issues such as the search for prospect and refuge (see examples in Figures 95 and 96).
- I copied anatomical studies from the Anatomy of Movement (Calais Germain, 1993) to understand my own physiology and movement function (2014-2015). See Figure 97.
- During all stages of the research, I kept reflective records (sketched, written, filmic, modelled or aural) of any new of movement-place experience that I noticed during both research and everyday activity.

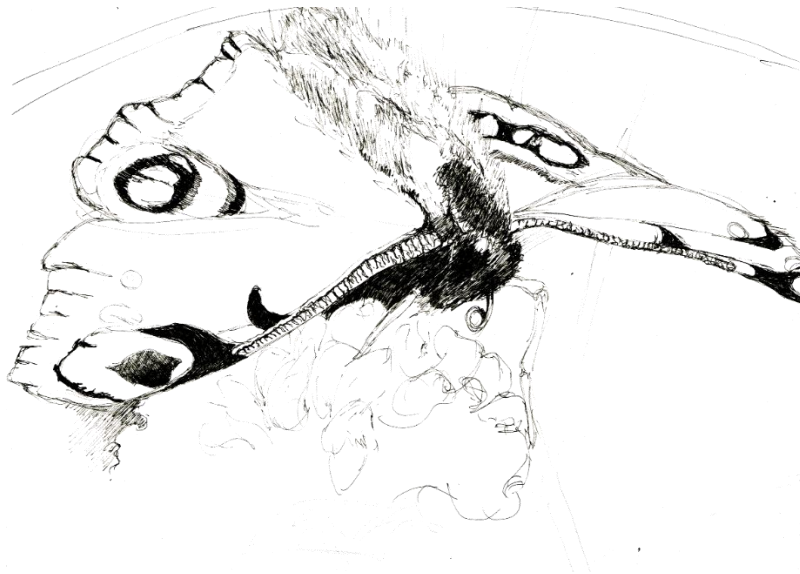
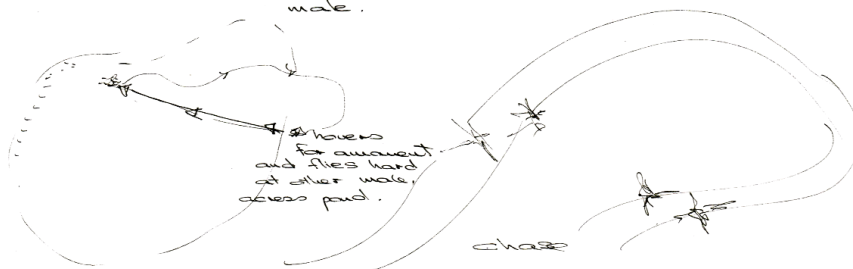


Figure 95: Journal excerpt from species studies - butterfly (11/08/14)

horizontal:
Dive bombing:

Male circles after attack to a distance → then flies fast, directly at other male.



Other interesting points:

The swallows quietened when the heron was circling - almost noticed the heron because of the sudden quietness, whereas life continued as usual in the pond. (insects).

Swallow noise nearby didn't seem to bother the dragonflies - business as usual.

But when a swallow actually flew over, the 'current' male patroller - took a quick route away into the reeds.

Although, I probably know what he looks for, the dragonflies don't appear to be reacting at all.

It's all about sex, it seems. But one did appear to shit (or some white stuff) came out during flight.

Figure 96: Journal entry species studies-dragonflies (2014-2015)

