SENSORY SPATIALITY

tangible and intangible dynamics in interior architectural design
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A project submitted in fulfilment of the requirements for the degree of Doctor of Philosophy

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March 2010
Declaration

I certify that except where due acknowledgement has been made, the work is that of the author alone; the work has not been submitted previously, in whole or in part, to qualify for any other academic award; the content of the thesis is the result of work which has been carried out since the official commencement date of the approved research program; any editorial work, paid or unpaid, carried out by a third party is acknowledged; and, ethics procedures and guidelines have been followed.

Gabriele Knueppel

Friday, 26 March 2010
Acknowledgements

Supervisors:   Associate Professor SueAnne Ware
               Associate Professor Suzie Attiwill

Copyediting:   Rob Sheehan

Proofreading:  Dr. Michael Fowler

Thank you:
Associate Professor SueAnne Ware, Associate Professor Suzie Attiwill, Dr. Michael Fowler, Professor Rob Watts, Associate Professor Andrea Mina, Roger Kemp, Dr. Lawrence Harvey, Dr. Hélène Frichot, Caroline Vains, Dr. Michael Trudgeon, Dave Kinder, Hanne Knuell, Horst Knuell, Stefan Knuell, Manfred Felgendreher, Doerte Felgendreher, Professor Ulrich Boehme, Professor Auwi Stuebbe, Rolf Doell, the Interior Design Program and School of Architecture and Design at RMIT University
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INTRODUCTION

Definitions of spatiality in interior architectural design are shifting. They are no longer merely limited to physical boundaries that can be quantitatively measured and visually represented through drawings, models and photographs. Instead, indeterminate conditions of movement and change, human occupation and multi-sensory qualities of spatial environments have become key areas of discourse in interior architecture, interior design and related fields. This has been evident in a range of publications, conferences and projects around these issues in recent years. In Toward a Definition of Interiority, Christine McCarthy provides a number of ways of framing interiority and interior in regards to these shifting territories:

Containment, confinement, enclosure, imprisonment, privacy, protection, security, shelter: These are words to which understandings of interiority adhere. Interiority is that abstract quality that enables the recognition and definition of an interior. It is a theoretical and immaterial set of coincidences and variables from which “interior” is made possible. It is not an absolute condition that depends on a restrictive architectural definition. Interiority is instead mobile and promiscuous. It is intimate with and contaminates every interior and every inside. It adheres to sensual possibilities (acoustic, haptic, olfactory, tactile, visual); conditions that are intimate with, but that defy, the specificity of particular interiors. [1]

A questioning of the interior and the senses was similarly presented at The Sensoria Festival of Design Education, hosted by the Interior Design Program at RMIT University in Melbourne 2004. The design festival aimed to inspire discourse in relation to the “contemporary fascination with the ‘sensuous intellect’”[2] through a range of presentations, exhibitions and events around the inner city. The definition of the term sensuous intellect was described ‘as existing in the gap between sensation and thought, visceral bodily reactions giving rise to perception.’[3] In the corresponding publication of essays, editor Ross McLeod notes that the ‘recent exciting work in spatial design interweaves ideas, materials, media and phenomena in ways that engage our senses both imaginatively and viscerally.’[4] For Helen Castle, the connection between the interior and sensation is also approached as a visceral encounter, though one capable of drawing out particular human sensibilities. In her foreword to Interior Atmospheres, she associates the sensory with the emotional (and Romantic) and understands it as separate from the rational intellect in the encounter of a spatial environment:

Misty, sculptural, tactile, theatrical and experiential, atmospheric interiors represent a seismic shift for architecture. They celebrate a wholly Romantic sensibility, in which the emotional response overshadows the rational line and the
sensory dominates over the intellect.... It beckons a new era in which the eye has lost some of its ground, and the joy of touch and feeling in a space has gained new value. [5]

Like Castle, Finnish architect Juhani Pallasmaa identifies a hegemony of vision in architectural design of the twentieth century and calls for an architecture that addresses ‘all the senses simultaneously.’ [6] As one of the most prominent advocates of a new integrated approach to sensory design, Pallasmaa, has argued for more consideration of the ‘crucial phenomenological dimensions of the human experience in architecture.’ [7] Mirko Zardini’s edited compilation, Sense of the City: An Alternate Approach to Urbanism also challenges a dominance of vision, this time in relation to urban environments. He presents essays on a range of different physical and ephemeral conditions in the post-modern city, such as sound, surface, thermal qualities, seasonal change, light and darkness. In Zardini’s opinion, the recent interest in the human bodily senses outside of architectural design has the potential to act as a catalyst for new approaches to designing within the built environment:

In recent years, the human and social sciences, from anthropology to geography, have undergone a “sensorial revolution” in which the “senses” constitute not so much a new field of study as a fundamental shift in the mode and media we employ to observe and define our own fields of study. [8]

Zardini uses Sense of the City then as a means to explore and interrogate new multi-sensory and multi-disciplinary design approaches within the urban environment in an effort to redefine the potential of public spaces to activate and innovate:

Is it possible to combine the different approaches to contemporary urbanism with a “sensorial urbanism,” capable of offering a broader understanding of urban settings, interested in describing the character and atmosphere of places, and aiming to contribute to a new definition of public space? [9]

Although not connected through any definitive manifesto on sensation, the Urban Interior (UI) research group in the School of Architecture and Design at RMIT in Melbourne is also concerned with the human occupation of public space in the urban context. [UI] consists of academic practitioners from interior, fashion, industrial, landscape and sound design. The group defines the word interior in its title ‘not as built fabric so much as a person’s relation to, and hence inhabitation of, the urban environment.’ [10] This focus on modes of occupation and inhabitation was also a theme explored at the recent conference Occupation: Negotiations with Constructed Space organised by the Interior Architecture program at the University of Brighton, UK, in July 2009. Numerous practitioners and researchers from a diverse series of disciplines focussed on how ‘buildings and places are used or occupied.’ [11]
These discussed discourses present a research framework for my own PhD investigations. The aspects of the theme bear upon relationships between interior architecture, sensation, modes of human occupation and the role of technology as a mediator for spatial encounters. The Melbourne-based trans-disciplinary network of design practitioners, Crowd Productions, for example, explores digital technologies and material innovations in their project works in order to augment connections between users and their environment:

New materials, industrial fabrication techniques and digital technologies promise a vibrant, dynamic architecture, with improved performance, both experiential and sustainable, responsive to input from users and surrounding networks; space crafted from information. [12]

Each of the briefly aforementioned precedents thus demonstrates the variety of possible ways of thinking about spatiality and its consequence for interior architecture and interior design. The key issue in all of these examples is an interest in connections between people and their spatiotemporal environment, which may be physical, sensory or mental. These relationships are never fixed and undergo continual change. Sound researcher and author Barry Blesser argues that 'Physical boundaries are only one means of delineating a space, and they are not always the most useful for describing social interactions.' [13] Multiple tangible and intangible qualities of an environment produce spatial conditions, which are capable of constructing or diminishing social relationships. According to Blesser, 'aural architecture is distinct from visual architecture, and each has the capacity to enhance or diminish social cohesion.' [14] Open plan offices, for example, encourage interaction and communication between employees by sustaining visual connections between people even over longer distances. To an extent, auditory connections are also desired in this environment. Workstations and screens may divide up a space, but the idea is not to separate people physically, visually and acoustically through floor-to-ceiling partitions. Naturally, the model of an open-plan office environment has certain unwanted implications, such as the unimpeded transmission of sound across the whole space. This means that every individual in the space is connected not only visually but also aurally in what Barry Truax calls an ‘acoustic community.’ [15] Truax introduced this term to describe ‘how sound, in all its forms and functions, defines the relationship of the individual, the community, and, ultimately, a culture, to the environment and those within it.’ [16]

In regard to visual, auditory and tactile qualities, the material selection as well as application has a crucial part in interior architectural design. Some materials, such as timber or plasterboard, for example, act as spatial and visual dividers, whereas clear glass segregates areas physically and aurally, but not visually. As a design tool the use of materials has strong consequences on the visual and the acoustic environment: 'Because visual and aural boundaries are independent
means of enclosing a space, our visual and aural experience of size, the space between boundaries, may not be consistent. For example, glass is an auditory partition but not a visual one, and black curtain is a visual partition, but not an aural one. It is therefore the responsibility of spatial designers to carefully consider such interdependencies between multi-sensory qualities and the way spaces are occupied.

This discussion sets up the following key questions in my PhD research:

- How are dynamic conditions of spatiality constructed through sensory, spatiotemporal and social interrelations in interior architectural design?
- How are human occupation and social interaction shaped by sensory and spatiotemporal design?

I undertook my investigations through a series of project works, in conjunction with readings, conversations and project reviews. The underlying methodology of this PhD research is conducted through practice and project works, with specific references to theoretical concepts that are useful to the development of this practice. The specific approach and methods used in each project work are then discussed throughout the chapters. Similar to some of the positions discussed above (for example, Pallasmaa, Zardini, Castle), my starting point was the assumption that in interior architectural design the visual holds a dominant status over other sensory qualities, such as the auditory, tactile, thermal, kinaesthetic or olfactory. In Western industrialised countries interior architects and interior designers of the twentieth century have commonly understood their discipline as belonging to a visual culture. Hence, they are generally well-trained and skilled designers in the visual realm. This includes the spatial arrangement of elements, consideration of views and lighting as well as the application of materials, surface finishes, colour, shapes and patterns. In conjunction with their visual aesthetics, tactile qualities of materials and surfaces usually also receive some thought in their selection for projects. However, significantly less consideration seems to be given to other sensory qualities that occur as a consequence of design decisions, such as issues of sound and acoustics, thermal conditions and temporal dynamics within interior environments. This results in these qualities often become mere by-products of visually biased spatial designs. I believe this is the case due to a lack of knowledge, awareness and sometimes unpredictability of these complex fields. Furthermore, visual means are commonly the predominant way of communicating spatial design ideas and proposals in interior architecture throughout the different stages of the design process. The multiple sensory and temporal layers of spatial environments and how they are occupied pose such a challenging and complex task to designers that we need to apply techniques and tools that allow us to make sense of the variety of conditions we work with. Given that design outcomes are inevitably a result of numerous design approaches and processes, it is important to scruti-
nise the current techniques, tools and priorities in interior architectural design. In Drawing Out the Interior Ro Spankie comments that:

Ever since the architectural critic Sigfried Giedion established the relationship of space and time in architecture, designers have been experimenting with how to represent space, time and movement effectively in their work. Traditional representation presumes stable objects and fixed subjects. However, this is often not the case. [18]

Indeed, recent explorations have sought to communicate ‘both interiors that move and how to represent moving through space.’ [19] The use of storyboards, flow diagrams, animations or walk-throughs are examples of methods that accommodate changes in time and changes in spatial design. But even these more recently popular means of communication that take into account temporal qualities show only certain dimensions of the physical space and remain visually biased. While these interior architectural conventions make the task of designing manageable, they are also reductive in considering the diversity of fluctuating conditions, forces and flows of actual spatial environments. It is therefore important that new design tools and techniques are explored that are more appropriate for processes and practices concerned with multi-sensory, spatiotemporal and social conditions.

As such, my incentive for undertaking this PhD was based on issues that had come up in my four-year undergraduate education and experience of working in industry practices in Germany. Prior to my time at the University of Applied Sciences Coburg, Germany, I was employed in a retail design firm for one-and-a-half years, assisting an interior architect on fitout projects for department stores in Hamburg and Northern Germany. The education at Coburg University was also closely related to commercial interior architectural practices, with particular focus on the design of fair stands, exhibitions and events. Many of the student projects were realised into built works. Throughout my course I was involved in the design and construction of fair stands for the International Furniture Fair in Cologne, exhibitions and events for the annual Coburg Design Days and large scale shows for the furniture company WK Wohnen near Stuttgart. While I enjoyed the collaborative and hands-on work on these projects, I was missing deeper levels of critical enquiry and became more and more discontented with the strongly commercially oriented outcomes. Hence, I developed an interest in health care design in the final years of my undergraduate course, anticipating it as a relevant topic for my final thesis project. Two key factors sparked this interest: firstly, the wealth of scholarly research publications and international discourse I discovered in this area and, secondly, the opportunity to investigate relationships between people and interior architectural environments in a more profound way. My thesis project was a re-design of the patients’ rooms, reception areas and circulation spaces of a hospital in Munich. The final design
concept followed design principles based on an in-depth review of literature on health promoting environments. After completing my undergraduate studies I was determined to pursue a career as a design practitioner in research and academia, rather than work in a commercial industry practice. Further to the initial insights I had gained in my thesis project I wanted to continue research into interrelations between interior architectural design and human occupation in public and social environments. Hence, I came to Melbourne on a postgraduate research scholarship from the DAAD (German Academic Exchange Service) in July 2004, after one year of working on a range of projects as a freelance designer in Germany.

The initial focus of my PhD work at RMIT was on visual and nonvisual qualities of space with a particular focus on the relationships between sound, spatiality and human occupation rather than what Barry Truax nominates as the traditional energy transfer model of modelling acoustic space. In my undergraduate degree at Coburg University acoustics was taught purely theoretically and through mathematical calculations. Exercises were limited to drafting plans and elevations of lecture theatres and concert halls that showed sound travelling from a source on the stage, reflecting off walls and ceilings and reaching every individual seat in the audience. Aesthetic issues or the practical application of sound and acoustics in relation to spatial, temporal and material qualities were not discussed in these classes. Through my early research at RMIT I recognised the potential of exploring acoustics outside of the traditional mathematical approach and undertook a series of project experiments that explored how sound produces its own spatial conditions, and how these auditory spaces may be occupied in relation to the physical and visual environment. Based on the skills and knowledge I gained through these project investigations, I designed several spatiotemporal installations that used multi-sensory qualities to encourage new modes of occupation within a site context. Principles of room acoustics, including sound reflection, reverberation and absorption, have contributed to my research projects, but I deliberately avoided an in-depth engagement with the field of acoustics in the way it is currently applied in interior architectural practice—which is primarily through computational and mathematical theories and formulas. As an interior architectural designer, rather than an acoustician, I have focussed on spatial concepts of sound in relation to how the auditory environment shapes zones and human occupation. Though the principles of room acoustics are always an integral part to the sounding environment of an interior architectural space, but they are not the only means of thinking about soundscapes and approaching auditory design. My project works explore the notion of more dynamic and varied design opportunities of auditory environments in a multi-faceted way. Blesser’s notion of ‘aural architecture’ is pertinent to my work as a concept that I have drawn on in my projects. In addition to tangible material-based studies of acoustics, digital technology has become more pervasive as a way of managing and controlling noise. In open plan office environments,
for example, digital sound masking systems are being implemented to achieve normative ambient sound levels that produce an acceptable and balanced auditory environment for employees. My project works experiment with these relationships and potential for new approaches to spatial design that encompass a range of different techniques using analog as well as digital technologies to shape, sculpt and define spatial zones. As such, I would contend that my investigations have been developed iteratively and equally inspired and informed through an investigation into current multi-disciplinary discourses, other project references and numerous conversations.

My PhD project works were thus conducted and framed as research through design rather than about design. Architecture academic Peter Downton developed these concepts to claim that designing is a ‘way of inquiring’, ‘producing knowing and knowledge’ and a ‘way of researching.’ Accordingly, artist and academic Paul Carter argues, that ‘because of the lack of credibility given to the vital processes of design and creativity...scholarship and research in these fields, where it does occur, is “about” them, rather than “of” them.’ Research through design is an investigation undertaken by a practitioner, and is distinct from that of a theoretician or historian. It opens up a possibility of unknown findings and unpredictable results because ‘designing is not normally intended to produce a fully pre-conceived outcome, rather it is expected to produce change in the existing situation and hopefully offer fresh surprise and delight.’ Detailed descriptions of the techniques are integral to revealing and analysing the design processes and methodology of the projects, and is of primary importance for a PhD by project which interrogates design practice. I consider my project work then as experimental, and inspired by a range of practices from different disciplines. The dialogue with supervisors and consultants from different backgrounds, such as interior design, landscape architecture, sound design, social science and architecture has been especially inspiring to my work and research methods. Although my research has been situated in the Interior Design Program, I have actively sought conversations with academics and practitioners from other related fields throughout my studies. This has often challenged my thinking and also provided opportunities for collaborative work. My research has effectively been situated in the field of spatial design, though has specifically sought to contribute to practices of interior architecture and interior design. In order to avoid a discussion about whether my projects are art or design (which is a problematic and irrelevant question in my opinion), I have adopted Jane Rendell’s notion of a critical spatial practice:

I suggest a new term, ‘critical spatial practice,’ which allows us to describe work that transgresses the limits of art and architecture and engages with both the social and the aesthetic, the public and the private. This term draws attention not only to the importance of the critical, but also to the spatial, indicating the interest in exploring the specifically
spatial aspects of interdisciplinary processes or practices that operate between art and architecture. [24]

Rendell’s definition of the term in relation to the nexus of art and architecture corresponds to key concerns of my research and has been a useful tool in positioning my own design and research practice. I understand my creative project work as a critical enquiry into particular issues and a way of thinking through ideas and concepts. Readings, dialogues and project references provide further stimulation at different stages of the process. As my research focuses on spatiotemporal qualities that are not quantitatively measurable, the findings are almost always qualitative.

The following three chapters of this Appropriate Durable Record (ADR) will discuss my research projects, the applied methods and related references. For each project there are specific references that relate directly to interior architectural discourse drawing from the fields of art, architecture, landscape architecture, social and critical theory, sound and acoustics. By using these references in my project work I have explored how techniques, tools and ways of thinking can offer new approaches to interior architectural design.

Chapter 1: Invisible Sites examines the role of sight and multi-sensory qualities in relation to spatial environments and implications for design. This enquiry was based on a series of group interviews with blind and visually impaired participants in 2005. Key literature and project references of this chapter include Brian Massumi, Georgina Kleege, Edmund Carpenter, R. Murray Schafer and Barry Truax as well as a sound piece by Lawrence Harvey and the exhibition Dialogue in the Dark. Three sound and video projects are the focus of my investigation in Chapter 2: Auditory, Visual and Spatiotemporal Records. This chapter specifically interrogates how visual, auditory and physical sites produce different spatial conditions, how these spaces are occupied and what interrelations are between them. References range from acoustic and visual ecology, John Hull, Massumi, percussionist Evelyn Glennie to audiovisual artist Christian Marclay. Chapter 3: Spaces of Movement and Interaction, discusses three design installations in different project sites. It explores how each of the projects changed modes of occupation and social interaction by temporally shifting the multi-sensory and spatiotemporal relationships in the site. This chapter draws on key references from installation art (Dan Graham, Bruce Nauman, Susan Hiller, Bernard Leitner, Rafael Lozano-Hemmer), contemporary dance (Lucy Guerin, Sasha Waltz, Merce Cunningham and others) and architectural praxis (NOX). Finally, in the conclusion, I will discuss the main threads connecting my project works, how my own design and research practice has shifted through this PhD and how it contributes to interior architecture, interior design and related fields.

A DVD of sound and video pieces accompanies this ADR. The purpose of these audio visuals is to complement and augment the projects discussed in the written text and illustrated in figures.
There are indications within the text of the ADR, which refer to specific sound and video content on the DVD.

Endnotes
1. Christine McCarthy, “Toward a Definition of Interiority,” in *Space and Culture* Vol. 8, No. 2 (2005), 112.
3. ibid, 169.
4. ibid, 7.
7. ibid, 7.
9. ibid, 25.
14. ibid, 21.
16. ibid, 4.
17. Blesser, 22.
19. ibid.
21. ibid, 1.
Chapter 1:  
**INVISIBLE SITES**

*If there is a realm where blindness makes us the expert, then it is the realm of the invisible.* [1]

In interior architectural design, specific attention seems to be attributed to sight before other human bodily senses. This perception and recent movements towards explicitly multi-sensory design practices became the point of departure for my PhD project works. I began questioning connections between the senses and their significance in relation to spatial design. In order to develop a better understanding of sense faculties other than sight, I decided to focus my research initially on issues of the non-visual. Apart from reviewing literature (Descartes, Jay, Gibson, Kleege, and others) and other references in the area (film, dance, music, art) I conducted a series of interviews with a small group of persons who are blind or partially sighted and undertook an experimental sound and video project as part of my early explorations. I would like to emphasise that my research and practice have not at any stage aimed to be anti-visual. In fact, I consider myself a designer with a strong visual appreciation of environments, which has certainly been one of the key incentives for a critical questioning of this tendency. I would, however, consider it a successful outcome of this research if my argument led to more in-depth considerations of multiple sensory qualities in spatial design. My intention was not to become a specialist designer of environments for people with visual impairments, but to develop a better understanding of spatial definitions other than visual ones through conversations with the focus group participants. This idea was driven by my belief that there was new potential for interior architects and interior designers to expand their practice into realms outside of visually biased designs. Furthermore, I had taken notice of many comments by peers at university and in industry practice, where spatial designs were often judged purely based on visual representations. These kinds of judgements do not consider the multiple visual and non-visual flows and forces that an actual environment comprises, such as sound and acoustics, the movement of air and light, thermal and olfactory qualities as well as changes brought about by processes of human habitation. For me, this highlights how many spatial designers prioritise visual aesthetics over bodily and sensory encounters.

Based on conversations with one of my research consultants, social science Professor Rob Watts, I decided to approach this first enquiry by interviewing a group of individuals who are blind and partially sighted about their spatial experiences and processes of sense making, rather than by undertaking a case study of one particular environment. This allowed me to discuss a variety of spatial encounters with the project participants and to hear a diversity of stories. I titled this research project *in|site*, suggesting direct relation—
ships to concepts of inside, insight, sight, site and non-sight (with in- being read as a negating prefix to sight). My incentive for the series of focus group discussions was to gain a better understanding about encounters between human bodies and spatial environments mediated by the senses. The focus group investigations provided a means of generating design projects and design processes. My primary interest in this interview project was as an interior architectural practitioner rather than ethnographer. Key issues I sought to investigate included techniques and tools used by persons who cannot rely on the accuracy of their eyesight when navigating physical environments, in order to be more independent of help from sighted individuals. Kidwell and Greer have described the difficulties of deteriorating eyesight and indicate the potential of developing refined sensory abilities:

Since orientation in the human species is normally almost totally visual, a loss of sight results in an almost total loss of orientation, and mobility becomes totally dependent on sighted help. In a number of animal species, however, notably the porpoise and the bat, spatial orientation through means other than sight is normal. At least in part some of these capacities for nonvisual spatial orientation are shared by humans too. [2]

If persons who are blind have certain skills seemingly superior to those of sighted individuals, it is not due to supernatural abilities like ‘extra-accurate hearing and perfect pitch, more numerous and more accurate tastebuds, a finer touch [or] a bloodhound’s sense of smell’ [3], but rather because of the need to develop compensating techniques like refining their use of multiple bodily senses in order to get around and cope with daily tasks. Hence, one can assume that fully sighted people must possess similar potential, yet are not as reliant on developing these abilities and are therefore less aware of the significance of their sensory capacities. Writer and lecturer Georgina Kleege, who has been legally blind since the age of eleven, in her book Sight Unseen points out that individuals with usable eyesight nevertheless employ a variety of sense faculties for different activities:

A good baker smells when the bread is done. An auto mechanic hears the trouble in the engine … You can fasten a necklace at the back of your neck without looking, shampoo your hair with your eyes closed and find the light switch in the dark. [4]

The specific examples given here refer to smell, hearing and touch respectively as well as to memory and training. The baker can only recognise the aroma of a perfectly baked bread if he or she has experienced what this smell is supposed to be; an auto mechanic needs to learn what a well-running engine sounds like in order to identify an issue through listening; to find the light switch in the
dark, one would need to have encountered the function, shape and position of the light switch before. However, the above illustrations only describe isolated sensory aspects of a situation. While the baker smells that the bread is done, this sense may dominate at the particular time, but the remaining bodily functions and sense faculties do not come to a halt because of this sensation. It is likely that the baker would be looking at the loaf of bread a the same time, perhaps touching it, feeling the heat of the oven and the texture of the crust, moving around the kitchen, taking out the bread while simultaneously hearing ambient sounds of the environment, perhaps feeling tired or a pain in the back. Paul Rodaway in *Sensuous Geographies* describes this interconnection of the sense faculties:

>Whilst it is possible to identify the apparent dominance of a specific sense in a given situation, on closer analysis all geographical experiences are made up of a complex of sensuous information combining activities of the sense organs, the body and its limbs, and mental processes (memory and expectation, analysis and evaluation). [5]

Similarly, Brian Massumi in *Parables for the Virtual* examines correlations between the senses and reasons that:

>... all the sense modalities are active in even the most apparently monosensual activity. Vision may ostensibly predominate, but it never occurs alone. Every attentive activity occurs in a synesthetic field of sensation that implicates all the sense modalities in incipient perception, and is itself implicated in self-referential action. [6]

These definitions suggest multi-layered connections between different sense modalities within the subjective body and evoke potential for a considered integration of diverse sensory qualities in the design of spatial environments.