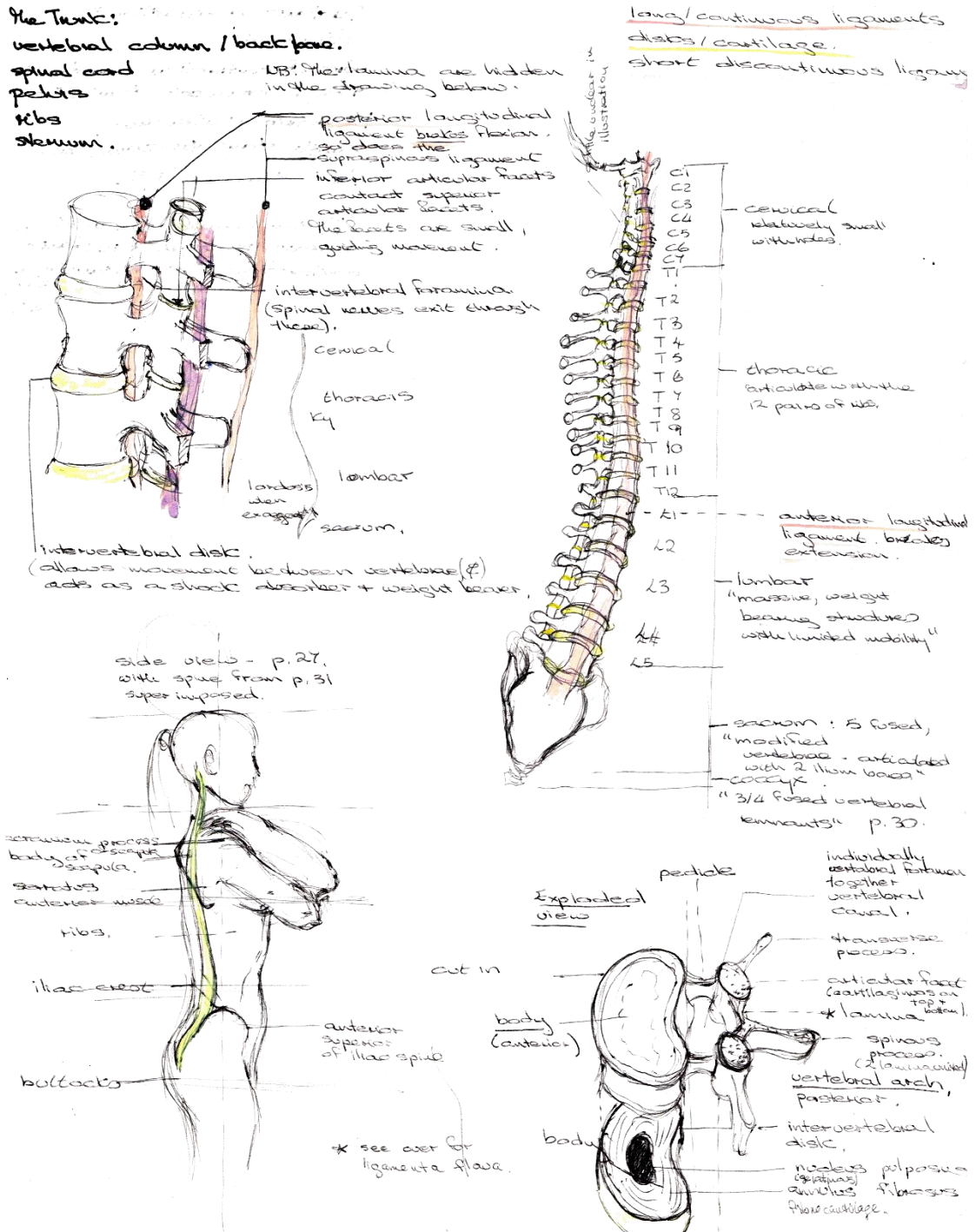


Figure 97: Excerpt from anatomical sketches adapted from Calais-Germain (1993).

Appendix 10: Additional notes on pre-conscious gesture and talking to think

Attention to gesture during this design research process also highlighted the solutions that were sometimes found by my hands before conscious verbal or visual cognition. For example, a rough-edged cupping gesture onsite suggested a pocketed approach to development along the

flank of the entrance view. In studio, the quick splayed motion of my hands (Figure 98) suggested a solution to the roof configuration. During these and other events, gestural thought acted like an instant three-dimensional conceptual diagram. In addition, my hands in motion expressed the visceral and dynamic qualities of progression through the architectural experience. For example, the cupping motion on site moved from smooth to rough in suggesting a move from smoothly crafted walls to wilder seeming boulders and planting. The wave like motion under the splayed hands suggesting the experience when walking under the progressively tipping roof. Talking worked naturally alongside gesture, perhaps as theorised by Eleanor Gibson (1969) and Gibson and Pick (2000) because words and spatial enactments work together when naming, conceptualising, and understanding what we perceive in the environment. During this process talking also emerged as a previously unanticipated activity that developed for pragmatic reasons. Initially, I used it for research purposes as it provided an easy way of providing reflective commentary that could match movement with concurrent thought and intention, so that I would be able to sort through the movement that matched design ideas later. Also, moving and talking in front of the camera normalised gestural action, easing self-consciousness when in sight of people surrounding the site. However, the verbal reflections (and written notes that followed) also helped me to name and thus own what I was experiencing in movement.



Figure 98: Gesture finding a played roof solution - re-enacted for film just after event (4/01/20)

Appendix 11: Reflections regarding rhythm, density and scale after Body Landscape week

The following personal experiences during a week-long *Body Landscape* workshop (van de Ven, 2018) illustrate how one's own rhythms and movement can be used as a way of understanding the diverse scales of surrounding life. During the workshop, Frank van de Ven instructed participants to each find a 'dictionary of movement' along a personal journey through the landscape. We were to watch movement in the landscape before recording it using writing and

drawing, and then recreating it using our bodies. The movement I watched ranged between the almost imperceptibly fast darting motion of a butterfly, perceived by its path rather than the intricacies of its individual movement and, in contrast, the slow and continuing path of tree roots pushing down through crevices in the rock (see Figure 99). Here, the evidence of the roots' past motion was visible along with implications of future movement. The pace, relative densities of rock, shale and root, and their trajectories combined to suggest further future movement. Concurrent attention to my own pace of motion as part of this layered, fast, and slow rhythm-scape heightened awareness of the multitude of concurrent rhythmic experiences surrounding my own rhythmic experience.



Figure 99: Tree root through time (Author 2018)

Lefebvre (2004) reflects upon the experience of reading environmental rhythms thus:

The rhythm-analyst will not be obliged to jump from the inside to the outside of observed bodies; he should come to listen to them as a whole and unify them by taking his own rhythms as a reference: For him, nothing is immobile. He hears the wind, the rain, storms; but if he considers a stone, a wall, a trunk, he understands their slowness, their interminable rhythm. (Lefebvre, 2004: 17).

Likewise, the walls along the coastal path in Figure 100 told a story of rhythmic functional human movement, in interaction with the stones of the place, with the footpath in Figure 101 describing a sensible human route worn away by feet through time.



Figure 100: Stone wall made and then grown into (Author 2018)



Figure 101: Foot worn path (Author 2018)

In all three examples, the past impact of movement was legible in the spatial and material qualities of the current place, with suggestions of future movement evident. Likewise, my own movement left its imprint as marks along the dirt path, and as flattened grass where I sat. Thus, continuity of time and of life was read in the marks left in place by movement, past and present. Likewise, as described by Vicky Hunter (2015):

The physical act of walking in the sand for example, is an act that through the creation of footprints in the sand, at once lays bare evidence of the body's past, present and future actions (Hunter, 2015: 36).

These readings of movement were accompanied by a temporal awareness of shared rhythms and densities in the interactions revealed that expanded beyond my own experience. In a similar respect, future expectation of change, movement and growth can be designed into the fabric of architecture. For example, the oak cladding of the Glucksmann gallery in Cork designed by O'Donnell and Tuomey, will change gradually becoming more attuned with the tree canopy surrounding it as lichens and weather alter the colours and textures of the oak cladding. Likewise, within *In praise of Shadows*, Tanikazi (2001) describes the beauty of patina in a teapot which shows the story of its interaction with both tea and hands over time. In these examples, a reading of movement within place, is accompanied by an awareness of relativity and difference in lived-time. Such awareness of, for example, the movement of a mountain, tree, human and butterfly in the immediate environs of a design, supports an awareness of the multiple scales of life already co-existing in the site. Furthermore, an awareness of the passage of time highlights the design as part of a continuum rather than as an isolated self-absorbed event. The patina on a teapot suggests time, it also suggests material exchange through use. The path along the coastal edge in Figure 15 suggests both a repeat rhythm and the passage of time. Both examples also suggest an exchange and a permeable material relationship through time. The patterns of these body-place encounters incorporate qualities of both rhythm and density (their own density rhythms). The following section describes the density-rhythms experienced and worked with in the design trials, both on-site and in the studio.

Appendix 12: Working with like material densities and analogues

During the main design trial, I worked with physical model making materials that behaved similarly to the scaled-up versions that would constitute the building. The finely sifted clay of the site behaved like future adobe, as did bought clay when I ran out the site clay. Muslin behaved like canvas and wood like wood. I also used the clay from the site as paint and like a chalk pastel. Figure 102 illustrates some of this process.