The availability of multi-sensory information within an environment is what LaGrow and Weessies describe as the fundamentals for orientation. According to their research, movement through a physical spatial environment requires:

>... the ability to establish and maintain an awareness of one’s position in space and is dependent upon both the gathering and interpretation of available sensory information. This information may be visual, auditory, kinesthetic, tactile, thermal and/or olfactory... Visually impaired travelers are taught to recognize and anticipate the regularities of the environments in which they travel. Exceptions to those regularities become more informative than the regularities themselves. They become landmarks which a traveler can use to pinpoint his or her exact location in space. [7]
I explored this notion of interconnected sense modalities in my interview project in|site. The project investigated, from a design perspective, how the focus group participants are able to make sense of spatial environments and multi-sensory cues that help construct a mental spatial map. In three focus group discussions, participants with visual impairments provided first-hand accounts on issues of orientation and mobility as well as techniques and devices for navigating and negotiating physical environments [for audio examples of the accounts refer to DVD – Chapter 1 – in|site interviews]. Further conversations evolved around the significance of some remaining eyesight in relation to other senses and the difference between stationary positions and movement.

Three one-hour long group interviews were held at the Royal Victorian Institute for the Blind (now Vision Australia [8]) training centre in Prahran, Melbourne, in September 2005. Five individuals, three of whom are fully blind and two with visual impairments, participated in the conversations. I taped each of the sessions with an omnidirectional audio recording device and transcribed the interviews into written text [see Appendix A for an excerpt of transcripts]. The following passages discuss key insights from these interviews and related references.

Non-visual Navigation, Landmarks and Concepts of Spatiality

When Ness leaves her house she knows where the gate is and touches the side of it as she walks past. She then turns into a laneway putting her hand out on the other side and touches the wall of the alleyway. With her white cane, Ness taps along the wall to confirm where things are: ‘Because I know that they’re there,... I just check to make sure that they’re there’. Although Ness uses a cane, she still likes to reach out and run her hand along surfaces beside her, like a wall, a fence or a hedge. By clicking her fingers Ness gets a sense of the spatial volume through acoustic reflection. Furthermore, she carries a hand-held sonic device called a mini guide. The mini guide can be set to detect solid objects and barriers at varying distances (that is, 1m, 2m, 5m, and so on) and vibrates increasingly as one approaches obstacles.

Bernice relies mainly on her dog guide Valek to safely lead the way and only uses her cane in environments familiar to her. She explains that when travelling, everything around her is important, including what is next to her, overhead and underfoot: ‘Your spatiality when you’re not seeing at all feels different. You use your body senses to recognise a lot of things ... the sense of smell, the sense of hearing, the sense of touch in all directions, ‘cause I even use my toes’. Bernice emphasises the significance of tactile qualities: ‘The sense of touch, regardless of what your sight is, is very important’.

For Debbie there is a significant difference between indoor and outdoor environments: ‘When I’m outside it all crosses over my cane, there’s too much space, but inside I’m able to sort of judge
the space around me and get an idea of where I’m going’. She describes how she navigates familiar spaces: ‘It’s like a bodily instinct or something, that I can just sense where everything is, ... I sort of sense how many steps I’m going and I’m able to judge distance and my direction is really good.’

The participants of my focus group interviews described a range of techniques and sensory devices used to extend out their senses and detect information about the surroundings. In an unfamiliar environment the use of a white cane is one of the most important tools as it helps orientation through tactile information of surface textures as well as providing acoustic feedback about materiality and spatial context. Cane techniques range from tapping to dragging, which provide different tactile and auditory cues.

Individuals who cannot make use of their eyesight as a primary sense need to utilise their other bodily senses more purposefully in order to compensate for unreliable and incomplete visual images of the physical environment. Orientation and Mobility training helps persons who are blind or visually impaired develop ‘skills in order to maintain independence and quality in their lives.’[9]

From the perspective of spatial design, multi-sensory signifiers integrated into the built environment, such as Tactile Ground Surface Indicators (TGSIs) [Figure 1] and audio-tactile pedestrian signals are intended to offer cues and warnings to individuals with visual impairments as well as to the wider community. Their value has been increasingly recognised and mentioned in building codes and guidelines in many cities worldwide. The Australian and New Zealand Standard, for example, outlines that ‘TGSIs should be installed to provide guidance and/or warning of an obstruction’ and to ‘provide cues, which, when combined with other environmental information, assist people who are blind or vision impaired with their orientation.’[10] References such as TGSIs and audio-tactile signals function as important sensory landmarks in the navigation of the urban realm.

Figure 1: Typical example of TGSIs on footpath in Melbourne.
The Oxford English Dictionary defines landmark either spatially and visually as ‘an object or feature of a landscape or town that is easily seen and recognised from a distance’ or temporally as ‘an event discovery, or change marking an important stage or turning point.’[11] Landmarks used by persons with visual impairments often differ from those meaningful to “fully” sighted people. They are commonly situated in close proximity to the traveller and may consist of a range of cutaneous, auditory, olfactory and some specific visual cues. In our conversations, Margaret explained how the ordinary system of street signs is mostly unintelligible to her: ‘I can’t see any of the street signs in Melbourne, I can’t find any of the street signs, let alone read them, unless I’m right underneath them.’ She described an example of one of her landmarks on her way to the railway station: ‘I know it’s a building that’s got really old bricks, that’s where I turn. I wouldn’t know what the street was or anything like that.’ Similarly, Brandon told us a story about visiting a friend’s house, which had ‘whitish floors, whitish walls and this long corridor and white pillars’. To Brandon this space was ‘this one, huge, big, white thing with no dimensions’. For the time he was staying at the place, Brandon placed a mat in front of the steps outside the door to provide visual contrast and as a tactile indicator to prompt him where to take a step up.

I got an impression of what it means not to be able to perceive a spatial environment visually when visiting Dialogue in the Dark in Hamburg, Germany, in 2007. [12] The exhibition was conceived to introduce groups of people who are used to relying on their eyesight to everyday settings in complete darkness (it is important to note that blindness does not equal darkness and the majority of legally blind people are still able to see light–dark contrasts, colour, motion and/or form). A friend of mine who is a photographer (and thus a strongly visual person) accompanied me, though not without reservations. It seems the idea of being deprived of the sense of sight is capable of causing feelings of apprehension, insecurity and fear. Mixed with excitement, I certainly felt uneasy about being led into the unknown and unpredictable, forced to let go of any sense of control and trusting a guide who I had never met and did not get to see. The small group of visitors gathered in the semi–dark entry space to the exhibition and each person was handed a white cane. We were given brief instructions about how to use our cane and how our guide would be taking us through the different settings in the following 30 minutes. Then the lights went out and a disembodied voice said, ‘Hello, my name is Mike, I’m your tour guide today.’ I kept trying to see the slightest sign of light, trying at least to make out silhouettes of the people around me, but realised quickly that even this was impossible. We were now entirely dependent on our other sense faculties. It felt like my own physical body had disappeared with the light. I had turned into an incorporeal organism made up of sensations, perceptions and thoughts, merely defined by tactile, auditory and olfactory connections to the indefinite space and matter around me. In addition to our uncoordinated use of the
canes, my friend and I maintained a physical link by holding on to either end of a scarf, which provided a little comfort in this otherwise rather unsettling situation.

Sequentially, we were guided through different areas with varying ground surfaces, strategically placed objects and a range of intangible sensory stimuli. We encountered sounds and smells of a garden and market, touched strange fruits and vegetables, navigated our way through a rug store, heard car traffic passing by, felt changes in air movement and temperature and were sprayed with water in a swaying boat. For me, these encounters were increasingly rich and enjoyable, although mostly disjointed. Apart from the experience of the boat ride, I was unable to connect the variety of near and far sounds, smells, surface textures and air movement. Each gave cues that enabled us to guess what kind of environment we found ourselves in, but they mostly remained fragments that I could not combine to form a complete mental "picture" of the environment. Unfamiliar voices were commenting, conversing and laughing nearby and in the distance. Once in a while the voice of our guide Mike would suddenly pop up to give us cues and point us in the right direction. The ground was the only consistent connection to the environment. The vertically arranged objects and surfaces changed and discontinued frequently as we slowly moved through the spaces, turning and changing path at various points. It was impossible to estimate the spatial volumes, height of the ceiling or distance of partitions, as heavy fabric sectioned off the areas. Due to the absorptive qualities of these textile boundaries there was no reflection of sound from the vertical surfaces and I assume the ceilings of the old warehouse were too high to provide any auditory feedback. All sound was either reproduced electronically or came directly from the visitors and guides themselves.

The only exception to my disjointed experience was the simulated boat ride on a river. Walking onto the swaying barge, surrounded by ambient sounds of seagulls and gurgling water, sitting down on the wooden bench and feeling a few water drops on the seat next to me instantly brought up vivid imaginations of a scenery around a pier with a backdrop of buildings along the river Elbe in Hamburg. These images continued to evolve, as the boat seemed to start moving and the driver, in a heavy Hamburg-accent, commenced his elaborations about the sights located on the riverbanks. All this was complemented by subtle changes in air temperature, an occasional light breeze and splashing water. Thinking about how this boat trip differed from the other non-visual encounters of the market place, rug store or garden, two things stand out: firstly, I was sitting in the boat in a stationary position, rather than moving about by foot and, secondly, the cohesive sensory information during the boat ride allowed my mind to produce visual images of the environment, which enabled me to get a sense of an interconnected spatial context. I will discuss these specific issues in more depth in the following two subsections.
The examples described above indicate that non-visual orientation and navigation strongly rely on a variety of sensory cues in relation to the spatiotemporal context. Multiple sensory features of an environment can become landmarks for persons with different sense-abilities, helping them memorise and make sense of a setting. Some of the techniques used may relate to sound, touch, sight, thermal qualities, air movement, position, balance, facial pressure, smell and taste. For an individual with impaired eyesight sensory landmarks are commonly in close proximity to the traveller’s body. The immediate space and boundaries seem to be more relevant than the broader context as orientation and mobility techniques and devices focus mainly on objects, surfaces and sounds of the direct surroundings. In our focus group discussions Brandon noted that for a person who is blind or visually impaired, a smaller space is more manageable than a larger one, and that he focuses on the area directly around him rather than the bigger context: ‘When you’ve got very large spaces you sort of break it down to your immediate space.’ Non-visual and multi-sensory concepts of spatiality differ from a predominantly visual understanding in that space is defined by relationships between different layers of sensory conditions and sensing bodies, rather than by the visual and physical boundaries of built architecture.

**Moving and Stationary Positions**

A substantial distinction in non-visual orientation and mobility can be made between stationary and moving body positions. To a visually impaired individual locomotion brings with it a high risk of injury and therefore requires full concentration. All of the interview participants agreed they needed to be extremely task-focused when travelling as getting lost in an unfamiliar environment could pose additional hazards and cause significant stress. In order to get around, individuals operate and proceed carefully and are highly alert and selective of the multiple sensory environmental stimuli. When travelling, the sense faculties are in “working mode” and filter the available information as to the key cues that enable a person to reach their destination safely by avoiding hazards and managing obstacles.

Brandon stated he is only capable of appreciating a wealth of sensorial stimuli from a stationary position. On a visit to the beach for example he enjoys the soft warm feel of sand, the fresh breeze carrying with it the smell of the ocean and the sound of rolling waves. My experience of the simulated boat trip at *Dialogue in the Dark* may similarly have been related to the stationary condition of my body. Sitting on the bench in a safe and secure position, I was able to let go of the alertness and tension that had predominated while I was moving around. This more relaxed state allowed me to open my senses to the attributes of the environment and take pleasure in listening, smelling and feeling. Allegedly, a fully blind toddler would barely start moving around on its own and is content to explore a variety of environmental stimuli from one fixed place. A “normally”
sighted child, on the other hand, would try to move towards elements that it visually perceives from a distance and is curious to examine more closely. Blind children instead have been noted to focus on the movement of their own bodies, for instance in a rhythmic rocking motion. [13]

This insight has led me to distinguish between three groups of movement in relation to the human body and physical settings: firstly, the movement of parts of one’s own body, such as that of an arm, hand or head. The body changes its position in relation to itself and the site context, but not necessarily its location. This kind of movement is commonly referred to as proprioception. According to Massumi, ‘Proprioception is a self-referential sense, in that what it most directly registers are displacements of the parts of the body relative to each other.’ [14] The second kind of movement is locomotion, in which the body changes locations, either through travel by foot or by other means of transportation. Locomotion naturally involves changes of the body in relation to itself, but in addition continually alters the location of the body within an environment. It describes a larger scale change of spatial relationships between one’s body and a site. The third group of movements can be defined as motion of or within the environment, that is, that of bodies (animate and inanimate) other than one’s own and that of intangible qualities. If proprioception is self-referential, this third type of movement refers to relations between physical bodies as well as the multi-sensory site context. It can be understood from a phenomenological perspective of movement around the self or it can be looked at in relational terms, for example from the viewpoint of an interior architect designing flows of people, light and air in a spatial environment. Naturally, these three groups of movement are interconnected and my distinction creates an artificial separation. However, it has been useful for me as a way of thinking through and positioning my project works and spatial design practice.

Assuming these kinetic and kinaesthetic distinctions, what then are their implications on spatial design and non-visual sensory design in particular? The design of environments for human habitation shapes movement at various scales. The position and function of a conventional light switch prescribe certain actions performed by the human body to turn lights on or off, a chair offers a number of ways of sitting or standing on it, a door can be closed to shut out unwanted sounds emanating from an adjacent room. The volume of a radio can be turned up or down and, alternatively, one can move closer or further away from a sound source to adjust its loudness. I have observed people talking on mobile phones in the city who were walking around, trying to find the quietest spot in alcoves of buildings, covering their other ear with one hand and raising their voices when the traffic noise increased. The spatial context has the ability to encourage and restrict certain flows, behaviours and interactions. Therefore, I believe it is the task of designers to consider these spatial dynamics on various sensory levels beyond the visual.
Sight, Vision and Re-vision

The majority of persons who are legally blind have some useful sight and the visual seems to retain a central role in their daily lives despite its reduced availability. My research has established that many individuals with significant visual impairments still rely on their eyesight considerably, using their other senses mostly to clarify, ensure, and confirm the spatiotemporal situation. Particularly intriguing has been the fact that those interview participants with any remaining sight (often merely light–dark contrast) still seemed to rely on it as a significant element in their navigation of unfamiliar environments. Although, none of the individuals questioned trusted their visual imagery completely as this information was incomplete, disrupted, blurred, or distorted. Bernice described how a shadow on the ground could cause confusion and insecurity:

Now I’ve got the dog ... I know I can go just about anywhere with that dog, but I still have times where if it’s a really, really shaded area I will stop and think about it and I’ll say ... “you’ve got the dog, just keep going”, but if I suddenly walk into a dark area, if I’m on my own, I freeze, ’cause I just cannot work out what’s around me, ... the dog takes the changes and just goes on.

Ness confirmed this issue recounting a scene from the film *At First Sight* (1999), which is based on a story by physician, author and neurologist Oliver Sacks. In this film, the main character who is fully blind has his eyesight partially restored through an operation and is required to learn how to see for the first time: ‘In the movie ... he sees his shadow and it’s so true, you don’t realise whether the shadow is a hole or whether it’s actually something you can step on, if you’ve never seen it.’ Ness had similar experiences after eye surgery brought back about 30 per cent of her sight for just three months in 2003 before she lost it completely again:

And it’s true ... when you actually get your sight back you don’t have depth [perception] and ... when I got my sight back the carpet looked like it was around about my hips, because it just zooms up ... because it’s got different specks in it, it doesn’t actually look flat... I seriously thought I could touch the carpet at my hip level, but ... I’m not walking in carpet. And the same thing with ... objects. You can’t judge how far away [they are] and you can’t judge if they’re flat or if they’re actually ... a 3-D thing.

The film’s protagonist also had difficulty distinguishing between an object and the picture of an object: ‘He couldn’t tell the difference between a real apple and a picture of an apple without touching it, because they look exactly the same.’ The eyesight Ness regained after the surgery was different to the sight she had had earlier in her life, which caused her to see things that she was unable to identify:
It was good, but it was frustrating, because I was seeing things that I didn’t know what I was seeing and then other things were good, because large objects, I ... began to realise again what they were and had never seen them and saw them, but in my way. But it was frustrating because people, because for me to explain what I was seeing, and they got very frustrated because they were like, well, “what are you talking about? We have no idea what it is”, but for me, you know, I’d see it in one way. I remember seeing a giant red thing going across the road and it was a tractor, it turned out to be ... and grass ... I’d never realised grass was that green.

Once more, Ness’ depth perception deceived her when ‘it looked like the grass was hip-height again’ and she was unsure about whether she would be able to walk on it. Only stepping on it confirmed to her that the lawn was ‘actually really low.’

These accounts indicate that seeing and especially the interpretation of what is seen are learnt processes based on lived experience and only partially natural. In his book *Eskimo* (1959) anthropologist Edmund Carpenter describes observations made while living with the Aivilik of Southampton Island, Canada, in the early 1950s [15] that furthermore suggest the act of seeing to be strongly influenced by cultural conventions. According to Carpenter, these Inuit people do not have a favoured point of view when producing and viewing an object or picture. Their craft and carvings have no single intended orientation or theme. Carpenter highlights the difference between the Western and the Inuit ways of seeing by recounting a situation in which he was given carved figures by the Aivilik:

I found myself turning them first this way, then that, orienting each figure in relation to myself. Aivilik do not do this. They carve a number of figures, each oriented—by our standards—in a different direction ... Similarly, when handed a photograph they examine it as it is handed to them, no matter how it is oriented. [16]

Carpenter also notes significant differences in the means of navigation between Western and Inuit cultures. While to him the Arctic landscape has few distinct landmarks, ‘to the Aivilik, [it is] varied, filled with meaningful reference points.’ [17] Generally these references were ‘not actual objects or points, but relationships: relationships between, say, contour, type of snow, wind, salt air, ice crack.’ [18]. Carpenter illustrates this different capability by example of a first-hand experience: ‘two hunters casually followed a trail which I simply could not see, even when I bent close to scrutinize it; they did not kneel to examine it, but stood back, examining it at a distance.’ [19] For the Aivilik hunters in Carpenter’s writings, as for the attendees of my focus group, landmarks are multi-sensory relationships and points of orientation in the environment. They can be tactile, auditory, visual, olfactory and cutaneous qualities (that
is, air movement or temperature) of a site that have become familiar and recognisable to an individual or group.

Sculptor Robert Amendola (1910–1996) spent much of his life developing techniques for spatial orientation with individuals who had lost their sense of sight. In this work he recognised that seeing does not have to be limited to eyesight and that other bodily senses are capable of compensating for absent ocular capacities through specific training:

If, without displacing the natural use of hearing for hearing’s sake, one were to ask of hearing an extra effort – to hear also for seeing’s sake – and similarly for all other senses and sense uses, each taking over one or more of the many functions of sight, it would be like providing the visual cortex with new sensors. The result would be a ‘visual’ (though non-ocular) experience of one’s environment. [20]

Amendola called this technique videation, a term coined by Father Thomas J. Carroll, founder of the Carroll Center for the Blind in Newton, Massachusetts, in the United States. [21] Videation, according to Amendola, means ‘concentrating the imagination on what you would see if you could see at a given moment the image evoked from information coming in from the rest of the senses.’ [22] In this method, the visual memory of spatial environments from the time when the individual still had eyesight helps in connecting the pieces collected by means of the other senses.

According to Kidwell and Groer (1973) everybody mentally visualises spatial relations, with the exception of persons who are congenitally blind. [23] On my visit to Dialogue in the Dark, it was only possible for me to visualise objects, surfaces or environments when I was able to make sense of the stimuli my body detected. The rubbery uneven texture of a rounded object only became a head of cabbage after our guide pointed it out to me; a surface made up of layers of rough edges only became a pile of rugs when explored through touch in great detail and by walking all the way around the stack. The boat ride conjured up vivid images of scenes along the riverbanks, because the sensory stimuli told a cohesive story by providing specifically selected information.

In the focus group interviews, Debbie described how she had visited a friend who is fully blind one evening. The lights in the house were switched off and Debbie, who can see light, shapes and some colour, got used to the house in the dark, orienting herself through her other bodily senses. Later in the evening the friend’s parents returned home and switched on the lights. To Debbie this meant she had to learn where everything was in the house and how to get around all over again. I was surprised and puzzled by this story when I first heard it. On reflection, I believe it indicates how spatiality and spatial relationships can be encountered and understood differently.
through distinct sense-connections. Debbie’s non-visual concept of the spatial environment obviously conflicted significantly with the one combined with certain visual cues. Kleege describes her way of seeing as a dynamic process, strongly filtered by her mind:

The dialogue that goes on between my eyes and brain seems something distinctly different from sight. It is not vision but revision, something altered, edited, changed by my mind, subject to my values, expectations, and even moods. I see what I sense is there, what I hope is there, not necessarily what actually is. [24]

Additional to my assumption that seeing is strongly influenced by cultural paradigms, it also appears to change depending on an individual’s intent, beliefs and feelings in a particular context and at a particular time. Kleege’s assertion, ‘Expectation plays a large role in what I perceive’[25] seems to be equally relevant to individuals with fully functioning eyesight. The Cocktail Party Effect is an auditory example of such filtering process. It describes the ‘ability to focus one’s listening attention on a single talker among a cacophony of conversations and background noise’[26]. Visual stimuli can be filtered in a similar way as several experiments on “inattentional blindness” have shown. In one well-known study, participants were asked to count the number of times a basketball was passed between team members in white shirts, while ignoring the other team in black shirts pursuing the same action simultaneously. After a while a person in a dark gorilla costume enters the scene and walks through the action. The researchers found that more than 50 per cent of participants failed to notice the gorilla. [27] Both examples suggest selective processes to be at work between the mind and the sense faculties, depending on what is given priority of attention at the time.

**Spatial Memory, Bodily Maps and the Biogram**

The above discussion points towards yet another issue in relation to non-visual concepts of spatiality: memory. All of the interview participants claimed to possess very good memory and that they are able to remember environments instantaneously after having been there once. I suppose a contributing factor in this ability is the required concentration when encountering and learning new spaces. The group agreed that common sight-based references used for orientation and navigation, such as distant visual landmarks, street signs, and maps are mostly useless to travellers who are blind or visually impaired. Instead, other techniques are applied, including counting the number of steps one has walked, feeling the ground condition and significant changes in it through the feet, memorising the directions and turns of the path, as well as identifying useful sensory landmarks, usually ones within reach. Kleege summarises the difference between common visual and non-visual techniques and landmarks: ‘I may not know street names, but I retain a memory of the contours of land, of architectural features, of
In the focus group conversations, Ness explained that after encountering a site for the first time, she knows how far it was, what walls and other barriers were next to her, where there were openings, whether the footpath was straight, curved or sloping, how many crossings she passed and whether it was a small or a large road crossing. Brandon described how he relied largely on his memory when going for a run before his eyesight worsened and this exercise became too dangerous for him:

> When I used to run ... although I could see people and stuff, but the pavement - 'cause I have got very poor depth perception - that was basically done by memory almost, and I would know every crack in the pavement, where I’m going to step up ... everything was almost by memory ... so I’m feeling the contours of the ground, plus looking for obstacles at the same time.

The body detects these tactile landmarks through movement and direct contact with the physical site. Several points of connection between feet and paving, hands and walls, the cane and the ground shape a mental map of the environment. Key features become reference points, while movement of the body maps the distances between them. Together they form a mental diagram of spatial relationships. After our visit to *Dialogue in the Dark* I asked my friend to draw a map of the exhibition and write down what she had noticed along the way. I too produced such a map and we got together again a few days later to compare our notes. It turned out we generally agreed on key sensory landmarks of the tour, although differed slightly in the details we had picked up. Our memory of the directions our journey took and the sequence in which we encountered the various different environments, however, were much less consistent [Figure 2].

Kinaesthetic qualities are integral to establish a sensory and spatial mental diagram of an environment. *A Dictionary of Ecology in Earth & Environmental Sciences* defines *kinaesthetic orientation* in relation to animal habitation as: ‘The behaviour of an animal that moves through familiar terrain in the absence of sensory information (e.g. in total darkness) by the repetition of actions remembered from past experience of the terrain.’ In this case, the animal body once familiar with the environment performs learnt and memorised actions apparently independently of reference points in the landscape. Notably, in this example the authors distinctively refer to the absence of visual information and do not discuss the role of other sensory qualities in kinaesthetic orientation, such as sounds, smells, surfaces, and so on. However, the emphasis on the animal moving through familiar terrain and by repetition of actions remembered from past experience expands the notion of a spatial mental map to a bodily memory of a site, including its own movements in relation to it. Similarly, Massumi’s concept of the *biogram* from his discussion of synesthesia refers to ‘lived diagrams based on already lived
experience, revived to orient further experience. Lived and relived.'

For the body the biogram is a memory of its own movements shaped by sensory qualities of an environment. The sense faculties enable connections between a human body and its surroundings as well as to itself. According to Massumi, biograms are ‘intersensory’, involving not only a connection between the senses, but more fundamentally a fusion of the senses.

Naturally, one’s biogram of lived experience is strongly influenced by a range of variables, such as the cultural and social context or an individual’s sensory abilities. In Paul Rodaway’s words, ‘Human bodies vary in their (dis)abilities with health and age, education and training, gender and socio-economic status of the owner.’

While individuals with visual impairments may of course differ in age, education, gender, cultural and social background and even visual
capacity, they have in common that they employ their bodily senses other than sight as well as multi-sensory tools and techniques more intently than persons with ordinary eyesight. Thus a biogram that is not as visually biased may evolve more intensely around worlds of sounds, textures, air qualities, smells, tastes, movement and other bodily sensations. For example, the muscle memory and aural ability of a pianist developed over many years of practice enable the performer to play the instrument intuitively through learnt movements of the body.

**Soundscapes and Acoustic Spaces**

To persons who are blind or visually impaired, sounds and acoustics can provide important cues about the spatial, temporal and cultural context of a built environment. Acoustic ecology researcher R. Murray Schafer coined the term soundscape in the 1970s to describe the total sounding environment, which consists of keynote sounds, sound signals and soundmarks. [33] Schafer positions the field of soundscape studies in ‘the middle ground between science, society and the arts.’[34] The term keynote is based on the musical notion of key centre or home tonality. It is a means to describe an anchoring sound within a soundscape:

... keynote sounds are those which are heard by a particular society continuously or frequently enough to form a background against which other sounds are perceived. ... Often keynote sounds are not consciously perceived, but they act as conditioning agents in the perception of other sound signals. They have accordingly been likened to the ground in the figure-ground relationship of visual perception. [35]

Keynote sounds are also described as drones and examples include the sounds of the sea for maritime communities, air conditioner or fan noise as well as traffic sounds.

The second key term used by Schafer for auditory classification is sound signal. Sound signals are regarded as foreground sounds within the soundscape and form auditory warnings of that community within (urban) acoustic ecologies. In the twenty-first century, such warnings have become predominately electronically generated (sirens, horns, and so on) though the sounds of whistles and bicycle bells, for example, allow for complex layers of information to be communicated to members of an acoustic community. As a derivative from landmark, the term soundmark refers to ‘a community sound which is unique or possesses qualities which make it specially regarded or noticed by the people in that community.’[36] Typical soundmarks may include church/temple bells, *Adhān* (Muslim call to pray), town square clocks and foghorns. The acoustic information contained in keynote sounds, sound signals and soundmarks serves as a significant system for non-visual navigation and orientation. Sound can reveal important aspects about the location and materiality of spatial volumes. It may also indicate the presence
Such auditory conditions within the built environment have become a catalyst for the work of numerous sound artists. The sound installations of architect Bernhard Leitner explore spatial experiences of acoustic environments [Figure 3]. His work ‘shows the potentials of sensual experience that we are barely conscious of because they are either lost or have remained unknown as possibilities.’[37] Australian composer and sound designer Lawrence Harvey has investigated the auditory relationship between urban landmarks and non-visual orientation through his *Sound Sites* project (1999). Harvey collaborated with blind and visually impaired individuals, taking spatial sound recordings of distinct auditory features in urban settings and natural environments based on a series of conversations. In the piece *Philip Conducts the City* [refer to DVD – Chapter 1 – *Sound Sites* (Lawrence Harvey)] the sound recording demonstrates how a project participant with visual impairments uses a variety of different cane techniques on his journey: ‘Sonic textures roll under Philip’s cane as he navigates his way through the city. A rapid montage of clicks, scrapes and clutters.’[38]

In the focus group discussions I played this particular piece to the interview participants and asked them to state what they were hearing. Everyone commented on sounds they recognised as Philip drags and taps his cane across the ground surfaces and a number of grates, walking along the street and into an indoor shopping centre. I had listened to this piece several times before and while I had been able to distinguish changes in timbre, pitch and rhythm as well as recognised people talking, it was not possible for me to identify auditory characteristics of the architectural environment to the same
level of detail as the participants in my group discussions [Figure 3]. When I asked the group to elaborate how they knew what each of the sounds were and how they picked up on the change from an outdoor to an indoor space, Ness explained: ‘When he’s outside ... you’ve got more space; there’s more echoing further out. When he goes inside you’ve got exact walls. You can tell that it’s a shopping centre because there’s only echo in a certain area. The sound echoes to a more boundary-set space and it’s more fake.’ To this Margaret added: ‘I’d say the silence sounded different’ and Ness agreed saying, ‘That’s exactly what it is actually’. The silence Margaret referred to describes the difference of ambient sounds and acoustic conditions between the outdoor environment of the city and an indoor shopping centre. As Ness elucidated, the acoustic space outdoors is larger and keynote sounds like traffic for example are more intense, whereas the acoustic space inside the shopping centre is more constrained by acoustic barriers. Keynote sounds in an indoor environment may include traffic noise emanating from the street, but additional sound sources with different content, such as air conditioning, background music and voices may also be present. Commonly, many of the materials used in shopping centres are hard and acoustically reflective, which leads to a more responsive and live sounding environment.

In industry practices of interior architectural design, issues of sound and acoustics are mostly dealt with as an exercise in directing sounds from a source to an audience in a lecture theatre or concert hall or keeping noise contained and to a level acceptable in accordance with current regulations. In Australia, regulations and guidelines such as the Australian Standards, Building Code of Australia or Green Star advise designers and architects on issues of lighting, acoustics, air quality, materials and finishes among other things. The information offered in these guidelines sets important benchmarks for human occupation, yet from my point of view is too generalised and reductive. Sound and acoustics, for example, are being addressed in the Indoor Environment Quality (IEQ) section of Green Star – Office Interiors under IEQ–10 Internal Noise Levels. [39] This chapter aims to ‘Encourage and recognise tenancy fitouts that control internal noise levels to ensure occupant comfort.’ [40] Green Star recommends an ambient internal noise level of 40–45 dBLAeqiii for general offices (unoccupied) in alignment with the Australian/New Zealand Standard AS/NZS 2107:2000 as well as a reverberation time (RT60) of 0.4–0.6 seconds. The classification of 40–45dBLAeq refers mainly to consistent mechanical sounds, like for example a base building’s HVACiv system, electrical hums or vehicular traffic from the streets. The recommended reverberation figure intends to ensure that the office space is neither too acoustically responsive nor too unresponsive. It is common practice to introduce artificial air conditioning sounds into an office space that is deemed too quiet, as any sound signals or soundmarks would be perceived as louder and thus as more disruptive in an environment with an ambient noise level below 40–45 dBLAeq. Sound signals and soundmarks

iii dB(A) refers to ‘the sound pressure level as measured with a sound pressure level meter using an A-weighting network which differentiates between sounds of differing frequencies in a similar way to the human hearing system’; dB LAeq refers to ‘the equivalent continuous A-weighted sound pressure level having the same energy as a fluctuating sound over a specified time period T’. [http://www.auracle-acoustics.co.uk/Glossary/glossary.html (accessed 10/01/2010)] Since the A-weighting network corresponds to the tendency of the ear to discriminate against low frequency sounds, it is often employed in decibel measurements of community noise.’ (Truax, Handbook for Acoustic Ecology)

iv HVAC is an acronym for Heating, Ventilation and Air Conditioning systems integrated into base buildings.
are the figures of the figure–ground analogy and common examples in an office environment include telephones, fax machines, printers and human speech. The technique of sound masking is used to increase the ambient noise level to the recommended comfort level. In the urban realm this masking effect is sometimes achieved through more aesthetically integrated and multi–sensory means, such as ‘the sound of fountains at busy intersections in Madrid and Rome.’

The potential of a highly considered and well–integrated sounding environment beyond functional acoustic design has not yet been explored adequately in the context of interior architectural spaces. One of the key aspirations of this research has been to explore and demonstrate this potential through spatial design projects.

Summary
My investigations leading up to the focus group interviews and my conversations with Ness, Margaret, Bernice, Debbie and Brandon brought up questions about how concepts of spatiality may be understood differently based on non–ocular qualities of an environment. The title of this chapter Invisible Sites suggests that spatial relationships emerge through sensory conditions, such as sound and acoustics, surfaces and textures, air temperature and movement, scents and smells, physical bodies (animate as well as inanimate) and the built environment. This notion of site and spatiality is different from a predominantly ocular one, in which interior architectural space is commonly defined by means of physical boundaries, objects and perhaps light and shadow. A non–ocular approach focuses on sensory interrelations and dynamic zones that produce multiple sites and define spaces between tangible and intangible qualities. Sites and spatiality therefore emerge from fluid and ephemeral relationships rather than through fixed physical boundaries. Miwon Kwon discusses this shift in thinking about site in relation to art as no longer ‘based on a physical permanence of that relationship (as demanded by [Richard] Serra for example) but rather on the recognition of its unfixed impermanence, to be experienced as an unrepeatable and fleeting situation.’ She argues further, ‘the operative definition of the site has been transformed from a physical location–grounded, fixed, actual–to a discursive vector–ungrounded, fluid, virtual.’ For interior architecture this means that the potential of spatial design is not merely limited to the inside of the built physical form. Instead, it becomes the task of the spatial designer to organise multiple sensory and temporal zones and relationships, which may only be partially shaped by a physical environment or building envelope.

As a point of departure in site provides the overarching framework within which my research has evolved through both theory and practice. In my project works I have focussed on very specific issues of interior architectural design that have been highlighted through in site, such as visual, tactile and auditory conditions of spatiality. Based on the insights gained from my investigations into non–ocular
qualities of environments, I have explored such approaches to spatial design through my research projects with particular focus on auditory, visual, tactile and kinaesthetic relationships. Sound and acoustics have become a key area of interest. Currently, interior architects and interior designers have yet to explore this area to its full potential. Issues of temporality, movement and change have also been a specific line of enquiry. Furthermore, I have recognised as an interior architectural designer it is not useful or even possible to completely eliminate sight from my project works and have instead explored ways of subdued and obscuring visual imagery with particular focus on relationships between the visual, auditory, tactile, and spatiotemporal. Therefore all of my design research projects deal with interrelations between multiple sensory qualities within spatial environments. The inquiry into non-ocular sites and spaces has helped me to focus my research area and set up the framework for my design projects, which will be discussed in detail in the following two chapters.
Endnotes

17. ibid, 9.
18. ibid.
19. ibid.
20. Kidwell and Greer, 119.
22. Kidwell and Greer, interview with R. Amendola, 123.
23. Kidwell and Greer.
24. Kleege, 96.


31. ibid, 188.


34. Schafer, 4.


36. Schafer, 10.


38. Lawrence Harvey, The Occupation of Space: Sound Sites, Exhibition catalogue, Span Galleries, 45 Flinders Lane, Melbourne, Australia, 1999, 6.


Interior Reverberations,
video still 2005
Chapter 2:
AUDITORY, VISUAL AND SPATIOTEMPORAL RECORDS

Auditory space has no favoured focus. It’s a sphere without fixed boundaries, space made by the thing itself, not space containing the thing. It is not pictorial space, boxed-in, but dynamic, always in flux, creating its own dimensions moment by moment. It has no fixed boundaries; it is indifferent to background. The eye focuses, pinpoints, abstracts, locating each object in physical space, against a background; the ear, however, favours sound from any direction. [1]

This chapter discusses three design research projects that have used digital video and sound as a means of investigating spatiotemporal relationships between the visual and the auditory. The first project, Interior Reverberations, was an experiment undertaken as part of my research and preparations for the focus group interviews in 2005 (discussed in Chapter 1). My incentive for this project was to investigate how sound reflection and reverberation articulate interior architectural volumes and materiality, and how this process provides cues about the spatial environment to individuals who are blind or visually impaired. Through video and sound recordings I captured a walk through an improvised sound installation set up in a foyer space and hallway at RMIT University. The installation and recordings sought to emphasise auditory and acoustic qualities of the spatial environment.

The second project examined in this chapter, Acoustic Arenas (2006), evolved through a number of different stages. My endeavour in this work was to explore concepts of spatiality and movement through sound by means of site recordings, a multi-channel soundscape composition, and finally, the production of two binaural sound pieces. The video documentation of actions performed to activate spatial acoustics for one of my original sound recordings have generated another layer to the project, which acts as a visual complement to the sound piece.

Choreographies of Inhabitation, site 01 (2008–2009) is the third work of this chapter. The collaborative project, with soundscape researcher and musician, Dr. Michael Fowler, aimed to scrutinise myriad relationships between physical, visual and auditory articulations of space, and how these shape human activities and interactions within a nominated site. Our site investigations included the auditory and visual capture of environmental data via video, still photography and stereo recording techniques. We subsequently produced a series of sound and video compositions, constructing new spatiotemporal and sensory relations from the captured material.

Each of the projects employs both video and sound as design and
research tools, but investigates different hierarchies and connections between them. The insights from my analysis of the interview project and references analysed in Chapter 1 have formed the background for these experiments. The methods applied in the individual projects have used visual and auditory recordings and the manipulation of captured footage as a design tool to experiment with sensory and spatiotemporal qualities of site. The selected sites have predominantly been publicly accessible circulation spaces of institutional buildings within Melbourne. The discussed creative works have enabled me to think through key issues of my research from the perspective of a spatial designer, with the incentive to inform and inspire my own and other design practices. In these projects I have sought to examine how video and sound may be occupied in different ways and what the relationships between visual and auditory modes of occupation are in relation to the physical and multi-sensory site context.

**Interior Reverberations (2005)**

This project experiment was inspired by my research into non-ocular means of navigating spatial environments. Several readings (Kleege, Carpenter, and others) and project references, such as Harvey’s *Sound Sites* had drawn my attention to the significance of sound and acoustics in enabling individuals who are blind or visually impaired to make sense of their surroundings. Changes between solid walls and openings or differences between small and large road crossings can be recognised through listening by a trained ear. Furthermore, sound and acoustics have the potential to articulate the broader spatial context to a traveller with impaired eyesight.

Professor John M. Hull kept a diary on the experience of losing his sight at the age of 45 in 1980. [2] In the entry of 9 September 1983, he writes about his appreciation of rain and how it allows him to perceive an interconnected environment: ‘Rain has a way of bringing out the contours of everything; it throws a coloured blanket over previously invisible things; instead of an intermittent and thus fragmented world, the steadily falling rain creates continuity of acoustic experience.’ [3] Hull further describes in intricate detail what he hears when the rain brings to life surfaces and shapes in his front yard:

I hear the rain pattering on the roof above me, dripping down the walls to my left and right, splashing from the drain-pipe at ground level on my left, while further over to the left there is a lighter patch as the rain falls almost inaudibly upon a large leafy shrub. On the right, it is drumming, with a deeper, steadier sound upon the lawn. I can even make out the contours of the lawn, which rises to the right in a little hill. The sound of the rain is different and shapes out the curvature for me. Still further to the right, I hear the rain sounding upon the fence which divides our property from
that next door. In front, the contours of the path and the steps are marked out, right down to the garden gate. Here the rain is striking the concrete, here it is splashing into the shallow pools which have already formed. Here and there is a light cascade as it drips from step to step. The sound on the path is quite different from the sound of the rain drumming into the lawn on the right, and this is different again from the blanketed, heavy, sodden feel of the large bush on the left. Further out, the sounds are less detailed. I can hear the rain falling on the road, and the swish of the cars that pass up and down. I can hear the rushing of the water in the flooded gutter on the edge of the road. The whole scene is much more differentiated than I have been able to describe, because everywhere are little breaks in the patterns, obstructions, projections, where some slight interruption or difference of texture or of echo gives an additional detail or dimension to the scene. Over the whole thing, like light falling upon a landscape is the gentle background patter gathered up into one continuous murmur of rain. [4]

In Hull’s account spatial relationships, orientation, proximity and distance are defined through the rich soundscape produced by falling rain as it hits different surfaces. His familiarity with the position of elements, materials and textures in his front yard enables Hull to accurately identify, locate and relate a range of different sounds he hears. This enhanced perception of interconnectedness through sound places the listener in relation to the wider spatial context. The only other human sense system that is capable of achieving this interrelating of a spatial environment at the same architectural scale is the ocular system. The scale, spatiality and temporality of touch, for instance, function very differently in that contact between the human body and material elements occurs through the direct connection of their physical boundaries. In order to recognise spatial relationships at an interior architectural scale (referring to the scale of the human body and the immediate environment it occupies through the senses) by means of the bodily tactile system, the body needs to move around the space to be able to detect physical barriers and surface textures. Sight and sound enable distance perception from a stationary position while the proximity of touch requires movement for the exploration of the same spatial context.

Hull illustrates this difference by example of the proximity of the sense of touch compared to the larger scale spatiality of sound and acoustics in his description of rain: ‘If only rain could fall inside a room, it would help me to understand where things are in that room, to give a sense of being in the room, instead of just sitting on a chair.’ [5]

The key implications of these insights for interior architectural design are that the visual, the auditory and the tactile have distinct potential and specific roles in the spatial encounter of an environ-
ment. For a spatial designer it is therefore useful to develop awareness of a variety of different sensory qualities. This recognition was my incentive to explore how an interior architectural environment may be articulated by introducing a sound that would “fill” the acoustic space and how sound, reverberation and vibration change spatially in my movement through it.

The Project Installation
The project site selected for Interior Reverberations is situated on levels 11 and 12 of RMIT University’s Building 8 at Melbourne City Campus. These two floors are occupied by the School of Architecture and Design. I chose to install my project in the foyer space outside of the elevators and an adjacent side corridor, because of their varying spatial volumes and degrees of enclosure. The surface materials in both of these areas are mostly hard and aurally reflective, that is painted plasterboard, concrete or tiles. The interior architectural space of the foyer features different ceiling heights, some of which extend across two levels as well as an open staircase and three elevators connecting levels 11 and 12 [Figure 1]. In contrast, the hallway, which leads to an emergency staircase and is mainly used for storage, is narrow and closed in. I assumed these spatial characteristics would noticeably affect how sound reflects off the surfaces and reverberates in the space in different areas. Furthermore, this space was readily accessible to me and allowed me to experiment with my use of technical equipment without the need of going through formal processes of obtaining permits.

The installation was set up for one day on a weekend in May 2005. This meant the amount of walk-through traffic was minimal and I was free to explore multiple configurations with few disruptions. My

![Figure 1: Level 11, RMIT Building 8, Interior Reverberations installation sites.](image-url)
first step was to identify and mark with red tape points on ceilings, walls and columns towards which I intended to aim the loudspeakers [Figure 2]. I picked places on different vertical and horizontal surfaces in one area at a time in order to achieve maximum reflection and spatial reverberation. This process determined the position of the loudspeakers and the playback device. I installed the speakers in two different areas of the site: firstly, in the foyer space of level 11 underneath and around the staircase and, secondly, in a narrow side corridor [Figure 1]. The loudspeakers were placed on the floor and directed at walls, columns and the underside of the stairs in order for the low humming sound to be reflected off the solid elements back into the space. As I had no technical expertise of professional sound recording and reproduction equipment at the time, I used a DVD player with a 5.1 surround sound loudspeaker system.

The sound played through the loudspeakers was an oscillating low frequency electronic tone (ca. 60Hz) produced from a short sample of various sound effects on CD-ROM obtained from RMIT library, which was looped and extended to ten minutes duration. As a second alternative, based on techniques of clicking one’s fingers or tongue sometimes used by persons who are blind, I also tried a second looped sample of a rhythmic clicking sound like that of a metronome, but this did not achieve the desired effect. I realised the drone was more suitable for articulating spatial volumes and changes due to its pitch and continuity. Another advantage of the drone was that its low frequency content resonated in the solid structures, especially the steps, landing and railing of the staircase.

**Recordings and Manipulations**

I recorded the installation on digital video from a handheld camera position, which enabled me to document my movement through the different areas visually and aurally [refer to DVD – Chapter 2 – *Interior Reverberations*]. Video and sound were captured simultaneously through the video camera. Hence, the sound recordings are
mono only and do not convey the same quality of spatiality as stereo or multi-channel recordings would have done. The visuals predominantly show the spatial environment at eye height of a person. In some of the shots a broader view of the spaces can be seen, while others are extreme close-ups of interior architectural details, such as the balustrade or surface texture of a wall. The handheld camera effect and continual twisting and turning of the frame following areas of maximum reverberation inhibit consistent visual orientation. The opening and closing views show the larger spatial context. These walk throughs with the handheld video camera at eye height alternate with extreme close-ups of surface textures on walls or the balustrade of the stairs as well as views up to the ceiling through the atrium of the staircase or down through the bars of the railing. Certain visual cues, such as signs or shapes, indicate points of orientation. The visual variations in proximity and distance to solid structures are complementary to the intensity of the sound. As variations in spatial sound and acoustics were the main focus of this project exploration, I did not want the visual imagery to dominate over the auditory as a mere soundtrack. Instead, I sought to emphasise the sound and use the visuals to support and contextualise the auditory in the editing process. I approached this by manipulating the video, converting the footage to greyscale and using a solarisation filter effect to invert the light and dark areas [Figure 3]. In conjunction with each other, the edited video and sound piece of 8:39 minutes in duration conveys interrelated concepts of spatial movement and change.

**Physical and Audiovisual Encounters**

My encounter of the installation when installed in the physical site was noticeably different to that of the edited video and sound piece. Bodily movement and tactile sensations were important aspects in my original exploration in situ. As I was walking through the space, navigating areas of more or less intense sound and reverberation, I could feel the stairs under my feet and the railing under my hand resonate from the low-frequency content of the drone. I found that
the sound projected at solid architectural elements was not only perceived through the ears, but as vibration it was also felt through the skin and made visible to the eyes. Percussionist Evelyn Glennie, who has been profoundly deaf since childhood, relies on the vibrations she feels through her body and the soles of her feet to a great extent when playing her instrument. In the Hearing Essay on her website Glennie argues: ‘Hearing is basically a specialized form of touch. Sound is simply vibrating air, which the ear picks up and converts to electrical signals, which are then interpreted by the brain. For some reason we tend to make a distinction between hearing a sound and feeling a vibration, in reality they are the same thing.’[6] Thomas Riedelsheimer, director of the documentary Touch the Sound starring Glennie, emphasises the significance of vibration, sound and rhythm for human life: ‘The first sensory impressions a person experiences are vibrations, rhythms and sounds. The heart-beat of the mother, the way breathing makes the abdomen rise and fall, noises – long before the eye awakens.’[7] He further elaborates on this notion writing:

It is only in rhythm that we can experience time. Without vibration, without oscillation, there is standstill, there is nothing. Our ideas of stability, of firmness, are illusions. Everything oscillates and vibrates – from the bridge of steel and concrete to the energy shells around an atom. [8]

The sound installation in the physical site explored such dynamic relationships between the human body and interior architectural space as: ‘The body seems to synchronise itself with the vibrations of the environment.’[9]

In the sound and video documentation of Interior Reverberations, the physical sensation of resonating structures is conveyed through the sound pressure on the ear and visible vibration in some of the close-ups. Even though this is not felt in the body quite in the same way as in the physical installation, the images and sound together are capable of producing a vibrating sensation. One comment made by a colleague, as she was watching the piece in a standing position and listening to the sound through headphones, was that the close-up frames are ‘like a beating heart.’ This colleague also noted a feeling of dizziness after a few minutes. Dorland’s Medical Dictionary describes dizziness as ‘a disturbed sense of relationship to space; a sensation of unsteadiness and a feeling of movement within the head.’[10] Her body was stationary in relation to the screen on which the video was playing; yet she experienced a sensation of movement triggered by the motion in the imagery and the sound.

Project Evaluation
My explorations of sensory relationships between the human body and tangible as well as intangible qualities of the spatiotemporal environment in Interior Reverberations provided important cues that informed my practice and subsequent research projects. The
experimental sound installation and audiovisual piece raised further questions about interrelations between the bodily senses and spatial design. I was specifically interested to investigate the key issue of sound and its potential to define spatiality in more depth. Even though the installation of Interior Reverberations in the physical site indicated this potential of sound successfully, the audiovisual recordings were still strongly reliant on sight to articulate spatiality. My project work *Acoustic Arenas*, discussed in the following subsection, primarily focussed on spatiality, temporality and movement articulated through sound.

**Acoustic Arenas (2006)**

The aim of this research project was to gain better knowledge and skills of sound and acoustics through creative exploration. It sought to investigate how spatiality is produced and encountered within sound recordings and reproductions. *Acoustic Arenas* consists of several parts, including an electronic sound composition spatialised on 16 channels, from which two binaural pieces were derived, and a video documentation of some of my actions performed in producing sounds for stereo recordings. I produced this project in the SIAL Sound Studios, which are based in the School of Architecture and Design at RMIT.

The title of this project, *Acoustic Arenas*, is a term that originates from the language of soundscape studies and defines “the area where listeners can hear a sonic event (target sound) because it has sufficient loudness to overcome the background noise (unwanted sounds).” [11] This definition refers to dynamic relationships between human occupation and the sounding environment. Acoustic arenas continually emerge, expand, contract, intersect, disappear again and are therefore in constant flux. Often they are not defined by physical boundaries, such as walls, doors or partitions. This is due to the fact that sound has the capacity to travel through myriad materials. In my project work I captured sounds from within diverse acoustic arenas produced by varying spatial typologies and activities. Examples of the spaces in which I took recordings include an entry foyer, a tram interior, escalators and elevators. Human activities that produced sounds, and therefore their own fluctuating acoustic arenas, included a variety of physical actions, such as walking, jumping and tapping.