Figure102: Working with material analogues

Appendix 13: Helpful comparisons with Bartenieff Developmental Movement Patterns

Irmgard Bartenieff was a physiotherapist involved in developing Laban Movement Analysis (LMA), who used developmental movement patterns in her work with sufferers of poliomyelitis (Fernandes et al., 2015; Eddy, 2016). During the period leading up to the main design trial I found that movement using these developmental patterns helped me to understand both the oppositions within each finding, but also the affinities across them. The 6 developmental movement patterns of –

- Cellular breathing (in and out);
- Navel radiation (core-distal);
- Spinal (head-tail);
- Homologous (upper-lower);
- Homolateral (body-half) and
- Contralateral (crossed-sides)

build upon each other in the early months as a baby develops mobility (after Bartenieff in Fernandes et al., 2015). The first four patterns align with the movement properties implicated in my findings, in relation to the experience of density and gravity during movement. The experience of in-out and our head tail connection precedes that of up- down, which differentiates the upper and lower halves of the body, with sensations of expansion and contraction preceding the association of levity-gravity within the upper and lower halves of the body respectively. The findings stress upper-lower body-associations with airy or solid place images respectively.

Appendix 14: Further notes on ranking

Laban and Lamb (in Fernandes et al., 2015) observe that particular combinations of movement elements tend to emphasize particular experiential qualities. They also emphasize that not all aspects of movement qualities are highlighted in a movement. Movement might typically emphasize 2 or 3 qualities of space, tempo, weight and flow, but seldom all four. Typically, at least one quality would remain neutral in a movement-phrase (after Laban and Lamb in Fernandes et al., 2015). Similarly, an unremitting combination of all place qualities with strong affinities might not produce a liveable space. It might not, for example, be healthy to provide a space which is unrelentingly bright, expansive, lightweight, materially soft and diffuse; or conversely, dark, contained, heavy, close, materially hard and dense.

Appendix 15: Extra notes on movement, in response to senses and the rhythms of place

As suggested in Chapter 1, during the interplay between the senses and movement the senses can lead movement, and reciprocally movement can stimulate the senses. For example: 'When turning the camera around to face up the site... the **head and torso naturally tip...** when **gazing** at these different views' (journal excerpts on site 01/01/19).

Barbara Tversky (2019), argues that action unites and **makes sense of** our concerted senses:

Ultimately what unites the senses foremost is action. That is, the output-action-informs and integrates the input-sensation- through a feedback loop. Unifying the senses depends on acting: doing and seeing and feeling, sensing the feedback from the doing at the same time (Tversky, 2019: 16).

Perhaps this relationship between movement and the senses accounts for the ease felt when I deliberately re- interpret and enact sensory site stimuli in movement as in the following example:

I move to it. It is the sound and motion **heard** and **seen** that I want to follow: birds and trees. Also, in the dark, the twinkling pulse of car lights in the distance up on the mountain pass ...a **pulsing felt** most easily in my diaphragm and rib cage...The movement of the lower site, facing down and along with foliage in the wind is wave like ... swirls and eddies...I feel them in my larger body (ripple through quite randomly and then settle). 18/7/2019 (on site).

This journal excerpt describes deliberate movement responses to both dynamic and still site elements, an embodied tracing of the qualities of place that initiated a practice that is discussed further in Chapters 5 and 6, and Films 3,4 and 5. Thus, the study employs an integrated approach to the senses that naturally aligns with the way in which movement is experienced, also supporting an ecologically conscious approach to life and interaction on site. Furthermore, as argued in Chapter 1 this study proposes that a multisensory approach within movement increases a sense of engagement with that that is perceived (Auer, 2008; Pallasmaa, 2005; Merleau-Ponty, 1962), and when what is perceived is life, dispels an objectifying attitude to that life (Auer, 2008).

Furthermore, the designer's own movement within the site strengthens a sense of being part of a living place. Sandra Reeve (2011) calls being in movement in responsive interaction to surrounding movement an 'ecological body' state:

I describe an ecological body as a 'body-in-movement-in-a-changing- environment'. It is the emphasis on viewing the world through a lens of transition or flux, from movement and constant change, that distinguishes it in my mind from the 'environmental body',

which is situated in a specific location and is in change but is often articulated as if viewed through a static lens ... The ecological body is situated in movement itself and as a system dancing within systems, rather than as an isolated unit (Reeve, 2011: 48-49).

Thus, reading the qualities of place using all senses with a focus on reading surrounding movement, supported an awareness of the site as alive thus giving its inhabitants and dynamics voice during the design process.