The conceptual framework of my multi-channel composition was inspired by two key ideas. Firstly, the tools and techniques used for the auditory navigation of spatial environments (as discussed in Chapter 1). As my research has shown, some individuals who are blind or visually impaired tap or scrape their canes on the ground or click their fingers or tongues in order to get acoustic feedback through sound reflection off solid surfaces and reverberation within the space. The techniques and devices used, in conjunction with the spatial volume, surface materials and shapes, determine the qualities...
of the auditory response. They affect the rhythm, texture and pitch of the sound produced as well as its acoustic characteristics. This was one main area of exploration in this sound project. The other area was the movement of bodies, specifically human bodies and mechanical bodies, such as trams, elevators and escalators. Movement and motion have been key areas of investigation in my research. Through this project I wanted to highlight and investigate the sound of different kinds of movement in a spatial environment via soundscape capture and composition techniques.

**Recording Sites and Techniques**

The selected sites for my recordings were spaces of transportation and circulation, such as a tram, escalators, elevators and an interior architectural elevator foyer. The former are mechanical spaces that move and have been designed to transport people and goods. The latter is a circulation space that directs flows of human movement. Mechanical and human sound sources produce several acoustic arenas on the tram, around the escalators and inside the elevators. Within the elevator foyer the main sound sources are the air conditioning, the lifts moving between floors and human occupation. I took sound recordings on the tram, at the escalators and in the elevators from a stationary position and from the perspective of a listener within the soundscape. In the foyer space I took a much more active position of producing acoustic arenas by using a variety of props and tools. This included walking up and down with pieces of timber attached to the soles of my shoes, handling a plastic bag, rolling glass marbles and a rolling pin across the floor, bouncing ping-pong balls between floor, walls and ceiling, and tapping along the surfaces with two wooden drumsticks. The spatial acoustics responded differently to the different dimensions, materials and uses of my props. The surfaces of the foyer space are all hard materials.
The floor is concrete, the walls on three sides are brick and the wall of the elevator doors a slightly angled steel surface, which also covers the entire ceiling. A timber and glass double door takes up most of the wall at one end of the space. At the other end, a hallway connects the foyer to another building. Opposite the elevators another narrower corridor leads to offices, classrooms and science laboratories. Next to this hallway, a large sign is installed on the wall. Two steel bins are placed at both ends of the space. The dimensions of the foyer are 12m long x 6m wide and 2.5m high approximately.

For the sound recordings in the foyer space I used a standardised stereo capture technique, in which two microphones were set up at an assumed average ear–height of 1600mm and at a 110–degree angle to each other, according to the Office de Radiodiffusion– Télévision Française (ORTF) standard. This set-up also allowed a greater economy of movement for recording in motion and on public transport systems (as opposed to a stationary multi–channel array). The microphones were positioned in the corner of the entrance space next to the door. All of the recordings used a small Digital Audio Tape (DAT) recorder that captured auditory information as 48kHz at 16 bit samples that were later digitised into .wav files for editing and manipulation. Furthermore I set up a digital video camera in varying positions in the foyer space in order to document my actions visually as well for my archive.

The sound recordings of the tram ride were taken on a journey from Hawthorn to the Central Business District (CBD) of Melbourne. I placed myself at the back of the tram in a seated position with the handheld microphones directed towards the front. On the recordings, human voices, the rattling tram, squeaking doors and car traffic are identifiable. Increasingly crowded conditions and a flux of moving bodies and machinery in the tram interior caused recording levels to occasionally peak. To capture the mechanical sounds of moving escalators I positioned myself next to the shaft between two floors of Building 8 of RMIT University, the microphones pointing towards the escalators. At the time of recording I was alone in this part of the building and therefore only the constant low–frequency drone mixed with high frequency squeaking sounds are audible in the footage. The recordings taken inside the elevator captured sounds of the doors opening and closing, the signal indicating the arrival at another floor, an automated female voice announcing the different levels and the dynamic frequency drone of the elevator moving up and down.

As well as capturing larger soundfield environments and ambient cover areas, sources such as elevators and escalators were also recorded up close. When concentrating on recording individual sources such as the sounds of the elevator doors closing, the ORTF
microphone set-up of 110 degrees was narrowed significantly to around 30 degrees so that ambient noise was somewhat attenuated. This method also increased the amplitude level. Recording in outdoor areas required microphone windsocks to be used to minimise the chance of distortion and poor quality recordings. Altogether my recordings within these different sites produced a large library of sounds for the project.

**Editing and Spatialisation**

The initial editing techniques for *Acoustic Arenas* involved basic dissections of the digitised DAT source files into discrete segments that ranged in length from a few seconds to 3–4 minutes of audio. From this I developed small audio scenes into an extended library with each of the samples concisely conveying a narrative about site conditions, human presence and qualities of the sources within the soundscape. Many of these segments contained spatial queues, or sound source movements across the stereo recording field, as well as drone-like stationary samples. The inherent spatiality was a consideration in the construction of *Acoustic Arenas* as a soundscape composition. By identifying certain characteristics of segments—their acoustic location, background sounds, texture and timbre—I began using standard layering techniques in the audio software Logic. Such editing software allows for numerous tracks (scenes or samples) to intersect and overlap, while additionally being processed and spatialised. As such, the premise for *Acoustic Arenas* was to utilise the full capabilities of Logic so that a potential of 16 individual channels of audio become available for moving multiple sources throughout the listening space. After numerous listening sessions of the sound segments from my library, I developed a structure for their placement that used numerous techniques of overlapping and intersecting as well as varying amplitude levels for transitions. The spatial information contained in the sounds (that is, any apparent panning) was a primary consideration for where these sounds would appear within the listening space and where a trajectory would take them. The listening space at SIAL Sound Studios comprises multiple loudspeakers configurable in groups from 4 to 16 channels located in a 360-degree area around the listener. As such, where sounds would appear was an important consideration in the composition of the work.

**Binaural Sound Pieces**

From the final spatialised sound installation on 16 channels, I condensed the composition down to two separate stereo pieces [refer to DVD – Chapter 2 – *Acoustic Arenas – Scrape Trickle Bounce* soundscape and *Hum Rumble Squeak* soundscape]. The portability of large multi-channel soundscape compositions becomes difficult when staging such works outside of specialist listening facilities such as those at SIAL Sound Studios. A 16–channel work can be reduced to 8 or 4 channels of audio only by significantly compromising the sense of encapsulation and source movement within the work. As these issues of spatiality are central to *Acoustic Arenas* I wanted to
allow the core of the work’s exploration of source movement and myriad acoustic volumes to remain intact through a headphone only version of the piece. I achieved this through capturing a playback of the work using a binaural dummy head within a near-anechoic environment at the SIAL Sound Studios. By eliminating any sense of a room in which the work is played back in, the inherent spatiality of *Acoustic Arenas* is maintained. The binaural head uses microphones embedded within an accurate sculptural model of a human cranium, including extremely detailed representations of the density and weight of a human head as well as the outer ear or pinna. The recording of the work in this fashion gives an extremely distinct spatiality common to the manner in which a human listener would perceive sounds in an environment. When playing back through 2-channel headphones, an extremely accurate 3-dimensional rendering of the trajectory of movement and spatiality produced in the original work are maintained.

The decision to divide the original 10 minute composition into two separate and shorter pieces was based on the recognition that I had taken two distinctly different approaches to the recordings initially. I was more interested in the research value of these distinct approaches in regards to aural spatiality as a designer than in a musical aesthetic and the overall form of the larger composition. The two binaural pieces derived from the original sound installation follow the different recording sites and techniques described above. The theme of one of the pieces, *Hum Rumble Squeak*, focuses on spaces of transportation. It features edited sound segments of a number of different spaces, that is, the tram ride, the escalators and the elevators. The other piece, *Scrape Trickle Bounce*, demonstrates my acoustic explorations of the RMIT elevator foyer. It evolves around the production of a variety of sounds and acoustic arenas (foot-
steps, rolling marbles, bouncing ping-pong balls, and so on) within
the same spatial environment. The titles of both pieces refer to the
key characteristics of the sounds within the pieces, that is texture,
colour, timbre and frequency. They were inspired by Christian Mar-
clay’s 2004 sound and video installation *Shake Rattle and Roll (flux-
mix)*. In this installation Marclay set up 16 monitors in a circular
arrangement, each playing a video of white-gloved hands handling
objects against a white background [Figure 5]. ‘The objects, includ-
ing wooden and plastic boxes, toys, books, games, photographs and
many other things, are from a collection of works by Fluxus artists
at the Walker Art Center in Minneapolis.’ [13] Similar to the effect in
my two sound pieces, in Marclay’s *Shake Rattle and Roll (fluxmix)*
everyday objects ‘make sounds: tapping, drumbeats, scratching and
scraping noises, ringing, buzzing, clicking and so on’, which ‘pro-
duces a randomly percussive, surround-sound concert.’ [14]

**Physical and Audiovisual Engagement**

Despite their similar content, I noticed specific differences between
my listening experiences of the original sound installation and the
binaural sound pieces.

The final spatialised soundscape composition for 16 channels was
installed in the listening space at the SIAL Sound Studios as well
as at RMIT Radio Theatre, an auditorium for multimedia presen-
tations. In both spaces the loudspeakers were set up around the
periphery with the audience in the centre to achieve an enveloping
surround-sound effect. One sub-woofer was placed at the front to
play back low frequency content. Apart from the functional arrange-
ment of loudspeakers and chairs, the spatial environment was not
manipulated visually or physically. The sound sources were designed
to move between channels around the audience, which was sitting
in the central area between the array of loudspeakers in a station-
ary position. Introducing electro-acoustic sound into the space
seemed to dissolve its physical boundaries. In the installation, the
constant flux of acoustic arenas produced continually shifting and
transforming conditions of spatiality. Sounds panning between the
channels and the changes in amplitude levels open up or close down
the space, moving towards the audience or away from it. Transitions
between segments and techniques of layering formed intersecting
and interweaving acoustic spaces. The 10 minute soundscape com-
position deliberately did not have one coherent narrative and took
an experimental approach to exploring spatial design through sound.
The sound installation made its own new spatial relationships rather
than reproducing familiar auditory characteristics of the original
sites. It used, however, certain soundmarks and signals recognisable
to local and global communities, such as a moving tram, the chime
and voice inside an elevator, a siren and a car horn. The focus
of this soundscape composition has been to investigate spatiality
through the acoustic conditions conveyed within the piece as well as
spatiality produced through it.
In my listening experiences of these soundscape installations my body was in a stationary and seated position, facing the front, which was defined firstly by the usual set up of the spaces for lectures or presentations and secondly by assigning spatial locations (front and back, left and right) to the loudspeakers. While my body was arranged in this position, I focussed my attention on listening to the piece. At times, I could feel the vibration of low-frequency content in my body in addition to hearing the sound. Visually, the physical space formed a mere backdrop to the listening experience and did not match the fluctuating spatiality and movement of the soundscape. What I was seeing in front of me were rows of chairs, part of the floor, loudspeakers on stands and the walls behind them. The light in the RMIT Radio Theatre was more dimmed down than the light in the listening space of the SIAL Sound Studios. The reduced intensity of the light in the Radio Theatre made it easier for me to immerse myself in the sound. In both environments, however, I felt a clear discrepancy and disconnection between the soundscape, the visual as well as the tactile connection to my chair on which I was positioned in a stationary position.

The two binaural pieces, *Hum Rumble Squeak* and *Scrape Trickle Bounce*, are best experienced through headphones. This playback format allows for the greatest spatial listening experience, with sound sources appearing from all orientations and noticeably moving in different directions. Headphones focus the listener’s ears on the soundscape within the piece and largely eliminate the physical acoustic space. The set-up of the spatial sound installations allowed for a group audience to listen to the piece together within a shared acoustic space. On headphones, the listener engages with the soundscape individually and is acoustically separated from the surrounding context. The actual spatial environment becomes less important, because attention is not drawn to the larger space in the same way as in the installations. In my encounters, I found that the headphones transported me into new auditory spaces within the recordings, while the installations drew attention to relationships in the larger spatial environment aurally, physically as well as visually.

**Video Piece: Scrape Trickle Bounce**

I exhibited *Hum Rumble Squeak* and *Scrape Trickle Bounce* together with my other PhD project works at the RMIT Design Hub Gallery in September 2009. When compiling and editing the material for this exhibition I re-discovered the video I had taken during the sound recordings of my acoustic experiments in the elevator foyer space. At the time I had kept these video recordings for my own reference only and did not pay particular attention to them. However, three years further into my research I recognised their specific potential in relation to key lines of enquiry. The video shows my body moving through the elevator foyer performing actions that produced the sound sources and acoustic arenas used in the binaural pieces [Figure 6 and refer to DVD – Chapter 2 – *Acoustic Arenas* – *Scrape Trickle Bounce* video]. It illustrates dynamic visual and physical
Figure 6: stills from Scrape
Trickle Bounce video
relationships between my body and the interior architectural space mediated by a range of props, such as ping-pong balls, glass marbles or a rolling pin. The spatial conditions and boundaries are more clearly defined in the video than they are in the resulting sound piece. In the exhibition I did not want the visual images to become dominant over the sound composition of *Scrape Trickle Bounce* as I found each of them to convey different concepts of spatiality. Therefore I decided to juxtapose them in a non-synchronised way, rather than edit the video to match the sound piece. I converted the video recordings to greyscale and increased the light-dark contrast in order to reduce the visual clarity and focus of the imagery. My movements are filmed from a stationary camera position. The frames of the edited material change between views of the larger space and close-ups of my actions. Scrape Trickle Bounce was part of my overall exhibition of PhD projects called *multisites*, which will be discussed in detail at the end of Chapter 3.

**Project Evaluation**

*Acoustic Arenas* focussed on spatial design predominantly through sound. The project helped me gain a much better understanding of the qualities and possibilities of sound for producing spatial environments independently of built structure. However, as an interior architectural designer I felt discontent with the lack of engagement with other spatial and sensory conditions, such as the visual, tactile or thermal in this sound composition. I realised that I was not aiming to become a specialised sound designer as such, even though my interest in and appreciation of this area have continued to be an important part of my research and practice. Through this project work I was able to identify my need for a multi-sensory approach to spatial design in the following research projects. The juxtaposition of the *Scrape Trickle Bounce* video with the *Scrape Trickle Bounce* soundscape has added another layer of investigation to this project. It has raised questions about physical, visual and auditory connections within spatial environments. The last work discussed in this chapter, *Choreographies of Inhabitation, site 01*, further explores such relationships between sound and video.

**Choreographies of Inhabitation, site 01 (2008–2009)**

The incentive for this project was to interrogate dynamic physical, auditory and visual interrelations in the human occupation of architectural environments. In order to gain fresh insights into this issue, I decided to take an interdisciplinary approach and collaborate with soundscape researcher and musician Dr. Michael Fowler in this work. Our aim was to produce a spatial design installation based on observations and documentations of activities in a designated site. *Choreographies of Inhabitation, site 01* describes the first part of this collaborative research project, which resulted in the design of three video and three sound pieces. Observations of movement and occupation in the physical site and the subsequent editing of the video and sound footage inspired the title of this project, *Choreogra-
phies of Inhabitation, site 01. We noticed how tangible and intangible qualities of the environment shape behaviours and interactions, producing choreographies within common modes of occupation. In dance the term choreography describes “the sequence of steps and movements.”[15] Spatial design similarly organises flows and forces through physical and sensorial qualities of a site.

The project sought to investigate the following key questions:

- How does human occupation occur in the designated project site physically, visually and aurally?
- What are specific spatial interrelations between the dynamic auditory and ocular qualities?
- How does a series of design experiments enable new sensory and spatial connections and temporary changes in the modes of occupation?

The theoretical framework was drawn from literature on visual and acoustic ecology as well as from Massumi’s discussion of movement and sensation. [16] Ecology, as defined by the Collins English Dictionary, is “the study of the relationships between living organisms and their environment.”[17] Hence, the fields of visual and acoustic ecology examine these relationships mediated by ocular and auditory systems. Gibson’s Ecological Approach to Visual Perception [18] has inspired our approach to the interrogation of time, change and bodily movement in the project.

We have engaged the work of the acoustic ecology movement as a means to implement design research methods in producing a number of spatiotemporal design compositions. By referencing Truax’s notion of the “communicational approach to acoustics,” [19] rather than a scientific approach, we have focussed on qualitative relationships within a soundscape and how they enable or produce particular
choreographies of occupation within a site. Similarly, R. Murray Schafer’s terminology of acoustic ecology (soundmark, keynote and sound signal) [20] has been useful in identifying the connections between visual and auditory articulations of space. Blesser’s notion of aural architecture [21] and Francois Augoyard’s systematic categorisation of terminology common between sound design, music, architecture, and sociology [22] have explored these interrelations extensively.

**The Physical Site**

Bowen Street is a central square and pedestrian thoroughfare of RMIT University’s city campus in Melbourne, Australia [Figures 7 & 8]. Multi-storey buildings along two sides, and multi-lane streets at either end, frame the site. The site provides a link between several buildings and facilities as well as connections to urban infrastructure. Due to its central city location, university students, staff and visitors mix with construction workers and the general public.

Bowen Street is divided into two main areas: a private street for delivery trucks and construction vehicles only, and a pedestrian/recreational zone, providing a number of services to students, staff and the general public including outdoor seating, barbeques, a basketball court and access between various multi-storey university buildings. The design intent and resulting physical infrastructure of Bowen Street are multi-functional. RMIT University designates the site as a leisure and lunch area in which a basketball half-court is positioned at the Franklin Street end. Nearby is a small planting of deciduous trees that delineates the resting areas, and contains ubiquitous timber picnic tables, slated benches and polished bluestone planters with seating. The site’s situation between major multi-storey buildings means that pedestrian traffic is at times high. Similarly, the site’s public accessibility and vehicle access by service trucks and contract personnel have required that the entire site is uniform in its topography. The predominant horizontal and vertical materials in Bowen Street are hard, visually opaque and aurally reflective.
surfaces. Varying paving materials such as concrete, pave stone, cobblestone and tarmac demarcate different areas within the site.

Key factors in the selection of Bowen Street as our project site were the dynamics of continual movement and change within this environment, as well as the site’s open public accessibility and its multi-functional layout.

Research Methods
We approached the site investigations of Bowen Street in three stages: firstly, through observation and listening sessions; secondly, through a number of visual and auditory recordings of the site; and thirdly, by means of the reviewing and manipulating captured sound and image. In initial site visits to Bowen Street we examined different modes of occupation, and investigated the visual, auditory and physical dynamics of the spatial environment through observations and sketches. In the second stage we captured user activities and spatial relations through video and soundscape recordings. Our initial observations informed our decisions about position, framing and points of reference for the recordings. In the third stage—the production of video and sound compositions—the project moves away from the original physical site context and produces new non-physical sites through the manipulation and editing process of the original recordings.

The Auditory Occupation
For the recording of environmental invariants within Bowen Street we adopted the methods of auditory data collection favoured by the acoustic ecology movement. We used a cardioid shotgun microphone pair with an ORTF set-up of approximately 17cm microphone separation and 110-degree displacement. Information was captured at stationary points, as well as on soundwalks through the site over the course of three weekdays between the hours of 10 am and 3 pm in November 2008.

Initial walk-through and listening sessions revealed a particularly static soundscape throughout Bowen Street, but one that is nevertheless articulated by two similar keynote sounds. These sounds emerged from two large circular structures (nearly identical looking) that housed exhaust fans for the nearby building. With a mesh opening, the sound of quickly moving air is distinctive. Located within 20m of each other, their respective sonic content was a constant mid–high frequency rich drone that penetrated the surroundings and caused two distinct auditory zones for the site. Additionally, the periodic auditory alarm for the raising and lowering of the street bollards to allow vehicle access to the pedestrian street becomes a rhythmic soundmark of the site, as do the auditory alerts for reversing trucks. The height of the buildings that define the edges of the Bowen Street, and their hard reflective surfaces allow for a degree of separation from the active city noises occurring at both open ends of the street, while similarly providing a containment area for
the soundmarks and keynote sounds occurring within the site. There is a certain amount of occlusion from the city within the street, though occasional traffic noise tends to reflect of the high walls.

Pedestrian traffic and the sounds of people conversing, meeting and playing basketball within the site have little impact on the keynote sounds present, especially when one is within 5m of the exhaust fans. But because of the higher frequency content and rhythmic fluctuations in birdsong, birds active around the seated areas and in nearby trees provide a dynamic soundmark that permeates throughout the space. To explore the range and dispersion of these keynote sounds, and the other qualities of timbre inherent within the streetscape, various recordings were made at different locations. Additionally, soundwalks that circumnavigated, or moved between the two exhaust fans revealed how the acoustic arenas of Bowen Street are relatively fixed by these keynote sounds. Any flux in amplitude or sonic texture is inevitably a result of the human occupants and their ephemeral occupations of the space. Apart from the soundmarks of the bollards and the birds, the soundscape of the site is rarely articulated in a diverse fashion by a large palette of higher frequency timbres.

By using stereo recordings of Bowen Street we were able to engage in a qualitative analysis of the key elements of the soundscape: what are their traits in terms of regularity, timbre, pitch or amplitude? Our approach to understanding the identified auditory qualities of this site was further developed through soundscape compositions, which drew on the trends, auditory zones and rhythmic content mapped within Bowen Street.

The Visual Occupation
The sense of occlusion is not limited to the auditory space of Bowen Street. Visually, the multi-storey buildings along its two sides set clear impenetrable boundaries. This resulting form of enclosure focuses the attention from the broader architectural (macro) context to the environment at human scale (micro). At this scale, sightlines change according to the respective position of the occupants. From the longer distances spanning the entire depth of the site to the shorter distances of the immediate surroundings, the respective position of the occupants creates a series of visual juxtapositions in which scale becomes malleable and relative to the immediate environs. Trees and large plants defining the designated seating areas, as well as two previously mentioned cylindrical structures housing the exhaust fans, are the main fixed elements interrupting an otherwise uninhibited visual connection through the spine of the site. Dynamic visual qualities within Bowen Street are introduced by variations in human occupation (pedestrian flows, cyclists, car traffic), lighting conditions, air movement (visible in trees and the movement of debris, such as plastic bags) and the activity of a variety of birds. Human activities observed in the site included walking, resting, conversing, talking on the phone, reading, writing, meeting,
The continual flow of pedestrians, bicycles and vehicles is particularly noticeable during lunchtime and mid-afternoon.

The visual recordings were taken in the site over a period of one week in November 2008. We used digital video cameras to capture temporal qualities of occupation within the site and digital still cameras to take snapshots of specific activities at different times of the day. Video recordings were taken from stationary locations as well as from moving handheld perspectives. Following Gibson’s view that ‘we perceive not time but processes, changes, sequences,’ [23] we concentrated our video recordings on activities, processes, changes and sequences at human scale. In order to capture activities in standing, walking and seating positions the camera was set up between average eye heights of a sitting and standing person. The recordings were framed to capture flows and activities of people in the foreground and in the background, as a way of exploring spatio-temporal relationships between moving bodies.

Our approach of using video recording to document occupation in the site highlighted the variety of human activities, bodily movement and interaction. This consequently inspired explorations of choreographic, temporal and relational concepts in three video compositions discussed in the subsection titled Design Compositions below.

**Visual, Auditory and Physical Relationships in the Site**

Occupation in Bowen Street happens in form of multiple visual, auditory and physical relationships. These relationships define temporary territories through human activities and produce visual and auditory zones, which overlap, intersect and contract in dynamic ways. The physical infrastructure of the site is suggestive of particular modes of occupation. The seating offers places for resting, eating, meeting, conversing, observing, reading, and so on, whereas the basketball court provides an area for running, jumping and playing. The open parts of the site and the paths leading to front doors of the university buildings encourage free flows of movement for pedestrians, bicycles and motor vehicles. The physical site seeks to structure and divide Bowen Street into designated sections of movement and rest. The visual and auditory zones of occupation however do not follow this spatial organisation. To an extent their zones and arenas are contained by the architectural design at macro scale, yet the territories they form within the site are far more dynamic in their volumes and relationships [Figure 9].

At micro level—which refers to activities and events at human scale—the site operates in various ephemeral, dynamic zones of activity, which accentuate the slow-changing visual and auditory macro environment at the larger architectural scale. At macro level the most prevailing visual and auditory qualities are the result of a utilitarian design brief. The building facades form a visual backdrop to the activities and events at micro (human) scale. Similarly, the
two circular exhaust fan ducts produce a constant background (key-
note) sound, which is punctuated by ephemeral sound marks in the
site. The exhaust fan structures are prominent advertising surfaces,
acting as visual landmarks within the arena, yet not producing an
aurally equivalent soundmark but rather a drone like keynote sound.
The strong or weak sonic identity of such arenas and the ‘unique-
ness or singularity of local sound in relation to those of other city
settings’ [24] helps define the acoustic typology of Bowen Street.

The analysis of our video and soundscape recordings has shown that
the physical, visual and auditory spaces within Bowen Street each
have consistent qualities that are related to the macro architectural
context as well as dynamic qualities that occur through occupation,
movement and change in the site.

Design Compositions
As an exercise in our qualitative analysis of the ephemeral visual
and aural occupation and inhabitation of Bowen Street, we devised a
methodology in which the spatial information captured from the site
via video and sound recordings would serve as the basis for six short
compositions: three as sound works, and three as moving image.
These pieces were compiled and composed independently, then jux-
taposed to allow for the accentuation of commonly identified spatial
predilections. These predilections arise in the design exercises as
observations, manipulations or amplifications of spatial relationships
active within the visual or auditory space of the site. Further to
this process is the production of an abstracted or projected site in
which Bowen Street and its spatial relationships are transformed and
situated within the two-dimensional viewing frame of a visual editing
software or screen and the digitised aural space of headphones or a
playback device.

The six design compositions use both auditory and visual investiga-
tions into the spatial predilections observed within the site in order
to explore how we construct new spatial and temporal interrelations
between them. We recorded the moving image and soundscape in
the same site context, but designed the compositions independently of each other in order to eliminate an imposed narrative that might arise from a deliberate synchronisation of image and sound. The parameters we set ourselves were to produce three sound and three video pieces, which only use manipulated recordings from Bowen Street and are three minutes each in duration. These six works are then indeterminately combined in nine different versions. The design process arose from initial site visits and the methods and devices used for the recordings. The process of selecting and manipulating footage to become the final six pieces was a result of filtering, organising and focusing our visual and auditory observations from the site.

*Three Soundscape Compositions after Bowen Street*

The most audibly prominent features present during the recordings at the site were the previously mentioned keynote sounds of the exhaust fan ducts. Due to the nature of microphones to act as aural microscopes, the stasis in these sounds predominates many of the soundscape recordings. The presence of these sounds sits within a large spectral range, giving them an aural resemblance to white noise. Because of their pervasiveness within the soundscape, the periodic and pitched interjections of the soundmarks (that is aural alert signals of the bollards, the birds and reversing truck warnings) provide points of departure for the three soundscape compositions. As a design exercise, and one that aims to highlight or manipulate the predilections of the soundscape, each of the compositions focuses in varying degrees on the periodicity of the soundmarks, and how this periodicity can be dismantled, reformed or echoed [refer to DVD – Chapter 2 – *Choreographies of Inhabitation, site 01* – v01+s02, v02+s03 and v03+s01]. Additionally, a micro-examination of the keynotes sounds [Figure 10, s02] is used to turn “inside-out” the static nature of the exhaust fans. By altering the pitch, changing the tempo and removing noise in these sounds through filtering, a remnant to the original sound remains, though its context and qualities are significantly transformed. This same technique is also explored in s01 [Figure 10, s01], this time as a means to transform the keynote sounds into soundmarks. By altering and transposing the fundamental pitch frequency content, a *stretto* effect (in which successive sounds are literally piled on top of each other) alters them to produce a far more varied unfolding of pitch and rhythm. Finally, a technique for the complete deconstruction of the keynote sounds is presented in s03 [Figure 10, s03] where site samples are layered together, filtered then repeatedly convolved. By combining this process with pitch transformation echoes of the discretely pitched soundmarks, a newly constructed soundscape is generated in which the timbre palette of the site is considerably widened.

*Three Video Compositions after Bowen Street*

Based on the observations and recordings in Bowen Street, the three video compositions explore visual concepts of choreographic movement, temporal variation and spatial relations [refer to DVD
Figure 10: Sonograms of soundscape composition showing spectral content (frequency in Hz) vs. time in s01 (top), s02 (middle) and s03 (bottom).
Figure 11: Freeze frames from visual compositions (left to right): v03, v01 and v02.

- Chapter 2 - Choreographies of Inhabitation, site 01 - v01+s02, v02+s03 and v03+s01. Video pieces v01 and v03 use material filmed from different stationary positions, whereas in piece v02 the recordings are taken from a handheld moving position [Figure 11]. The colour, brightness and light–dark contrast have been manipulated in all three compositions with the aim to focus viewers on the relationships between movement and the spatial environment. Through this visual manipulation the identities of individuals are obscured and the broader site context becomes less definite.

The first piece v01 explores choreographies of movement using techniques of repetition, reverse motion and the manipulation of speed. Deliberate disruptions in the visual continuation emphasise the rhythmic structure of the composition, while variations in the visual field of depth and the framing of the moving image question the spatial relationships between viewers and “performers”. Video composition v02 similarly investigates such connections, this time mediated through a moving viewpoint. According to Gibson ‘a point of observation is never stationary, except as a limiting case. Observers move about in the environment, and observation is typically made from a moving position.’ [25] By slowing the moving image and using long transitions between the different parts, this piece examines a changing motion perspective, as well as the compressing and expanding of temporal qualities. Composition v03 focuses on interaction and occupation in relation to continuity and change. The frame zooms in and out of the scene at times drawing attention to particular visual details, yet does not change its original position. Again, techniques of long transitions are used in this piece to achieve translucent layering effects, which highlight and contrast modes of occupation and the movement of bodies.
Nine Coincidences of Juxtapositions

As a means to examine the relationships within and between the resulting sound and video pieces [refer to DVD – Chapter 2 – Choreographies of Inhabituation, site 01 – v01+s02, v02+s03 and v03+s01], we determined a framework that contains four overarching concepts: structure, texture, rhythm and continuity. These concepts have assisted our quantitative and qualitative investigation into spatio-temporal modes of occupation. Structure is used as a quantitative measure to describe the division of the whole into parts, or how proportional relationships occur within the unfolding of the work. Texture refers to the thematic qualities of colour (timbre), scale (reverberation), intensities and the juxtaposition of events. Texture is also used to define different sections within the ‘structure’ of the pieces. Rhythm is understood as pertaining to event activity at micro-scale, frequency (occurrence) and periodicity. Continuity relates to the temporal relationships inherent within structure and is a means to assess the macro-structure of rhythm. In using these four terms we explored the visual and auditory interrelations of the pieces with the objective of developing a set of design parameters for a spatial design installation in a new project site to further investigate the concepts formed in this project.

The trends observed within the juxtaposition of the works reveal an expected difference in their structure, rhythmic content and overall continuity. We found that the visual compositions contain more sections than the sound compositions, though identified more rhythmic variation within the sound pieces. The visual compositions contain a higher level of structural continuity, and unlike the numerous small linked sections within the visual compositions, the sound compositions contain medium-to-long sections. When a contrasting short section appears, it is in the context of two longer parts. This characteristic creates a continuum for the juxtapositions between the quasi alignments of s02-v01 [Figure 12], to the non-alignment of s03-v03 [Figure 13]. In regards to texture, the nine juxtapositions act in concert to create a new ephemeral and dynamic materiality. They are exaggerated through a simultaneous rhythmic language operating on the micro-scale, that consequently creates a dynamic structure (on the macro-scale) because of the contrasting sections of varying length. Because of the similar uses in editing techniques between the sound and visual compositions—for example, layering, repetition, manipulation of time, scale (reverberation), and colour and contrast (timbre)—the resulting texture of the nine juxtapositions is suggestive of a series of projected spaces that co-exist, collapse, conjoin and expand seemingly at will, though occasionally through a synchronised choreography. This abstracted spatiality of juxtaposition is a dynamic one. It is in constant flux, driven through temporal articulations, the movement of sound sources and changes in volume. The spaces produced between the visual and auditory compositions are qualitative, only suggestive of scale, sometimes indeterminate and ambiguous, and not readily measurable.
Figure 12: Comparative diagram of the quantitative structure (shaded arcs) and qualitative rhythm (mapped between 0=static and 1=agitated), of s01-v03 | s02-v01.

Figure 13: Comparative diagram of the quantitative structure (shaded arcs) and qualitative rhythm (mapped between 0=static and 1=agitated), of s02-v01 | s03-v02.
Project Evaluation

Our investigation of human occupation through sound and video compositions refers to questions of sensation and perception in relation to the body and movement. For Massumi there is an ‘intrinsic connection between movement and sensation’ [26] that is inseparably tied to his concepts of change and the body. Massumi distinguishes between perception as ‘segmenting and capable of precision’ and sensation as ‘unfolding and constitutively vague.’ [27] Our indeterminate combination of video and sound compositions prioritises intensive qualitative encounters of sensation over a quantifiable object-perception. Yet both concepts are inherent in our exploration of visual, auditory and spatial relationships through our attempt to make sense of the works. We understand the sound and video compositions as modes of non-physical occupation removed from their original physical site context. Even though not manifest in the material world, the compositions mediate multi-sensory and spatial encounters through texture and movement.

Our use of design compositions (both as auditory and ocular experiments in spatiality) has facilitated a method through which the spatiotemporal qualities of a site can be mediated and analysed in order to develop a design brief. This project has highlighted that relationships between visual and auditory qualities within the built environment function in a like manner to the juxtaposition of the video and sound compositions produced in this study. Although often apparently unrelated and without a coherent narrative, there is nevertheless a cohesion and occasional synchronicity between visual and auditory events as they occur in close spatial and temporal proximity. The significance of such interrelations, and the constant play between visual auditory spaces has been identified through our project work as an unexplored dimension for spatial design praxis.

Based on the investigations of our experimental design compositions and preceding elaborations, we developed a design brief and proposition for the installation project *Choreographies of Inhabitation, site 02* discussed in Chapter 3. This installation has allowed us to explore how the sound and video compositions have enabled a different approach to a visual, auditory and spatiotemporal design for a new site. The design concept for this installation was to enable new spatial choreographies of sound, image and movement in relation to human occupation and to curate dynamic auditory and visual articulations within a site.

Summary

The projects described in this chapter have used video and sound recordings as tools to explore relationships between spatiotemporal physical, auditory and visual qualities of site. Whereby the video and sound pieces have served not only as means of documentation, but also as spatial dynamic mappings highlighting particular qualities and conditions within the sites. The editing and manipulation of
the footage produced new spatiotemporal relationships, which have informed design briefs and propositions for further project works discussed in Chapter 3: Spaces of Movement and Interaction. The implications of exploring non-synchronised image and sound combinations in the design process are manifested in the spatial form of the installations themselves and their function, program and articulation of site. The conceptual framework is centered on how spatiality is constructed in different ways through myriad spatial qualities beyond the physical material properties of site.

The works have defined interior architectural design as a spatio-temporal practice, in which human occupation in relation to sensory qualities form continually changing territories. By approaching the discipline as such, it becomes one involved in the ephemeral articulation and organisation of space. Spatiality and human occupation are not merely shaped by physical typologies, but emerge through interrelations in expanding and contracting arenas and zones, which are multi-layered and multi-sensory.

These key insights set up the discussion of project works in the following chapter, which deals specifically with issues of time, movement and social interaction in relation to multi-sensory qualities of spatial design.
Endnotes


2. see http://www.johnmhull.biz/about_jmh.html (accessed 05.02.2010).


4. ibid.

5. ibid.


8. ibid.

9. ibid.


14. ibid.


23. Gibson, 12.
25. Gibson, 66.
27. ibid, 259.
Filament dance improvisation with Choreographies of Inhabitation, site 02, 2009. Photography: Heidrun Loehr
Chapter 3: SPACES OF MOVEMENT AND INTERACTION

When we think of space as “extensive,” as being measurable, divisible, and composed of points plotting possible positions that objects may occupy, we are stopping the world in thought. We are thinking away its dynamic unity, the continuity of its movements. We are looking at only one dimension of reality. [1]

The research projects discussed in this chapter explore concepts of spatiality in relation to human occupation and movement. They investigate how spatiality is produced through dynamic processes of social interaction as well as tangible and intangible sensory qualities of an environment. While the works described in Chapter 2 focussed mainly on digital video and sound pieces, the three projects of this chapter are all spatiotemporal design installations that have altered the multi-sensory context and modes of occupation of a physical site. They question in different ways how multiple sensory qualities facilitate behaviours and social interaction.

In the first project, Kontakte (2007), I installed a kinetic aluminium screen in a staircase RMIT University. The design of this screen was generated in response to site investigations I had undertaken within the space. These investigations revealed specific predilections of the site context in relation to sensory conditions and human activities. The project installation sought to shift these conditions and instigate different modes of occupation in the space.

Choreographies of Inhabitation, site 02 developed out of the six sound and video pieces that I produced in collaboration with Dr. Michael Fowler (refer Chapter 2). We designed a spatiotemporal installation with responsive sound and video components using sensor technology. The project incentive was to generate dynamic conditions of spatiality activated by human occupation and movement. A performance by the contemporary dance group Filament in the installation added another layer of enquiry to our investigation. This work was set up as part of the transdisciplinary conference time. transcendence. performance. (tp) at Monash University in Melbourne in October 2009. It was also installed in my exhibition workshop of PhD projects titled multisites at the Design Hub Gallery, which is located in the Design Research Institute (DRI), in September 2009. The workshop was an opportunity for me to test how to curate all of my PhD design works within one gallery space and to get feedback from peers. In my discussion of multisites I will explain my approach, the processes and the issues that arose in this project.
This project installation explored current issues of multi-sensory, spatial and temporal design in relation to human occupation within an interior architectural environment. It was set up in a site in Melbourne’s inner city for two weeks in October 2007. The title of this project, *Kontakte* (English: *Contacts*), was inspired by an electronic music piece (1958-60) by Karlheinz Stockhausen. According to the composer, it refers to ‘contacts between instrumental and electronic sound groups and to contacts between self-sufficient, strongly characterized moments. In the case of four-channel loudspeaker reproduction, it also refers to contacts between various forms of spatial movement’ [2] As such it relates to my project installation, which sought to reveal, amplify and produce multi-faceted contacts between flows and forces within the site context by means of changing the spatial dynamics.

In addition to drawing on literature by Massumi and from the area of acoustic ecology, the works of particular installation artists have been key references for this project. Specifically, works by Dan Graham, Bruce Nauman, Susan Hiller and Bernhard Leitner have been important influences as they pursue similar explorations of multi-sensory and spatiotemporal arrangements in relation to human occupation and social interaction.

Video and spatial artist Dan Graham is interested in ‘inter-subjectivity, exploring how a person, in a precise and given moment, perceives him/herself while at the same time watching other people who in turn are watching him/her.’ [3] He considers the public realm as a space ‘for social performance purposes.’ [4] His spatial works use concepts of transparency and reflection that shift the relationships between viewers. [Figure 1] Some of the works of multimedia artist and sculptor Bruce Nauman similarly aim to shift the role of the visitor from mere viewer to participant. As Nauman has stated, the point was ‘no longer to “entice” or “captivate” the viewer but to activate him, to make him the ultimate object of the work.’ [5]
Nauman uses a variety of practices and media in the production of his projects. His video installation pieces, such as the *Going Around The Corner Piece* (1970) and the *Live-Taped Video Corridor* (1969–70) have been particularly inspiring to me in that they raise questions about relationships between visitors as well as relationships to the self. In these installations the viewer is captured on video whilst moving through or around a built structure, watching him- or herself and others on screen, observing and being observed at the same time. At an early stage of his career Nauman’s ‘art became more of an activity and less of a product.’[6] This insight has been significant for positioning my own research practice as I consider my design intent to be process-driven rather than focussed on the final object. To draw on Massumi, I am more concerned with what something does than what it is. In this sense, sound and acoustics have been major areas of investigation and creative experimentation in my research. The sound works of Bernhard Leitner, who graduated with a degree in architecture, explore spatial experiences of acoustic environments. Leitner’s art installations either place an individual listener in the centre of the sound work or encourage groups of visitors to engage with his soundscapes from moving positions by situating loudspeakers in different locations of a space. Similarly, UK-based multimedia artist Susan Hiller exhibited a sound installation called *Witness* at the Sydney Biennale in 2000 [Figure 2]. Visitors walked through 70–80 suspended earphones that played back voices speaking in different languages. In this work Hiller was interested in the tension between ‘an overall kind of fable effect of all the voices talking at once’ and ‘a close relationship with all the people telling their stories,’[7] depending on the listener’s position in the space. All of these installation works produce new spatial relationships within a larger architectural context by means of shifting visual, auditory and material conditions of site. This facilitates new modes of occupying the physical environment as well as the visual and auditory spaces within the reflection of glass, the video or the soundscape.
The above practices suggest diverse tactics and tools for an engagement with multi-faceted sensory qualities of environments in relation to human occupation. This set up the following set of questions for investigation in this project:

• How are issues of multi-sensory, spatial and temporal design related to human occupation in interior architectural environments?
• What is the specific role of interior architects and interior designers in a multi-sensory, spatial and temporal design practice?
• What are the skills and tools needed for such approach?

**Site Selection and Documentation**

My selection criteria for the project site stipulated a publicly accessible space with rich sensory stimuli, indeterminate numbers and types of users, high frequency of motion and movement as well as continuous change. I believed that such site conditions would highlight how a variety of tangible and intangible sensory qualities within an interior architectural environment shape human occupation and interaction. The kinds of user groups in the space were not given any particular relevance in the site selection because I wanted them to be varied and not fully controlled. This allowed me to develop my design independently of specific requests and programmatic considerations.

The site that I eventually chose for my research project is an access space to RMIT’s Building 14 in the inner city of Melbourne, Australia [Figure 3]. The access space is located on a main street and near a major traffic crossing. Besides the street traffic, there is a high frequency of pedestrian traffic past the site along Swanston Street. The space opens onto the street and is easily accessible during business hours. Numerous people use the space as an entry to or exit from the campus. The site contains a staircase providing access to four levels of Building 14. It leads to key facilities, which connect to other university buildings such as the student service hub. The staircase opens to the outside at street level as well as on the level above. After hours a perforated roller door closes the site off to public access, but still allows for unobstructed air movement and views into the space from the outside. The space’s strong relationships between inside and outside are its key features. Inside the staircase, the solid structures all have hard and acoustically reflective surfaces, such as exposed brick, concrete and glass [refer to DVD – Chapter 3 – *Kontakte* project site].

Investigations of the multi-sensory conditions in and around the existing project site were the starting point for developing my design response. These site visits and various recordings happened between February and July 2008. I approached the investigations through observations, conversations and documentation, using video and stereo sound recording, photography, mapping and note taking.
as my main media. Each of these media revealed distinct qualities about the spatial relationships and ephemeral conditions of the site context. The most notable of these qualities were the lively soundscape with a distinct keynote sound caused by an air vent within the space, changing lighting conditions throughout the day, the strong wind penetrating the staircase as well as continuous flows of people and traffic through and past the site. These sensory forces and flows continuously enter into the space from the outside and resonate within it.

Through listening sessions and sound recordings I identified that the drone of an air vent, as well as trams and traffic from Swanston Street, mainly dominated the soundscape. These mechanical and low frequency sounds were even more strongly amplified in the sound recordings. Occasional higher frequency soundmarks and signals, such as human voices, tram bells and sirens, intercepted the keynote sounds. The texture, pitch, amplitude and movement of voices are a significant auditory quality indicating human occupation. The acoustically reflective surface materials and narrow vertical volume of the site cause any sounds to be perceived as increased in amplitude. For the stereo sound recordings I used the ORTF microphone technique with wind socks [Figure 4]. The microphones were set up in a stationary position in three different locations on ground and first floor levels and the on landing between first and second floor.

I also systematically documented the sound pressure levels in the site at different times of the day in these locations using a Sound Pressure Level (SPL) Metre. Besides the soundscape, the frequent
strong wind blowing through the site is another distinct sensory condition. Air currents move in and out of the space through the two large openings at the front of the staircase towards Swanston Street. In my site documentation I recorded the perceived strength of the wind through written notes. Furthermore, the sound recordings aurally captured the frequent strong air current through the space. As I undertook site visits mainly in autumn, winter and spring, I noticed light to intense wind on most days. Visually, the connection between the staircase and the streetscape is central to the spatial relationships of the site context [Figure 3]. The interior architectural space is as much defined by the activities on Swanston Street and framed by the buildings on the opposite side of the road as it is by the built structures directly enclosing it. Pedestrians walking past the site get unobstructed views into the space at ground level. Visitors walking down the stairs from level 2 or level one can see straight out onto the street. The lighting conditions in the space change throughout the day. While there are a number of electrical light fittings in the space, the light levels are different on a rainy or overcast day compared to a sunny day with a blue sky. As the open facade of the site is oriented southwest, there is only a short time in the afternoon when the sun brushes one wall of the staircase before disappearing behind the buildings on the opposite side of Swanston Street. I used photography and video recording to document these visual conditions of the project site. Through photography my attention was drawn to framing particular moments and views, such as the play of light, shadow and reflections. The video recordings enabled me to capture flows of people and traffic and changes over time visually and aurally.

As the project site is a circulation space, it is strongly defined by movement of people through it and human occupation is mostly fleeting. The majority of pedestrian traffic occurs on the sidewalk along Swanston Street where people walk past the space without
paying any attention to it. During the day a number of university students, employees and visitors use the staircase to enter or exit the building. Most often they would be individuals or pairs. Before or after classes or gatherings larger groups sometimes pass through the space. They commonly do not stop in the site and either move through it quietly and quickly or more slowly and in conversation. Occasionally, individuals or small groups use the opening of the staircase onto the street to have a cigarette. I have also observed pairs and groups of people come to a halt at the physical threshold between the staircase and the sidewalk on their way out to continue their conversations before departing in different directions. This threshold is physically marked by Tactile Ground Surface Indicators on the sidewalk in front of a small step up onto a ramp with more TGISs that leads to stairs to the lower and upper levels of the building. As to the openness of the circulation space, it is directly exposed to changes in weather. Strong wind, rain and variations in air temperature all contribute to the sensory site conditions and relationships changing significantly.

Altogether these multiple sensory conditions created an environment rich in a variety of stimuli. Each of them produced their own spatial relationships between the staircase and the streetscape. Therefore, it is difficult to determine the boundaries of the interior architectural space or to simply define what is inside and what is outside. These site investigations have reinforced that definitions of spatiality are not limited to the built and visual environment and that a simple dichotomy of inside and outside is reductive for spatiotemporal design practices. Based on this notion I sought to develop a design for the site that would draw together a range of sensory qualities in order to generate new spatiotemporal and social connections within the site context.

**Project Design and Construction**

Based on the site investigations I developed a design response that aimed to reveal, amplify and produce connections between the spatiotemporal environment and human occupation by means of shifting the multi-faceted sensory dynamics of the site. The main tools used to realise my design concept were sound, air movement, changing lighting conditions and light reflection, the flow of traffic past the site as well as human activities. Furthermore, I wanted the design to investigate these issues through material rather than electronic means. Hence, I approached my design development by sourcing a material with certain visual, auditory and kinetic properties and potential, which evolved from a number of small experiments with 0.5mm thick aluminium sheet material in the project site.

As my project site was a publicly accessible and institutional space, it had to conform to a vast range of rules and regulations in regards to health and safety issues. The numerous meetings and conversations with RMIT Property Services staff and building surveyors about my proposed project installation meant that it was nece—
sary to adjust my original design proposal. I had to negotiate the construction, materials, scale and exact location of my work in the space. We finally agreed to a compromise that would not obstruct the day-to-day activities of the site too much and more importantly, have a low risk of causing harm to anyone. Once RMIT Property Services had approved my revised design I was able to go ahead with my research project.

My final design was a kinetic screen made from over 1000 suspended pieces of aluminium sheet, which was installed in the access space for two weeks [Figure 5 and refer to DVD – Chapter 3 – Kontakte installation]. Its matt reflective surface was designed to blend into the background of the site. It was activated through wind lights and colours reflected from the street (natural light, passing motor vehicles, people, signage and shop fronts). Air currents of varying strength caused undulations on the surface of the screen, which produced a metallic high-frequency sound. Depending on the force of the wind the sound varied from soft to rather assertive. In order for to achieve this effect I cut the large aluminium sheets into

Figure 5: Kontakte installation.
smaller pieces, each ca. 60mm x 80mm in size. I then drilled holes in two corners of each piece and tied strings of six pieces together with fishing line so that they overlapped each other. McCormack Property Services installed two vertical steel poles in the staircase. These poles were bolted to the top of the concrete hand railing and to the underside of a concrete beam. Horizontal steel cables were then spanned between the poles across the full height, 400mm apart from each other. With a scissor lift and some help I spent a full day tying the strings of aluminium pieces to the steel cables at the top and bottom. The overall dimensions of the screen were approximately 1800mm x 4000mm.

Recording Methods of Kontakte

For my documentation of Kontakte I used obtrusive as well as unobtrusive methods of recording in order to collect a variety of research data. For most of the time I carried out unobtrusive observations of activities in and around the project site. I had direct interaction with people in the space only when a meeting had been specifically arranged or when I was approached spontaneously. Most of the information gathered was qualitative material. I used the following research tools and techniques for the documentation and evaluation of my project in situ:

- Video recordings
- Photographs
- Stereo sound recordings
- Recordings of dB(A) levels in different locations of the site
- Mappings and notes of daily observations
- Poster, postcards and a feedback box inviting people to comment on the project
- Email correspondence and minutes from meetings with Property Services staff
- Arranged conversations with individual design practitioners and academics
- A talk to a group of designers and academics
- Conversations with university maintenance staff and construction workers that arose from project related tasks
- Spontaneous encounters and conversations with university staff, students, visitors and passers-by

All of the above means of documenting the project have been valuable in contributing to my evaluations. Each of them captured different aspects of a variety of information about multi-sensory, spatiotemporal and social qualities of the site. The still frames of photography have emphasised specific moments purely visually, while the sound recordings eliminated any visual distractions and have allowed me to focus on the acoustic environment. They have furthermore offered an analysis of movement and change over time. The video recordings have brought together visual, kinetic, temporal as well as aural aspects of the installation and have highlighted their interconnections. The measured dB(A) levels in the
site showed data that was consistent with my notes and mappings of perceived noise levels. Some of the comments I received from the feedback postcards were merely stating whether or not the person liked the installation. However, the more interesting ones mentioned the way in which Kontakt changed the sensory qualities of the spatial environment and indicated notions of an auditory and visual landmark. The first hand accounts are an imperative means of investigating a variety of encounters between individuals and the spatial designs. These provide a qualitative feedback measure of the shifts in sensory spatial and temporal interrelations within a site context. The stereo sound recordings have revealed specific cues about the altered soundscape of the site context during my project installation. The kinetic screen added a high frequency sound to the existing keynote drone, which was caused mainly by passing traffic and the air vent. This introduced sound seemed to highlight the low frequency noise levels within the space even more, rather than covering them. Depending on the social context and the intensity of air movement, people tended to either get irritated by the sound environment or enjoy the auditory transformation. In one-to-one meetings right in front of the installation, it acted as a pleasant aural backdrop for most of the time. Once in a while the conversations were interrupted by a strong wind that activated the screen and made it rather difficult to hear the other person speaking. This was not much of an issue because it was possible to shift the attention quickly between the person and the installation. Social interaction proved to be more difficult in a talk that I gave to a group of about ten designers and academics in the project site. The wind, and hence the sound produced by the screen, required the audience to listen to my words carefully and required me to make an extra effort of speaking loudly and clearly for the whole time. This experience turned out to be a rather tiring task for all of the participants.

Project Evaluation

Kontakt was an important experiment that highlighted the significance and potential of multi-sensory qualities in spatial design. By shifting the sensory and spatiotemporal relations in the site I was able to introduce new modes of occupation without changing the physical configuration of the passageway. The sensory qualities, and in some cases the sound qualities, affected how people acted or interacted. I found that my installation created a sense of place within the site context and offered a pause in a highly transitional space that is characterised by movement and constant change. The project site had previously been a functional circulation space that did not actively invite passers-by to stop. My installation encouraged a number of individuals and groups to spend more time in the space than they normally would have. For example, when I arrived at the site one day, an RMIT staff member had brought a chair into the space and was eating his lunch next to the screen. He explained how he enjoyed listening to the sound of the installation and that it seemed like a good location to spend his break. Furthermore, Kontakt introduced dynamic sensory zones, which became a visual
or aural landmark to some people. These zones were not wholly defined through physical (built) interior and exterior conditions, but through the fluid movement of light, sound and air in and out of the site. These ever-changing sensory qualities continuously produced new spatial, temporal and social interrelations within the site context. However, the installation provided more cues about how people occupied the site differently than how their ways of interacting with each other changed through the work. It was rather difficult to draw out specific information about social relationships from my observations and documentation in the project. The following design installation, *Choreographies of Inhabitation, site 02*, further investigated such connections between a spatiotemporal and multi-sensory environment and social interaction.
Choreographies of Inhabitation, site 02 (2009)

The design for this interactive installation was developed directly from initial site observations and design experiments conducted in *Choreographies of Inhabitation, site 01* (discussed in Chapter 2). It was set up as part of the transdisciplinary conference *time. transcendence.performance. (ttp)* at Monash University, Melbourne, in October 2009 [8] as well as at my exhibition of PhD research projects at the DRI Design Hub Gallery in September 2009. *Choreographies of Inhabitation, site 02* at ttp was a collaborative project between Dr. Michael Fowler, contemporary dance group Filament, led by Tony Yap, and myself with assistance by Sarah Jamieson. This project discussion will investigate key issues of how the original sound and video pieces informed the installation design, and how modes of occupation changed between the two different site contexts and in different social situations.

The dynamic acoustic arenas and visual relationships observed in Bowen Street, RMIT University, and further examined through video and sound pieces became the impetus for the installation. The project site clearly shaped behaviours and interactions within the environment, but it was equally shaped by human activities, which functioned to both produce and change auditory and visual territories within the site. The installation *Choreographies of Inhabitation, site 02* aimed to explore these interdependencies between human occupation and the spatiotemporal environment. Works of contemporary dance groups and collaborations (that is, Bewth, Chunky Moves, Lucy Guerin, Sasha Waltz, Merce Cunningham, Yumi Umiumare and Tony Yap) offered key inspirations for this project investigation. An earlier example from the 1960s is the John Cage’s collaborative work with Merce Cunningham Dance Company and Bell Laboratories, *Variations V* (1965). But similarly to our own incentives, contemporary dance pieces often explore spatiotemporal relationships between moving bodies of dancers and the sound and visual design articulations of a performance site. Lucy Guerin Inc, an Australian dance company established in 2002, produces such multi-media performances based on ‘programmatic research into choreographic practice’ [9] within contemporary dance. One of their current works is *Corridor* (premiered 2008), which investigates relationships between a stationary audience and the moving bodies of the performers [Figure 6]:

The audience sits in a corridor formation of two long single rows facing each other, effectively becoming part of the set. The dancers receive instructions through a variety of media including iPods, telephones, spoken word and written text which provokes a struggle between the finality of words and the dissident communication of the human body. Each viewer has a unique perspective of the work, with the performers seen at very close range, or at a distance as they move up and down the corridor. Close proximity to the performers creates a disturbing tension revealing a more personal reality
Figure 6: Lucy Guerin Inc, *Corridor* dance performance, 2008.

Figure 7: Rafael Lozano-Hemmer’s *Body Movies*, 2001.

Figure 8: NOX architects, *HtwoOexpo*, interactive water pavilion, 1997.

Figure 9: (UI) *Occupation* installation, Craft Victoria, gallery A, 2008.
than the controlled presentation of a public performance. [10]

Other important references for this project are found in the areas of installation art, architecture and spatial design. In Rafael Lozano-Hemmer’s interactive installation *Body Movies* (2001), from his *Relational Architecture* series, oversized photographs of inhabitants of the host city are projected onto urban facades [Figure 7]. The images appear ‘inside the projected shadows of the passers-by, whose silhouettes can measure between two and twenty-five metres depending on how close or far away they are from the powerful light sources positioned on the ground.’ [11] The installation encourages viewers to play with the images and scale of their projection through movement of their bodies. Furthermore, it encourages social connections between strangers. Dutch architect and artist Lars Spuybroek of NOX also uses computing tools and technology to design interactive sensory spaces of social interaction [Figure 8]. The architecture of his water pavilion ‘was developed simultaneously with a highly innovative interactive interior that fully involves all the senses in the visitor’s experience ... Collectively visitors can make enormous waves of sound and light and completely alter the atmosphere and emotionality of the interior.’ [12] This is achieved ‘through a series of interactive systems controlled by sensors distributed throughout the pavilion. Visitors can manipulate the sensors to transform their environment through light, colour, projection and sound.’ [13] Both examples use video, sound and projection technologies as well as sensors to track the movement of people in order to produce dynamic spatial and social relationships. The focus on new social interactions and modes of occupation in relation to design were a similar focus for the RMIT-based research group Urban Interior [Ui]. Their main research questions centre on the idea of exhibition as research, concepts of interiority and relationships between people and the urban condition. [14] [Ui]’s inaugural installation project was situated at Melbourne’s Craft Victoria gallery space in 2008 [Figure 9]. The work unfolded via a complex multi-layered orchestration of multi-disciplinary interrogations into the question of design as a mode and mediator for human occupation. The installation comprised a number of physical occupations of the site by different members of the group, each bringing a performative element to the use of the space (through sound installation, film screenings, bicycle customisation workshops, concerts, video installation and so on) and each project interrogating the concept of urban interior.

All of these precedents explore concepts of spatial design that are based on temporary occupations, the use of multi-media, human activities and interpersonal relationships. Our research project *Choreographies of Inhabitation, site 02* similarly investigated performative and ephemeral questions of human occupation, movement and sensation from the perspective of a spatiotemporal design practice, rather than within the context of a music/dance performance or art installation.
Installation Design and Technology

Michael Fowler and I developed our conceptual design for the installation based on the insights and material of our video and sound pieces produced in Choreographies of Inhabitation, site 01. Our central idea was to make direct connections between the physical occupation, the soundscape and the visual environment. We wanted to give visitors an active role in producing acoustic arenas by moving through the work and thus to also become part of the installation physically and visually. Key technologies used included video projection, spatial sound diffusion, open-source programming softwares and Force Sensor Resistors (FSRs). From our observations of human occupation and movement within Bowen Street and in the video pieces, we derived the physical layout and materiality of our design. Furthermore, the arrangement of loudspeakers for the desired sound spatialisation effects informed the positioning of elements within the site. Clusters of loudspeakers and pebble-shaped rubber mats placed on the floor were intended to allow for free flows of movement through the installation and to encourage certain choreographies [Figure 10]. The materiality and irregular sizes and shapes of the rubber mats were a response to the hard surfaces, rectilinear layout and functionalism of Bowen Street. We designed the work to be installed in any publicly accessible circulation space large enough for the clusters to be positioned loosely while still leaving an option for visitors to walk around it comfortably. The reason was to provide a choice of whether or not a person wanted to occupy the work. This gave us an opportunity to observe and document how visitors responded to the installation.

The sound spatialisation used manipulated and processed samples of the soundscape compositions derived from the recordings in Bowen Street. By using sensor technology and open-source audio programming techniques, the introduced soundscape was activated only when visitors entered into the installation. As people moved around the site, more sounds were triggered producing an ebb and flow of numerous dynamic acoustic arenas. This was achieved through FSRs embedded within the clusters of rubber mats placed on the floor. The 8-channel loudspeaker array consisted of eight stations that
contained three loudspeaker cones each of varying size: a woofer, mid and tweeter. Such a trio of loudspeakers created a broad frequency response range for the auditory content of the installation and was facilitated through the use of a standard 3-way crossover. Each station was treated as a single channel. In the programming language Pure Data (Pd), Michael Fowler prepared a spatialisation module that randomly selected a source sound from an extensive database of .wav files. These sounds were projected through the 8-channel array in an indeterminate fashion, using random number generators to control its projection speed through the router. The resultant sound diffusion produced a continually varied tempo between point sources and the direction of travel within the 8-channel array. All the sounds of the installation were modified source sounds that were captured during the analysis of visual and auditory conditions within Bowen Street. These source sounds were later subjected to varying degrees of audio processing. As such, the 3-way crossovers were necessary to deliver the large range of timbre and frequency ranges within the sound files. Both pitch modulation and rhythmic variations were also explored in the creation of the new sound sources, though the database was conceived to contain roughly an equal number of direct (that is unedited) and manipulated sounds.

The interactive video component took the three video experimentations developed in *Choreographies of Inhabitation, site01* and pieced them together into a single film. By using the Graphic Environment for Multimedia (GEM) within Pd, impulses received via the FSR were programmed to trigger processing effects on the video in real-time. The video’s RGB range was firstly processed in GEM, reducing the new projected image to black and white. Whenever an impulse was sent from one of the six FSRs, the projected image froze and the video’s background was removed (turned blank) leaving only a trace of the visual impression. Within the silhouette of this trace, the video continued to show and slowly the complete image emerged again from the background. If another sensor was triggered, it superimposed the new silhouettes over the top of the previous ones. As such, the video constantly produced freeze frames of the action in the video projection triggered by movement of visitors through the installation.

Unoccupied the installation draws attention mainly to the projected video while there is no augmented soundscape present. Occupied, and through the movement of visitors, several expanding and contracting acoustic arenas emerge, while the visuals are forced into a stop motion effect. This juxtaposition continually shifts the hierarchy between physical, visual and auditory spaces within the installation.

*Project Sites and Occurrences*

*Choreographies of Inhabitation, site 02* was installed at two occasions in 2009. My PhD exhibition workshop, *multisites*, at the
DRI Design Hub Gallery from 23–29 September provided us with an opportunity to test the set up and technologies and to get first insights into visitors’ interactions with the installation design. The subsequent installation of the project at the Monash *tip* conference from 1–3 October enabled us to investigate our research questions in a different site context. In these two venues we were also able to experiment with different spatial configurations of the loudspeaker clusters and video projections.

At the *multisites* installation the negotiation of space, projection surfaces and sound with my other PhD projects posed particular challenges. (A full exploration of all projects exhibited in multisites can be found in a later part of this chapter). I decided to allocate the front area at the main entrance to the gallery space to *Choreographies of Inhabitation, site 02*, as this was the area where most people would be passing through. The bar and two doors leading to adjacent facilities were also directly accessible from this entrance area. Furthermore, we were able to set up the required technical equipment in one corner of the space, which was partitioned off from the gallery. In order to have a surface to project the video onto and to keep the installation visually segregated from my other project works, I suspended three large aluminium sheets in the centre of the space. This projection surface was positioned exactly opposite the entrance and left a floor area of 4m x 3m approximately for the work to be installed. This meant that the clusters of loudspeakers and rubber mats had to be placed more closely together than originally intended. Visitors had to walk through the work to enter and exit the gallery space. Coming into the space, clusters of loudspeakers were positioned on both sides as well as in front of the video projection straight ahead. In between these clusters, the black pebble-shaped mats acted like stepping stones guiding the way through the installation and to the right, past the suspended aluminium screens to the rear part of the exhibition. The projector was situated next to the entrance at ca. 1800mm height, as it had to be installed in a way that the light did not directly shine into the eyes of visitors. This limited our options in terms of the direction, height and angle of the projected videos significantly in both venues.

A number of individuals and groups, including academic and industry practitioners, researchers, artists and students, visited the multisites exhibition [Figure 11]. On the opening night the gallery space became crowded at times and surprisingly most visitors gathered in the front area within the installation, rather than in the more spacious and quieter part in the back. Through this occupation sounds and the video effects were triggered continuously, which made the environment especially busy and noisy. Another observation was that most visitors walked into the gallery space and stopped, watching the video projection often not realising that they were repeatedly triggering sounds by standing on a sensor. The moving image seemed to draw attention immediately, while it seemed to be more difficult to make sense of the indeterminate soundscape.
Once people found out that sensors were embedded in the clusters of mats, they often tentatively tried to locate them. The groups of students were most comfortable exploring the auditory, visual and spatiotemporal effects of their actions, jumping from one cluster to another, walking around and tapping on the mats. Some other visitors approached the installation more rationally and purposefully and were confused when it was not responding in the expected way. The FSRs were deliberately integrated into mats unobtrusively so that human occupation would trigger dynamic sounds and visual effects without giving visitors direct control over the results. We wanted to avoid for the installation to function like a musical instrument, which responds in a predictable fashion every time and can therefore be rationally understood and learnt. Our design aimed to simulate a rich variety of auditory and visual spaces in the foreground and background as observed in *Choreographies of Inhabitation, site 01*. These sensory spaces are produced by human activities to a great extent, but not fully controlled.

At the ttp conference, the installation was housed in Building H, lower level at Monash University’s Caulfield campus. The site that
was allocated to us is a thoroughfare of approximately 100sqm, which leads to three converging lecture theatres [Figure 12]. Being in the basement, the circulation space has a proportionally low ceiling height of around 3m with a protruding metal feature in one corner and integrated downlights. Our installation occupied around 20 per cent of the space. It was orientated in a manner for which movement through the site to at least two of the lecture halls (where presentations were being made during the conference) enabled brief, or sometimes prolonged, encounters with the work. We identified a nodal area that seemed to serve the numerous paths towards the lecture theatre doors. The clusters of pebble-shaped mats and loudspeaker stations were then strategically placed to disrupt these paths of least resistance, maximising the chance for encounters with the work. The placement of the clusters within the space was considered for a maximum availability of user interaction, if even unintentionally. We were interested to observe whether people would choose to walk through or walk around the installation. It was important to us that the work could be encountered from any direction and did not offer one preferred viewpoint as happened in the multisites set up. In this installation for ttp we reconsidered how we could encourage more natural movement through the work. One of the key issues with multisites had been the visual projection onto one screen, which had made visitors stand in the installation watching the video. Hence in our ttp set up we used two projectors to be able to cover two adjoining walls and parts of the ceiling with the same moving images. This formed a much more spatial and immersive backdrop to the clusters of loudspeakers and pebble mats. The

Figure 12: Choreographies of Inhabitation, ttp installation, Building H, Monash University Caufield Campus. Photography: Heidrun Loehr
Figure 13: Filament performance with Choreographies of Inhabitation at Monash University. Photography: Heidrun Loehr
video projections dissolved the physical boundaries of the space and visually extended the site beyond the walls. The abstracted imagery of human activities and movement in the film furthermore turned the space into a more visually active and dynamic environment. In order for the projections to be clearly visible, Monash property services dimmed down the lights to a minimum, while still meeting basic Occupational Health and Safety standards. This assessment also included the issue of projectors pointing directly into people’s eyes again. This time we positioned the projectors on the floor and had to ensure that they were not directed towards doors and hallways.

Our investigations of different modes of occupation within the *Choreographies of Inhabitation* installation had two different approaches. Firstly, we wanted to observe how visitors casually and spontaneously engaged with the work and, secondly, we were interested how dancers would respond to it. Therefore we asked the dance group Filament with Tony Yap to improvise a performance in the installation as part of the *HtP* conference [Figure 13 and refer to DVD - Chapter 3 - *Choreographies of Inhabitation, site 02 - Filament performance*]. This was not envisaged as a choreographed and controlled dance piece, but one part of an exploration of an environment responsive to human occupation. We did not brief the group about the work or what they should do and all but one of them were encountering the installation for the first time shortly before the dance performance. As the audience was arriving some of the dancers positioned themselves along the walls and thus blended into the video projections. They stood still for some time before slowly starting to move still close to the walls. Individual dancers then started moving into the centre of the installation and across the clusters of pebble mats. When sounds were triggered the rest of the group responded through more expressed movement. At times, the soundscape became multi-layered and densely textured, which seemed to activate the performers’ bodies. Other times, the sound was much more subtle and pointillist, which was also reflected in the dancers’ movements. Throughout the performance the dancers moved in and out of the installation, either to integrate into the projected imagery or to mix with the audience. The shadows of the dancers’ bodies were superimposed onto the projected video at varying scales, which drew further visual connections between the action in the film space and the actual space. The performance lasted for about 20 minutes altogether. Filament’s dance improvisation not only illustrated a range of spatiotemporal conditions that human occupation could produce in the installation, but it also provided us with significant insights into these relationships. The continual motion within the video projection seemed to encourage stationary positions, while an increasingly dynamic soundscape tended to activate movement of the dancers’ bodies. Furthermore, the individual dancers performed quite independently of each other, frequently changing positions and shifting spatial relationships between them. This was analogous to the occupations we had observed in Bowen Street, where a range of different activities occurred simultaneously. This produced spatio-
temporal relationships between individuals and groups, but did not follow one coherent narrative.

Observations of occupants and their behaviors are used to inform design and how the sensory, spatial and temporal environment shapes human occupation in different ways. Visitors’ engagement with the installation observed outside of the Filament performance ranged from walking past the installation without paying much attention, to actively exploring the soundscape and video responses. As \textit{ttp} was a transdisciplinary conference hosted by the School of English, Communications and Performance Studies at Monash, researchers, academics and practitioners from a variety of fields attended, including from philosophy, social sciences, dance, performance, film, art and design. Notably, some of the dancers and performers explored the installation in an outgoing and natural manner through improvised movements. Other visitors preferred to simply walk through it, stand back and watch, or ask us questions about the work, rather than explore it for themselves. While we were present people often seemed to be uncomfortable to freely engage with the work, but when we walked into the space unexpectedly, we often saw several individuals occupying it. Our site investigations were conducted through observations and conversations with visitors. For the documentation of the Filament performance we used digital video and photography.

**Project Evaluation**

The \textit{multisites} installation of \textit{Choreographies of Inhabitation} in the DRI Design Hub Gallery offered important insights into what worked well and what needed reconsideration, which allowed us to make adjustments to the set up for the \textit{ttp} conference at Monash. In terms of the variety and modes of occupation, the \textit{ttp} installation was more successful. Key reasons for this were that the work was set up in a circulation space, rather than a dedicated gallery, the video projections were more spatial and immersive, and there was more space around the clusters of loudspeakers and mats with integrated sensors. The spatial arrangement at \textit{ttp} provided visitors with a choice about how they wanted to engage with the installation (more actively or passively). This created an interesting performer–audience relationship in some situations. Even though the work had not deliberately been intended to act as a stage, it became a space that people were watching from the “outside” when occupied. There was, however, no one simple distinction between inside and outside as the visual, auditory and tactile qualities produced multi-layered dynamic spatiotemporal zones in response to human occupation and movement. These zones were in constant flux and created fluid and continually shifting connections between interior and exterior conditions.

In our reflections on \textit{Choreographies of Inhabitation, site 02}, further specific issues have come up regarding the project sites and technologies that we have not yet fully explored. Digital technologies
have the potential to increase the responsiveness of space. They can track and map human occupation as well as visual and auditory qualities. They can also become part of the spatial design, and the design process. From the outset we have had the idea to re-insert our interactive installation into the original site context of Bowen Street. I believe this would provide us with additional valuable information as to how occupation and interaction shift through changes to the spatial and sensory environment. Furthermore, we would like to experiment with motion sensors instead of force sensors and with live-feeds of sound and video, rather than use pre-recorded material. These different technologies could emphasise connections between flows of people and sensory qualities of a spatial context even more explicitly.

multisites (2009)

This exhibition of my PhD project works was installed in the DRI Design Hub Gallery from 23–29 September 2009 [Figure 14]. In view of my final exhibition for examination, it was an opportunity for me to explore how to curate all of my PhD design projects within one gallery space. There were a number of key issues to be considered in regards to the spatiotemporal arrangement of the works, the relationships and hierarchy between them, as well as the technological equipment required. I understood this exhibition more as a workshop than as a resolved display. Hence, I occupied the gallery space and changed parts of the exhibition on a daily basis in order to explore how the hierarchy and relationships between the projects shifted. I also invited academics, students and industry practition—
ers in for one-on-one conversations or small group sessions, which enabled me to observe their engagement with the works. Throughout my PhD research I have had supervisors and consultants from a variety of fields. Therefore, it was important to me to receive feedback, thoughts and comments from an equally wide range of people in this exhibition workshop. I also tried to contact the participants of my interview project in situ from 2005 again to invite them to the exhibition. Unfortunately, this attempt was unsuccessful. However, the other conversations I had arranged turned out to be very useful.

The title of the exhibition, multsites, refers to a notion of multiple tangible and intangible sites. This concept developed through my project investigations and research over the past five years. Rather than thinking of the gallery space as the only site of the exhibition, I consider the visual, auditory, tactile and multi-sensory qualities to produce further layered, interconnected and fluctuating sites [Figure 15]. These ephemeral sites emerge through relationships between spatiotemporal conditions and human occupation.

The Gallery Space
The DRI Gallery is a small multimedia equipped space in RMIT’s Building 91. It is located below street level with no natural light and is approximately 60sqm. The space contains numerous large flat screen displays, each anchored to a moveable trolley that houses a computer. A ceiling grid houses up to six data projectors controllable from a central computer console. The data projectors are attached to the ceiling grid with a limited ability to be moved or tilted. The gallery is carpeted and the combination of plasterboard walls and a low ceiling of around 3m, gives it a predictably short sound reverberation time. The entire space is visible from the building’s hallway via automated glass doors and clear floor-to-ceiling glass partitions. The space also acts as an access point for two other internal rooms: the Virtual Reality Centre and technical offices.

Exhibition Concept and Installation
The exhibition concept was to install the projects according to specific relationships between them rather than chronologically. One of the aims of this workshop was to develop the chapter structure for my ADR from the groupings of projects. In this installation of all of my project works together in one space, however, the various videos and sounds posed a particular challenge. I used a range of different playback devices in order to achieve a hierarchy of content and to provide different encounters with the individual works. It was essential to establish a balance between communicating the projects appropriately and a risk of sensory overload through too much sound and visual information. I approached the initial set up through visits to the gallery prior to my exhibition and developed a relational diagram of the plan layout. I also thought through what the playback device would be for each project and organised some equipment that was not available in the gallery. On the day of the actual installation of the projects in the space I determined their exact locations [Figure 16] and adjusted their visual and auditory intensities.

I decided to place the *Choreographies of Inhabitation, site 02* installation in the front area, as it was the most current work at the time and had developed from my key research investigations. Furthermore, in this position the installation was most likely to have the highest amount of walk-through traffic. As visitors entered through glass doors into the gallery, a compressed version of the work was the first encounter. Once the site for *Choreographies* had been determined, I established direct connections to my *Kontakte* installation as well as the participants’ accounts from my in l site interviews. *Kontakte* had been a similarly responsive and multi-sensory design in a physical project site. Both projects investigated how human occupation and spatial relationships in the site shifted through the installations. *in l site* on the other hand had been one of the first projects of my research and had been a strong reference and foundation for all of my subsequent works. Therefore I situated *Kontakte* to the left of *Choreographies* and *in l site* to the right. Three hanging aluminium screens that formed the temporary screen for the projected *Choreographies* video partitioned the gallery into roughly

![Figure 16: multisites plan diagram of exhibition layout](image)
equal halves. The area of the gallery behind the screen presented visitors with four projects variously projected on the rear wall, on multiple flat screens, through a sound dome, and via headphones.

Video recordings of Kontakte were projected onto another two aluminium screens in the rear left corner of the gallery. The sound played through two loudspeakers fixed to the projector grid above the projection. Both the video and sound were played in loop mode, with particular attention paid to the volume of the soundscape recording of the Kontakte site, which was intentionally presented at a relatively high dB level (ca. 60dB). At the opposite wall to the Kontakte projection, on the other side of the Choreographies installation, excerpts from the in|site interviews played through a single sound dome. This dome was an adapted light fitting, in which one loudspeaker cone was suspended approximately in the focal area of the dish and directed upwards. This caused the sound to reflect off the interior metal surface and down into the area directly beneath the dome. By controlling the amplitude of the mono source, the intrusiveness loudness of the sound outside of the approximately 600mm diameter dome could be significantly reduced, thus allowing an auditory zone to be localised to the area directly underneath it (that is, through the focal point). The dome was positioned at about a height of 2m delineating an auditory enclosure within the context of an open room. The production of this localised auditory zone was also designed as an acoustic foil to the other sound sources that were activating acoustic arenas in the gallery space concurrently (Choreographies and Kontakte). The dome enabled a sense of auditory seclusion within an already active soundscape caused by the relatively persistent sounds of the Kontakte site recording occurring less than 3m away. Because sound from these three projects was playing at the same time, the other projects used headphone playback. One of the flat screens was used to present both the video and sound of Interior Reverberations, while another showed the experimental video compositions from Choreographies of Inhabitation, site 01 and a third screen showed the video documentation of Scrape Trickle Bounce (without audio). A small light box on the ground had a set of headphones that played back the soundscapes of my Acoustic Arenas project, Scrape Trickle Bounce and Hum Rumble Squeak. [Refer to DVD – Chapter 3 – multisites – video 01, video 02, video 03 and video 04]

As in my ADR Chapter 2, these projects were grouped together based on their specific investigations into auditory and visual relationships. They all consist of digital video and audio pieces that were produced from recorded and manipulated footage. The video and sound of Interior Reverberations were synchronised and played simultaneously on the flat screen and through headphones. Choreographies of Inhabitation, site 01 also played each of the video and sound pieces together, although they did not share a common narrative. The sound pieces and video of Acoustic Arenas, however, were arranged separately. The silent Scrape Trickle Bounce
film was displayed on a flat screen along the wall, while the headphones with the soundscapes were positioned in the centre of the space. The reason for this arrangement was that I wanted visitors to engage with the auditory spatiality within the binaural sound pieces independently of a visual explanation. The spatiality encountered within the soundscapes is quite different and far more dynamic than the physical context of the recording sites. Through the use of headphones and smaller flat screens (rather than projections), the engagement with these three projects was much more intimate than with the other three projects. Visitors who were watching or listening to these pieces momentarily entered the auditory and/or visual spaces of the projects and were removed from the larger gallery context. The interactive *Choreographies* installation, *Kontakte* and *in l site* on the other hand were much more intrusive of the social space. Especially, their soundscapes directly affected how people moved through the space and how they interacted socially. When one area became too noisy, conversations either became louder or stopped.

During the one week of the exhibition I experimented with the setup by moving some of the more flexible elements around and changing the projections as well as the amplitude of sounds. I explored how relationships and hierarchies between projects shifted when juxtaposing different videos through large-scale projections on the walls. Furthermore, I tested how an increase in amplitude or variety of sounds altered the spatial context to a point where occupation of the gallery became unbearable. My visual and auditory experiments in this exhibition and workshop brought out particular connections and differences between the individual projects. The insights I gained from this made a significant contribution to my unpacking of these relationships.

**Project Evaluation**

*multiples* was an extremely useful project as it highlighted key research threads within my body of work. It was an important step towards the compilation of my projects in this ADR as well as to the design of my final exhibition for examination. The exhibition workshop enabled me to investigate different modes of visitor engagement with the works. In particular, the custom-made sound dome proved to be a successful playback option for sound content. It provided a level of auditory seclusion while still maintaining visual and aural connections with the larger spatial and social context. As opposed to headphones, it did not limit the engagement with the work to an individual encounter and allowed for two or three people to listen to the sound at the same time. It was possible to move into or out of the acoustic arena underneath the dome easily. Furthermore, the visual openness of the sound dome meant that spatial relationships could be established to video projections, without the audio content being necessarily understood as a mere soundtrack to the moving image. Generally, the intensity of sound and visuals in the exhibition was overwhelming at times. A number of visitors remarked...
that they found it difficult to cope with the variety of stimuli, especially when the gallery was crowded on the opening night. After a few hours in the space with all sound and videos playing, I started feeling signs of nausea and dizziness myself. This emphasises the importance of a careful consideration of multiple sensory qualities in relation to human occupation, not only in a gallery context.

Summary

The three projects discussed in this chapter have investigated specific interrelations between human occupation and the sensory and spatiotemporal environment through design installations. These installations have each encompassed responsive elements, either in relation to sensory qualities, as in Kontakte, or human occupation and movement, as in Choreographies of Inhabitation, site 02 and multisites. The projects demonstrated that concepts of site and spatiality are not only defined by fixed physical boundaries, but are dynamic and multi-layered sensory zones that resist quantifiable representation. These fluctuating conditions are capable of shaping human occupation and movement, and of producing or impeding interpersonal relationships.

In these project works I was able to experiment with different approaches and tools to designing spatiotemporal environments. Video and sound recordings, as well as their manipulation and spatial reproduction, were key techniques used in the different stages of the design processes. Particularly, Choreographies of Inhabitation and multisites demonstrated how such technologies can enable significant temporary changes to the sensory qualities and occupation of an environment, without altering its physical structure. One of the main insights of the Choreographies of Inhabitation project is that visual and auditory spaces are never actually disconnected from one another, only that the connections are not necessarily composed, premediated or controlled. This is significant to interior architectural design practice in that it highlights the potential of designing not only in the visual realm, but also enabling spatial design through auditory zones. Kontakte achieved a shifting of sensory relationships and human occupation in the site by means of a physical temporary design installation. A significant insight I gained from these projects is that my spatiotemporal designs provided a range of platforms for new encounters, behaviours and interactions, without trying to control how people engaged with the diversity of sensory sites. The visual and auditory qualities in the documentation of my installation projects were directly responding to the environments in which they were situated and their human occupation as opposed to me as a designer executing full control over the sensory environment.

In the following conclusion of this ADR I will be reflecting more fully on specific threads within my research and connections between the design projects. I will also address how my practice and thinking have shifted throughout my PhD and what I believe its contributions to the field are.
Endnotes
4. ibid.
7. Copeland, J. Interview with Susan Hiller. (From the edited transcript of Radio National’s Sunday Morning program originally broadcast on 26/5/02), http://www.abc.net.au/arts/visual/stories/s597706.htm (accessed 04.05.08).
10. ibid.
12. NOX website, http://www.noxarch.com/flash_content/flash_content.html (accessed on 04.05.08).
CONCLUSION

My research and design practice have explored interrelations between sensory spatiotemporal environments and human occupation, with a particular focus on dynamic relationships between auditory, visual and physical qualities and within the context of interior architectural design. In my projects I have used sound and video as a means for recording, mapping, documenting and designing with these sensory qualities of spatial environments. As such, I have sought to reconsider and augment my own practice as a designer of interior environments and offer new ways of thinking about design processes as well as new tools and tactics to other interior architectural practices. Through my PhD research projects I have investigated five key threads that contribute to new knowledge and ways of practising within interior architectural design. These include:

- the use of digital technologies and recordings as tools and techniques in the different stages of the design process
- time, movement and change as integral to understanding spatial environments
- identifying visual and auditory relationships within the human occupation of spatial environments
- spatiotemporal and sensory design as a facilitator of human behaviours and interactions
- spatiality being defined through dynamic sensory, tangible and intangible qualities, rather than fixed structures

Using research through design as an investigative framework, six design projects have contributed to new knowledge and ways of practising within the field of interior architectural design. While my earlier project works were based on a phenomenological approach, focussing on visual, auditory and physical relationships between an individual and an interior architectural environment, my research interest shifted to collective and more openly accessible spaces in my later installation works (Kontakte and Choreographies of Inhabitation). At the time of this shift, I also positioned my practice more clearly as an interior architectural designer again, as opposed to a sociologist, ethnographer or sound designer. The significant difference in this re-positioning was that as a designer of non-domestic interior environments, I do not usually get the opportunity to engage with the individual occupants of the space. However, the design outcome (including both tangible and intangible sensory qualities) has strong implications on human behaviours and interactions. Through my research projects I have explored ways in which interior architectural design can deal with this challenge by using new approaches and innovative tools in the design process.

My initial investigations into non-ocular spatiality through my interview project in|site brought to the fore specific issues about the role of visual, auditory, cutaneous, olfactory and kinaesthetic conditions as mediators between people and sites. Experimental
design projects (*Interior Reverberations, Acoustic Arenas* and *Choreographies of Inhabitation, site 01*), in conjunction with readings and conversations, established how spatial concepts and relationships shift according to different sense modalities. *Interior Reverberations* explored visual, auditory and kinaesthetic spatiality, while *Acoustic Arenas* focussed on the production of fluctuating auditory spaces through sound reproduction. *Choreographies of Inhabitation, site 01* drew on discoveries about visual and auditory relationships in a physical site to generate video and sound compositions. These three research projects experimented with digital recording techniques as a means to investigate and document spatiotemporal conditions and, by manipulating the recorded footage, to produce auditory and visual design pieces. The recordings served as dynamic site mappings and the resulting designs offer a way of interrogating correlations between different sensory qualities. From the perspective of interior architectural design practice, there are no precedents for ways of working with and mapping acoustic ecologies. Therefore, one of the key contributions of my PhD research has been to propose how these mapping techniques could be used in a design process.

The issue of how auditory, visual and physical spaces are occupied through the human body and sense faculties was a key line of enquiry in this research. An important insight from *Choreographies of Inhabitation, site 01* was that there is an underlying cohesion but not necessarily a coherent narrative between these qualities. On this basis, three further projects focussed on the specific question of how multi-layered tangible and intangible conditions of spatiotemporal environments shape human occupation, movement and social interaction. This was explored through a series of design installations (*Kontakte, Choreographies of Inhabitation, site 02* and *multisites*). *Kontakte* used the design of a physical kinetic screen as a way to make site conditions visible and audible, as well as to construct new sensory relationships in the environment. Video and sound recordings formed a significant part of the design process and informed the auditory, visual and kinetic attributes of the screen. Through the *Kontakte* project I realised that by changing the sensory conditions of a site, the way people occupied this site was also directly affected. This inspired me, in *Choreographies of Inhabitation*, to further interrogate interrelations between human behaviour and interaction, and the sensory design of spatiotemporal environments. The installation explored how flows of people activated a dynamic soundscape and triggered effects in the moving image, and how these auditory and visual changes then shaped human occupation and movement. Sensor technology, loud speakers and video projection were the electronic media employed in this project. Clusters of loudspeakers and rubber mats on the floor defined the physical territory and boundaries of the installation. The installation of sound and projected image transformed a conventional interior architectural foyer space into an environment highly responsive to human occupation and movement, with multiple dynamic visual and auditory sites. This demonstrated how digital technologies offer
ways of designing with ephemeral conditions and the potential for producing temporary interior architectural spaces and zones without manipulating the physical structure. My multisites exhibition further investigated such issues of auditory, visual and physical articulations of space in relation to individual encounters and social interaction. Again, digital technologies were used for the sound reproduction and visuals. The visual, auditory and physical materials installed in the space each defined different spatial zones in relation to each other, which were dynamic and fluctuating.

All of my projects demonstrated specific yet ephemeral connections between spatial qualities (sound and acoustics, air movement and temperature, built structures, material surfaces, light and shadow) and human factors (sensing bodies, movement, behaviours and interaction). In my investigations, concepts of site and spatiality have emerged as fluctuating and continually changing territories, rather than fixed physical boundaries, frozen in time. As such, they are not quantifiable and defy traditional means of visual representation in interior architectural design. These sites and spaces are produced by a variety of qualitative relationships and intensities of sensory conditions and human occupation. Interiors and interior architectural design practices are hence not confined to the inside of buildings, but occur as a diversity of tangible and intangible conditions of spatiality. Flows of people, human behaviours and interactions are integral to such temporary formations of spatiality and become an active part in the design of an interior architectural environment.

To think about site, spatiality and interior architectural design as emerging through layered interrelations between multi-sensory qualities and human occupation, means that interior architectural design processes, tools and techniques need to be adapted. Many of the tools and techniques conventionally used in interior architectural design, such as orthographic and perspectival drawings and representational models, are no longer appropriate and need reconsideration. My design and research practice has sought to critically explore such ways of working. In my projects I have specifically used visual, auditory and physical means to experiment with tools and techniques that are appropriate for capturing and conveying invisible sensory and temporal qualities of spatial environments. The combination of video, sound and tangible materials in my recordings, mappings and design installations have each contributed different sensory aspects to the works, which enabled me to interrogate their spatiotemporal characteristics and connections. I explored and used a variety of analogue and digital technologies in my project works, because each tool has different capabilities and limitations. The tools are therefore complementary to each other and not mutually exclusive, yet equally challenge conventional interior architectural design processes.

Indeed, digital technologies have become more ubiquitous both in our culture and in interior architectural design and have offered
me new methods of working and exploring the issues that had come up through earlier project works. In fact, one of my first project works, *Interior Reverberations*, used digital technologies (sound and video recordings) as means for investigation. From this project I further developed these tools to reveal certain sensory, spatial and temporal predilections within the *Kontakte* project site, which then informed my final design. While manifest in the analogue material realm, *Kontakte* was generated and documented through digital recording techniques.

My research projects have demonstrated that visual, spatial and tactile concepts of spatiality are inseparably interrelated; yet differ in how their boundaries are defined individually. Though the physical environment is mainly encountered through touch and sight, its more solid boundaries can also be heard. Even so, the entire sounding environment is not defined merely by built structures, but through a variety of acoustic arenas that are in constant flux. Similarly, the physical environment may affect air movement and temperature, even to an extent where it attempts to completely control these qualities within buildings—that is, through air conditioning systems. However, like sound, air is a dynamic and intangible material that follows its own patterns of movement and spatiality. Spatial environments are therefore not fixed or immobile entities. In fact, they are subject to continual qualitative change through diverse

*multisites installation, 2009*  
Photography: Ian Ten Seldam
sensory forces and flows. Human activities form a central part of this ongoing variation in spatial and temporal relationships. Hence, from the perspective of interior architectural design, these sensory conditions offer potential for constructing spatiotemporal environments beyond visually biased or functional designs. My design projects have furthermore established that encounters with or within spatiotemporal environments cannot be reduced only to one sense faculty, although certain qualities may predominate at one particular time. Any such encounter is simultaneously multi-sensory and multi-layered. Consequently, interior architectural design needs to move beyond visual aesthetics as well as functional and standardised regulations, towards a more integrated approach of sensory, spatial and temporal environments for human occupation.

My research has evolved within the area of interior architectural design and reconsidered how concepts of spatiality and spatiotemporal design practices can shape the discipline in new ways. The focus on the methodology of designing (the act and its processes) has been of primary importance to my investigations. The processes and technologies explored to inspire, generate and document designs offer up alternative approaches to spatial design. Hence, it was essential to document these succinctly in order to gain and provide insights into the implications for the field. This has enabled me to clearly position my interior architectural practice and to develop ways of critically investigating my own design processes through project works. The critical engagement and original contribution of this PhD by project lie in the exploration and experimentation of a variety of tools and techniques within the context of interior architectural design practice. As such, my PhD research has questioned conventional design processes of interior architectural practices. I believe that criticality in this research is inherent in the act of designing and the design projects (not only in the writing and theory), in that they have each interrogated very specific issues and demonstrated new ways of practising. It is through the projects, rather than through theory, that my PhD research contributes to the field of interior architectural design and distinguishes itself from other research within the area. In my research, theory has primarily served to inspire my design practice and projects.

As a continuation of the project works generated in this PhD research, I envisage my ongoing interior architectural practice to further explore processes, tools and techniques that enable new approaches to designing sensory, spatial and temporal environments for human occupation. I will use my experimental practice, established through this PhD by project, to investigate conceptual design ideas and specific issues outside of the constraints of industry practices. This will enable me to continually develop my own thinking and ways of working. On the other hand, I would like to connect my research back to the industry of interior architecture and the design of workplace environments in particular, as this is an area I have practised in for the last three years. During this time
have found my PhD research to be directly related to many of the issues of open plan office environments, which I have referred to in different sections of this ADR. Specifically the acoustic conditions of shared workplaces pose significant challenges to the designer and, as a consequence, to the users who eventually occupy the space. As discussed in Chapter 1, noise management and electronic sound masking technologies are current and upcoming ways of dealing with this issue, but at this point in time, the solutions on offer remain purely functional and rudimentary. I believe there is much potential for exploration and innovation in the field of sound and acoustics in workplace environments and my PhD research project has established the foundations for me to contribute productively to this developing area through research and practice in the future.
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May 2008]


Focus group session 02 (Debbie, Brandon, Ness, Margaret, Bernice+Valek):

Gabriele: Alright, are you ok if we start even though some people aren’t here yet?

Group: Yes.

G: Maybe we can just talk about, you can just tell me about some of your experiences and then when other people turn up later they can tell me what they think about it.

Margaret: Do you know the extent of people’s vision loss?

G: In this group?

M: Yes

G: No, I don’t. So what I would like you to do…

Ness: It’s obviously the … question, it’s just…I always go around in blinky circles, it’s always like you know ‘What’s your vision loss?’ Everyone gets so sick of it.

M: Yeah, I just thought it makes a difference I guess with some things I want to talk about it wouldn’t be, you know, attained to you people. Cause I’ve got some vision, but I don’t have peripheral vision.

Bernice: Neither do I anymore.

G: So what I would actually like you to do is to introduce yourselves a little bit, give us a little bit more of a background. Doesn’t have to be too detailed, but whatever you would like to tell us about yourself. So that everyone in the group knows… I think you know each others names by now…

Group: Yes

G: Last time unfortunately we ran out of time. I was going to do that then, but it was just two o’clock before we even, before I even noticed, so, em, if you.. maybe Bernice you want to just start and tell us a little bit about you?

B: My name is Bernice and I have a guide dog Valek, em, I was born blind, as a child, I was premature. And I went to a boarding school in New South Wales. Then I had…after the school I went to Tafe for a number of years and I used the disabilities section at Tafe in NSW. Then I came over to Melbourne and I’ve been using the facilities here, but in between this I have …(3:35) a family. And I’ve got grandchildren. So let someone else have a say. Or do you want the vision loss?

G: Yeah…have you got vision at all?

B: Very little. I’ve got a little bit of vision, but I’ve got four eye conditions and each one fights the other.

G: Sorry, what does that mean, can you just explain it to me?
B: Well I’ve got, em, the conditions I’ve got, I’ve got optic atrophy, which is the optic nerve, retinitis pigmentosa, which is commonly named as rp, that destroys the rods and cones of the eyes, which takes either the field vision or the tunnel vision or both, and I’ve got listignis (4:23) which is lack of muscles, control and now I’m getting catorax, which I can’t have removed. So that’s the glutton for punishment, but that’s how it goes. And, yeah, I think that’s about enough for me.

G: Ok, thank you. Margaret?

M: Ok, well, I’m Margaret. I had measles when I was about seven or so and from that, after that I had a very bad ear infection which probably continued on for a few months and nobody realised why I was getting so sick or anything, while I ended up losing most of my sight because there was a blockage in the brain, a blood vessel and so it ended up with the optic nerve being mostly destroyed and so I have no sight in the right eye and in the left eye I don’t have any peripheral vision, em, also the vision I do have when I take my glasses off, I’m legally blind as far as the distance accuracy goes as well, but with my glasses I can actually see three lines of the chart, so I get around quite well, so I’ve been like this about fifty years, it’s not a big deal. But my near-sight has decreased the last two or three years, it’s ageing and I find colour recognition has gone right down.

Ness: Do you use a cane or anything?

M: No, I do have one but I don’t use it.

G: Brandon, hi! Would you like to just sit next to Ness, because if Debbie comes in, maybe for her it’s easier to sit at the end so she can sit down straight away when she comes in.

Brandon: Sorry, I completely lost my … left my memory that Monday.

G: That’s alright.

Brandon: I have to admit, I probably won’t be here on Monday.

G: Alright, well, it’s great that you’re here today and maybe you can tell us a little bit and, em…

Brandon: I think I signed up before I realised what you’re actually doing. I put my name, they put my name down and then I realised it was the three days…anyway…

G: That’s alright. Well, Margaret is just introducing herself.

M: I’m finished.

G: You’ve finished, ok, so Ness now and then maybe you can go on and introduce yourself just quickly and then I’ll just give you a very brief description of my project. And then we’ll go straight into the questions, or the talk, yeah, Ness?

N: I’m Ness, I was born with low vision, em, at the time they thought it was congenital catorax, em, with a healthy dose of lots of other things, em, over time I lost my sight. I lost it completely and they discovered it was actually hypophorretanemia, which is a rare blood condition that forms eye crystals on your eyes or in your retinas, em, as well as I’ve got some retinal problems, em, astigmatisms, (7:29) when my eye rolls out. And then at beginning of 2003 I had surgery, where they did a lens replacement in my right eye. I got 30% vision back for three months and then it disappeared and so I’m
now total again.

G: You got 30% of vision back after that? Really?

N: For three months. It was good but it was frustrating because I was seeing things that I didn’t know what I was seeing and then other things were good because large objects, em, you know, began to realise again what they were and had never seen them and saw them, em, but in my way, but it was frustrating because people, like my family never adjusted to me having bad sight. My parents didn’t cope very well and so for them it was very frustrating because for me to explain what I was seeing and they got very frustrated, because I was like, well, what are you talking about, I have no idea what it is, but for me, you know, I’d see it in one way, em, but it was very interesting, but if I look back on it, I don’t think I would have done the surgery, just cause it was too traumatising (laughs).

Group: It would be.

N: Yep, and then now I had some lapsiveness (8:43) and then I lost it all. I’m lucky though I can see…

the good thing is, well it’s painful but good, is if they shine a people (8:52) torch, like it has to be right at my eye and in the centre, em, it hurts and I can just tell there is something there, but other than that there is nothing, no shadows, no nothing.

G: And, em, Ness you’re doing industrial design at Swinburne, you just told me and mentioned last time as well, and Margaret you said you’re doing a medical course?

M: I’m doing a course in… medical receptionist and audio-typist, but I’m actually a music teacher, I’m looking for part time work audio-typing, but I’ve got about 45 students so that keeps me quite busy.

G: Where are you teaching?

M: From home, I have a home studio.

N: What do you teach?

M: Piano, keyboard, … (9:35), yes, students up to grade 8 level. So I’ve been doing that for…ever (laughs). Yes, I started learning piano soon after I lost my sight. I had a wonderful cousin who was only about sixteen or so who taught me and, em, took me … (9:52–9:54), I got it the same year as I, as I did year eleven and twelve, em, so yeah, and I’ve been teaching on and off since, I’ve been doing, I have done quite a bit of office work as well, but not lately.

G: Yeah, ah, hi Debbie. Come in, your seats reserved.

Debbie: Thank you. Can I get you to put my stick away.

Brandon: How are you?

D: Good, thank you. I’m trying…

Brandon: Brandon.

D: Brandon, I haven’t seen you last time
Br: No, no, no, not last time.

G: Alright, so maybe we just, em, we’re just introducing ourselves, Debbie. We’re just going through everyone and now Brandon is going to just tell us a little bit about him and then maybe you can say a few words.

D: Alright.

G: And then I’ll say something very quickly and then we’ll go straight into the questions and the actual topics. Ok, thanks.

Br: My name is Brandon. I’m actually working in the RVIB here for the next three months. I’m kind of doing an internship as part of my third year, em, third year of a social science degree at RMIT University. So, em, …(11:23), hopefully. Em, in terms of eye condition, I’ve got retinitis pigmentosa or rp, which is a congenital disease, so it’s, it’s deteriorated over time. Em, what that basically means, I’ve got several different, several symptoms combined at the same time with my vision. Em, to put it plain, I think I’ve got about five percent vision left, em, which is a mixture of bits and pieces, a little bit peripheral, a little bit central, and not quite central as well. Also I’ve got, I’ve developed astigmas(12:00) over the last few years, so, em, which is a …(12:05) eye bubbles involuntary, em, what else would you like to know?

G: Em, that’s about it (laughs). I can’t think about much more right now, thank you. Debbie?

Debbie: Em, well, my name is Debbie, which you guys know, em, I’m at the moment doing a course in business certificate 2, em, I’m a singer in a band, I’ve got, my vision condition I’ve got what’s called optic atrophy, which is where the optic nerve shrivelled up. I had a severe(12:47) brain damage when I was born, so that caused the optic nerves to, well, I suppose shrivel would be the best way to describe it, they barely work, so that means that the messages, my eyes work, but the nerves, that’s the part that transfers the messages from my eyes to my brain, em, that part isn’t working very well, so my brain gets maybe, I don’t know, five percent of what vision comes to my eyes. And so yeah I’ve got five percent in my right eye and hand movements and I’ve also got the condition astigmas, which is what Brandon has just described. Em, what else? Anything else you’d like to know?

G: Have you got any colour vision at all?

Debbie: Yes, I’ve got some colour, it’s mostly light, em, and shades, but yeah I do see colour. But the person has to be close to me for me to be able to see what colour they are, and like what colour they’re wearing and what detail of them I can see. So if a person or object or something was far away from me then I couldn’t really distinguish it very well.

G: Aha, aha. And you, Brandon? Colour as well or no?

Brandon: Em, I’ve got some blue-green colour blenders, which means when the colours are, those colours are similar I’m not sure which one is which. Em, also just because of my low vision colours aren’t very clear. They run into each other a lot, so…

G: Ness, you would have none?

N: Em, I know a hell of a lot about colours though cause I had sight before and because, like, painting and design is my passion I know every colour there is, like specific colours, heritage green and like, you know, fuchsia, but, no, I don’t see any of it, but I know what they are.
G: Ok. Did you get your colour sight back when you got your vision back?

N: Yeah, that was a very vivid thing, cause I remember seeing a giant red thing going across the road and that was a tractor, it turned out to be, but, em, yeah like sort of vivid colours were---, and grass, I'd never realised grass was that green, because I got, the sight that I got back was different to the sight I had before, but, em, I still, like, I knew what I was looking at if that makes sense, but the interesting thing was actually reading I was bad at, because I hadn't read well before, so I couldn't actually read, I was like dyslexic (laughs).

Debbie: Have you got some sight, have you, Ness?

Ness: No, I'm totalled.

Debbie: Ah, you got sight back and then it went again?


D: Ah, ok.

N: Yeah.

G: Margaret, can you see colour?

Margaret: Em, I can see some primary colours, I'm not good on pastel colours, like I think something will be mauve and it'll actually be beige (laughs), em, so I can't rely on my colour at all. I have to read the labels (laughs) on clothes and ask, ask for, you know, advice whatever things go with one another. I don't see the outlines of things either at all well, they blur into one another.

G: Em, but you, do you see the contrast, em, of, you know, lighter colours and darker colours?

M: Yes, I can see the colours around the edges.

N: So is it kind of like a rainbow or anything where you don't see the edges? Like does it sort of mix in?

M: Ah, it's just everything is sort of furry around the edges. It's not clear-cut.

G: And Bernice? Do you see colours or contrast?

Bernice: Not like light or dark possibly, but to actually tell you what it is, no, I mean I pick these trousers, these pants up the other day and I couldn't tell you whether they were blue, navy blue or green, I just kept looking, I thought they don't look right, but they were navy blue. But, you know, I, and I may not ---(16:53) explain an incident, but I had a pair of, two pairs of sandals, this is going back quite a while, I had a red pair and a black pair, I walked out on the street, I had one of each on, looked down and thought: 'This shoe is not shiny enough', so I went in, took them off, stood out in the sun, I thought, here, one red shoe, one black one (group laughs) and I immediately picked the two pairs of sandals up to throw them out, so I wouldn't mix them again.

G: Was it the same, exactly the same kind of sandal, but just in different colours, because otherwise you would have noticed by some…
Bern: No, they were exactly the same style of sandal

N: You should just get a, like a, like circle sticker or something.

Bern: Well, I didn’t even think at the time, I was just so annoyed that I actually did it, I thought: ‘I’m not gonna have that happen again’, and I just went whoosh, bye (laughs).

G: Quite fashionable, I just saw a girl the other day, who was wearing boots and they were different colours, the left one was red and the right one was brown or something.

N: (laughs) It’s like a brown sock with a red one.

G: So it’s like a design these days (laughs).

N: Statement.

G: Yeah. So, Brandon just very quickly for you, because we spent so much time last, em, Monday to actually talk about the project that I don’t want to go into it too much, but, em, basically I’m, em, doing my Masters in Interior Design here in Melbourne at RMIT, but I am from Germany originally and did interior architecture there. And, em, I’m really interested at the moment for my masters research, it’s by research. So I’m doing a project, em, which I’ve chosen to do myself, so, I’m talking or thinking about spatial coherence, which means how do we, or how do you having a vision impairment understand spaces, how do spaces become comprehensible in a way, how can you get around and, em, how… what kinds of features are important to you, what kinds of landmarks of… in the environment are important to you? And also possibly as we’ve got a very mixed group how important is sight still and how much do you rely on…on your vision? And, or, what do you use to confirm what you can’t quite figure out, what Bernice was just saying for instance, em, with the shoes, so, how, how do you get around and today I would like to talk about orientation and navigation, so I would actually ask, like to, like you to explain in quite a detailed way how you for instance got from your home to here, or so, how you, em, what do you look for, what do you, what’s important to you, what…yeah I don’t know, I’d just like too…because you can probably assume that I haven’t got much of an idea about it, although I’ve read about it, em, I’ve read several books, and there is actually one really good book. I don’t know if you know about Georgina Kleege? No? It’s called Sight Unseen and she has got a vision impairment, em, or has been legally blind since the age of eleven, I think it was and it’s actually a very, very good book, em, and I’ve read this and she has talked a lot about how she feels about society and what kinds of things she has experienced and how, em, she has got cats, how she sometimes when the cats move things from one place to another and all of a sudden there is something in the bath tub that shouldn’t be there, how she figures out what it is and, and, em, these kinds of things, and also she talks about literature and films that deal with vision impairment in a way and that she thinks they are pretty…a lot of the films especially are pretty bad, because they just show the, the vision impaired, em, person as a kind of, in need of help or so, or it’s kind of like a character that’s on the side or so to the actual main character, or so, so it’s not, and she is criticising that a lot that it’s, that that’s the way, em, in which society seems to deal with vision impairment, but, em, yeah, I’m, I’m really interested about orientation and those things…

Ness: Something that could be interesting just because you’re dealing with spaces and I know it’s, it’s a rather corny movie, but it’s called At First Sight.

Debbie: Ah, I’ve heard of that.

Ness: And it’s actually, it’s em, it’s not too bad actually, em, it’s called At First Sight and it’s,
em, got Val Kilmer in it. And one of the first things he does is he takes this new girl a walk down his street and says, you know, how he knows where things are and the idea of what he hears when the rain comes on the roof and describes it to her. And how they actually did it is he, they actually interviewed the real guy who this had happened to and he actually trained him how to use a cane properly and how, you know, what exactly it was like, em, you know, and...so actually did reference it with a real person, it’s based on a true story and I actually have read the true, the real person’s log on it.

G: And what’s the story outline?

N: The story outline is basically, em, he’s a blind guy who is a masseuse, this city woman comes down to the hotel to basically have some relaxation, she meets this guy, they fall in love, but the story is also, he...she then thinks she can fix him. Em, you know, he’s a poor sighted person he needs fixing. And he’s sort of like I don’t need fixing, I’m not a project to need fixing and explains to her his world and how he sees the world and how he gets around cause he’s totally blind and then he decides that he is interested in seeing, because of the prospects of, you know, never seeing your kids, or something like that. So he then has an operation to get his sight back and he gets his sight back for a short period of time and then loses it again, em, but it’s interesting to see what happens when he becomes sighted and his experience then and then also when he loses his sight again. And it’s, he’s the main character throughout the whole story, so it’s actually pretty interesting.

G: Is it a new movie, or...

Ness: No, it’s quite an, it’s an older, coming about 1990.

Bernice: Excuse me, that’s not the one where they had, where the fellow took a lot of photos, is it?

N: No, no, that’s a different one, that’s with Russell Crowe.

G: Is that Proof?

N: That’s Proof, yeah. I hate that movie.

G to Bernice: Did you like that movie?

Bern: Well, I, probably because I really wanted to see what it was like.

Group: Yeah.

Bern: I got interested in it, but I thought in the end it didn’t that well (24:07), he’s just another human being.

Group: Yeah.

Bern: Yeah, but I was intrigued at first, especially the way he took the photos, but other than that, because I’ve never been able to use a camera very well.

Ness: Really?

Bernice: Yeah.

Ness: Mm, interesting.
Bernice: I did once abuse the camera of me kids, took it back inside and it fell apart (laughs). It was hilarious. So obviously…(24:31 – 24:40).

G: Yeah, that Proof film, I just watched it recently, too and, em, and I thought it was just so much, it’s all about this, about truth and trust and other people relying, having to rely on other people.

Ness: …(24:56) bitter though. I found he was very bitter.

Bern: He was bitter.

Ness: And that really got me, cause I’m like, ah, get over yourself.

Bern:…(25:03) many people that are bitter about …(25:05).

Ness: I would really recommend that you see this one, they’ve got it everywhere, like in Blockbuster, everything, and, em, it’s a very common film, and, em, yeah, it’s just the way that he’s not, he doesn’t feel sorry for himself, like it’s, he’s more you know, I don’t need fixing, which is very interesting, cause of course everyone’s perception is, ‘Blind people, oh, you poor thing, you must need to be fixed (laughs).

Bernice: Tell me about it.

Debbie: If someone asked me if I wanted my eyesight back, I’d say: ‘No way, that’d be more of a curse than a blessing. It’d be a hindrance, I couldn’t handle it.

G: And I watched another film, em, Wim Wenders, em, German director, or producer as well, and, em, it’s more, he does more arty sort of films and I watched Until The End Of The World, has anyone heard of that one? It’s pretty crazy, too. That is about a scientist and the scientist’s wife has been blind, I think all her life, or since childhood as well and the son, the scientist has invented a…like spectacles, em, that record, that film, em, videorecord everything, the environment, but also records the processes of the brain or the way the, em, the information are being transmitted to the brain and, em, then the son goes out, travels around the world and records a whole lot of things, and, and friends of theirs and things like that and, em, it’s very straining for the eyes and everything, so he’s got trouble with his eyes later as well, but he comes back to this lab and, em, then basically the person who has recorded it has to watch it again and simultaneously to the person, em, the mother who is… who has got no sight, em, she has got those electrodes connected to her head in a way or something, or some laser, whatever, and then the son has to watch the images again and, and the memory then is being, em, kind of double, double–checked, or it’s the memory of the, em, that’s being recorded is as well and then kind of adjusted to the original. And it’s really complicated and, and it’s very weird and, em, yeah the actually, what they said or what the woman, the mother the vision impaired mother says is that she, for her it, she didn’t enjoy it at all, so it was more her husband being the scientist wanting this to happen, em, and so thinking he would give something amazing to her, but she, em, for her it was just shocking and, em, for her it was like all her friends had aged within one minute in a way, you know, all of a sudden they are all really old and she looks at them and, and, yeah, and she saw her daughter and her granddaughter and that was great, but…

N: Along with it comes all the bad things as well.

G: Yeah, and I think… she dies in the end, so, I don’t know if that’s…

N: That’s a bit of a dramatic ending. I don’t like those. I like the Hollywood happy ending.
G: Yeah, yeah, so it’s pretty, em, yeah, it’s just weird as well.

N: There is lots of blind films out like Scent Of A Woman, Dancer In The Dark, all of those, yeah.

G: But this one I haven’t heard of, the At First Sight. So, am, can I just go straight into the, em, orientation issue, em, do you all get here by public transport, or…by taxi, or?

Debbie: My mum, my mum dropped my off.

G: Yeah ok.

D: Very sweet like that. But I have to get home by a taxi.

G: Yeah.

Bernice: …(29:11)

G: Did anyone come here by public transport?

Group: Yes.

G: Ah, yeah.

Bernice: …(29:19)

G: So, Brandon, you, do you actually take the tram in every day, or…?

Br: Yeah, I live in Cranbourne, so it’s quite a ..(29:27) away from here.

So, em, I catch a, a bus from the end of my street to the train station. Em, in the train,· · · today actu-
ally was a bit of a weird one, I actually went to uni first and then came here, but normally just to come here I would, em, catch a train to either Armadale or South Yarra station and tram down to here.

Normally, em… Do you want to go in a bit more detail?

G: Yeah, yeah, I think as you’re only here today for short time maybe you can talk a little bit, em, about what you’re···

Br: I can tell where, this morning in terms of orientation I had to go to university to · · ·(30:12) and stuff, so the same job, caught a train, a bus and a train, got off at Melbourne central station and walked up to RMIT, em, and then I caught a tram from there straight all the way to here, em, in terms of how do I know which tram to get on, em, the tram to get from RMIT to here is number six and, em, so every time there’s a tram going past, you do, I do ask the driver what number tram is this? Until we got to number six, em, it’s quite interesting though. Some, you know how sometimes trams, they might line up at the stop?

G: Yes, and then they go altogether, yeah?

Br: That’s right, there’s tactiles at the, rights at the front entrance, the front of the line, em, so you know where, normally that’s where a totally blind person will stand. Which I was standing there with my cane out, my sunglasses on and stuff, I, I’ve got a bit of vision, so··· but I noticed that a lot of trams would just, the ones that are behind would just go when there’s, when the first one went.
Ness: Yes.

Brandon: Which is a bit of an issue and I was thinking about it: ‘I hope none of those were tram number six.’ So then I thought, ‘what I should do next time is, next time one goes past I’m gonna stick my cane out and …(31:36) the front of the tram, realise for them to stop. I didn’t think I’d go that far.

Ness: No, please do.

Br: I will one, because it’s just logical to realise, I mean, maybe I should get like a big, I don’t know, two by four stick or something to carry around.

Ness: Or when they stop like five metres from their actual stopping point.

Brandon: So yeah, that’s a, that’s a bit of an issue and then in terms of getting off the, at the, when I get off the tram I normally, unless I’m familiar with where I’m going, I quite still have a bit of vision, I would normally ask the driver to, em, let me know when a particular stop is when you arrive sort of at a particular stop. This particular tram driver forgot, but I just happened to know where I was anyway, but I reminded him, I said: ‘Is this Chapel street?’, and he goes ‘Oh, yeah, sorry, yes, yes, yes, yes, yes.’, but I was already ready to get off anyway. So that’s one issue with trams, now train is another issue, because, em, for example travelling to where I go every day, like to Melbourne Central is not a problem, cause I, I know, I know that the route, em, Melbourne Central is the second stop from the loop going into the, into the tunnel, now if I ever…, I used to go to, em, meet my wife sometimes in Croyden. And I, I don’t know that one at all, now sometimes there is an announcement, sometimes there is not, em, so you’d have to ask people, or, or, em, count stops or, but then again that’s a bit of …(33:15) when there’s, when there’s express trains and some trains don’t stop at some places and (laughs), so, yeah, there’s some issues there.

G: And in terms of announcements I, sometimes I don’t understand the announcements very well. I actually find it really hard to hear what they’re saying, so…

Brandon: Correct, yeah.

Debbie: Sometimes the speakers can also be distorted and I see where you guys are coming from, I have the same problem.

Margaret: Sometimes the announcements are actually completely wrong.

Brandon: Yeah, that’s true, true.

Margaret: Yes, that has happened, some have happened to…

Debbie: I had that happen going home from Flinders street when we were in the loop, em, they were one station behind with their announcements, like when we got to Parliament station I think they announced it as Flagstaff and … oh no it was one station in front actually, that’s happened as well, it was like pfft…

G: That’s right, at Flinders, em, at, em, Federation Square on the trams on one of the new trams they say every time when you’re actually leaving Federation Square and going towards Collins street it, it says, em, ‘next stop Federation Square’ and we, we’re just leaving there, so…
Brandon: That’s actually…

G: Really confusing, for me as well being, you know new in Melbourne in a way, I’ve been here for a year, but it’s still, you know, that, that is an issue for me as much as for a lot of other people I think, yeah…

Br: Sometimes that, that automated, automated, em, voice is actually worse cause a lot of the time it, it doesn’t, it misses stops, so it would say some stops and wouldn’t say other stops. So, and that… (34:54) that’s a problem, cause when you, when you’re waiting for a, for an announcement, because it’s been announcing the five stops before and then it decides not to, you’re sort of mmm, you’re not sure whether it’s going to announce it or not or what.

G: Is that, do you get really stressed sometimes, I mean that must be…, I always, when I get lost, or I miss a stop, or so and I don’t know now to get there or how to… how far it is to get back or I am … is that…?

N: Sometimes when they actually, they swap the train like I catch a Frankston sometimes, it’s supposed …(35:28) going to leave from platform three and then you jump on the one from platform three and it’s actually not the Frankston, it’s the one that normally goes from platform three that’s going to … Cranbourne and you get down somewhere and I’ve never been on that train before and I have no idea where to go or how to get back and it’s, it is distressing, cause you realise you’re not turning the right way and then you think: ‘How am I gonna get back? What am I gonna do?’, like, especially when you’ve never been there before, it’s ok, I don’t mind if I’ve been to that station before and I can get back, but if I can’t I sort of get very, very stressed.

G: So what do you do?

Ness: (laughs) I just stand and cry, no, em (laughs) …

Brandon: After that, after that, what do you do?

Ness: (laughing) Yeah alright, after that. When some …(36:09) says ‘Are you ok, dear.’ No, em, usually I, I, em, have to ask someone or try and, try and find my way and if there’s noone there and you’ve got to try and find your way, or sometimes I actually end up ringing up, em, like my sister or someone who has been down there and …(36:27) ‘Where do I go?’ and sometimes she can help me out and be like ‘ok, this is this station, you’ve gotta go this way and get there this way. Other times I just give up and go ‘I want a taxi from the station (laughs)’, you know…

G: How do you get a taxi?

Ness: You just, well, you just ring up 132227 (laughs), so …(36:42) and the great thing is they have me programmed dawn as a ‘blind passenger’, so it’s like, they already look out for the white cane anyway and I’m like, I’m, like, if you can find out what station you’re at, yeah, so, but I mean usually I prefer to get back, just because of the cost of taking taxis, but sometimes it’s just, it’s very stressful to be able to work out and sometimes you don’t know where people are to ask them as well, so I sort of feel like I’m talking in mid-air, going: ‘hello, can someone please tell me (laughs), you know, and you, and you think you know, is anyone going to answer me? And then you hear this voice, a mid-old lady going: Are you talking to me?’ (laughs) And you’re thinking: ‘Yep, you’ll do.’ But, I find that really frustrating, especially when they don’t, don’t announce that train, or like for instance I catch they don’t announce that, if it’s a Mordiallac then it’s gonna run express … and sometimes it runs express from the one station before mine and then I’m left kicking myself thinking ‘Why didn’t I just
get out one station earlier, you know, but when they don’t announce it, it makes it very frustrating.

Brandon: I think there’s particular stations that are worse, Flinders street is shocking.

N: Oh yeah, South Yarra is sometimes pretty bad.

Brandon: South Yarra is pretty bad, too.

N: And Spencer.

Br: The big ones are just shocking.

D: I haven’t caught one from there.

Br: They don’t make announcements.

D: Don’t they? Oh, my god.

Br: Some of the, some of the other, like for example, some of the smaller stops they have, that aren’t manned at all they have that little box where you just can press the button, now that’s handy, but the other ones like Flinders street they don’t have that.

G: How do you find the box?

Margaret: Flinders street announces, doesn’t it?

Bernice: They are there but they are not working.

M: On the wall somewhere.

N: Yeah, it’s always on the wall

Bran: … near the end…(38:18)

N: Yeah, like generally wherever you enter the station, it’ll be right there. But sometimes it’s annoying, cause you press the button and it doesn’t answer, but sometimes when it doesn’t actually give you the thing you’ve gotta, on the left is a red button which you press in emergency and on the right a green button and if I’m pressing the green button and nothing has happened I just press the red button. (group laughs) And they’ll be like: ‘What’s your emergency’ And I’ll be like: ‘I need to know where I am.’

Bran: There’s an information box, That little button at Flinders street, em, which gets you to a real person, …

Ness: Ah that’s good.

Bran: …but they won’t tell you information.

Ness: Are you serious?

Debbie: Really?
Bran: I pushed it one day, I said, look, I don’t know, there’s no one else, I don’t know when my next train is, can you help me? And he goes: ‘Ah, I don’t have timetables. You’ll have to go to the booking staff, which is up…’(39:06) to the front where the barriers are. So…

Bern: You’ve actually gotta go out of the barriers, too.

Bran: That’s …(39:15), unless there’s someone standing there, but you wanna go out of the barriers, yeah.

Ness: The other thing is with the new trains, I came back from being overseas and didn’t know they had new trains and couldn’t find the door, because the doors are nicely flush along the side of the train with a button and there’s no indication of an actual door, so I’m running along going, you know, running my hand along and going: ‘Ok, where’s the door, where’s the door’, walking up for quite a while, going: ‘Mmh, there is no door.’ (laughs)

Bran: …(39:44) pumping us through the roof?

N: Yeah, (laughing), what’s with the trains now? This is how they’re reducing passenger loads not letting us on. And it was crazy.

G: And, did you find it or did you wait for the next older tram, train?

N: No, in the end someone was like: ‘here you go’ and I’m like: ‘Ok, but, em, it’s, it’s difficult. But sometimes people aren’t quite, you get some people who are really helpful and you get some who that think they’re being helpful, like grab your backpack and throw you on the train, because they think that’s going to help you get on the train.

G: I saw, I saw that the other day and I thought it was so bad and I just, oh, I just…

Debbie: What happened?

G: The same sort of thing, there was an older guy with a dog as well getting onto a tram, one of the older trams and the seats are basically opposite the, the entrance past the driver, and, em, and there was a guy, a business guy sitting there, on his mobile talking and then he saw this, em, man with the blind, em, guide dog, em, getting on (laughs) not blind dog (group laughs). The guide dog getting on and, and he just stopped, he just got on and stopped for a while and the tram wasn’t moving and I looked at him and thought: ‘Well, he’s probably orientating himself, he’s probably figuring out what’s around him and whether there is anyone sitting there and this guy had jumped up and just grabbed him and spun him around - would you say spun? - spun him around and, and said: ’Well, here you go, mate. There’s a seat right there if you just turn around’ and just turned him, you know, and, as if he can’t turn around himself, and pushed him down onto the seat and thought he was so helpful. And I just thought, ’Oh, my god, how can you be like this?’. And he can ask him, or he can offer it in a way.

Ness: Sometimes you get on and you don’t know there’s a seat, like, I don’t sit down usually. On trams you can usually find a seat, but on trains you can’t. But when people, I’ve had …(41:52) they grab your backpack and throw you on and they think they’re helping you get on the train and you get thrown across to the other side of the train and you’re sort of like: ’What do I do now?’ You know, and they don’t realise and they’ve just gone and walked off and you’re just there on this train sandwiched against the door going ‘mmh’….
Debbie: I’ve never, I’ve never, em, had that.

N: *(42:11)* and you think, well, at least it stops moving.

D: Ah, people have sort of like grabbed my arm a bit and helped me on, but that could be because I’m, I’ve got a walking disability, which is obvious, so I don’t know, whether it’s my sight or the fact that I can’t do anything without holding on to a stick when I’m trying to get in the train.

Bran: Do you find it helpful or not if someone has grabbed your arm?

Deb: I, depends whether, generally it’s ok because they don’t do anything more than just that.

Bran: No yanking, pulling and … guiding, yeah.

D: They just sort of like, go like that and steady me while I’m getting up and I don’t really complain.

Ness: I hate when people grab your stick. Yeah, and they like, grab your stick and put it where it should be and I’m like ‘that doesn’t help me’, you know, I’m like, I’m caning along, trying to find this thing and they just, instead of saying to you ‘here you go’, they just grab your stick and go ‘plonk’, you know like, ‘and that’s supposed to help me how?’ (laughs)

G: That’s crazy. Although it is hard, you know, I mean, some people really probably mean well and then really try to …

Brandon: That’s true.

Ness: Ah they do, but some of them actually say they’re afraid because some people have snapped and that they had had someone who has obviously, you know, none of us, but some people have been obviously very obnoxious and when they have turned to help them they have obviously gone: ‘I don’t need help’, you know, or something and so when they said to me, they’ve sort of gone ‘Is it ok, you know, if I help you?’ and they’re very, very nice, but you hear that they’re actually nervous and when you ask them why they say it’s because they’ve had a bad experience when they went to help someone and they just, nicely they asked: ‘Do you want help?’ And this person sort of screamed at them ‘I don’t need help.’ You know, so one hand you’re getting people who are throwing us on train on the other hand people who don’t want to help us for fear of us killing them (group laughs).

Debbie: Usually people ask me, usually people help me, em, mostly I ask for it, but occasionally I’ve been helped, which is nice. I’ve never had someone not help me, which is good.

Bernice: It’s Margaret’s turn.

Debbie: We haven’t heard you speak, Margaret.

Margaret: Yes, well, I sort of cope with all that area pretty well I can, you know have enough vision to cope with trains and etc., so that area I’m pretty alright with.

Ness: Can you read the numbers? Or do you find that difficult?

M: Em, the, well, I mostly get trains and buses, em, and buses, I can’t see signs and, you know, the signs on the top of the …*(44:44)* right near in front of me. That was a big problem in Adelaide, not so much here, because here, em, there are the huge number of buses going all the same way to the, to
Ness: do you find it hard not, like can you see them coming, em, the trains?

M: Well, I think every big truck is my bus (group laughs). No, apart from ...(45:12) I manage pretty well.

Brandon: That’s called ...(45:15).

M: You see, when I give up with all these white trucks or buses something pulls up in front of me and I look around, ‘ah, there it is’, ...(45:22) you saw me.

G: And Margaret is there, em, is there some particular route that you take to go from one place to another that you walk, ever? In the city or from home to the supermarket or to the shopping mall, or...

M: Well, I ...(45:41) my tracks, you know. My favourite way is, em, it’s mostly about safety first, em, like I use traffic lights or I walk a block or two in the wrong direction so I can cross more safely, em, I love walking anyway, so, em, ...

G: You don’t like walking?

M: I do like walking...

G: You do like it?

M: I’m walking all the time, so, I don’t mind if I have to walk further to do the, cross safely, em, I don’t like walking through car parks, that’s my, em, (laughs) perhaps kind of contention, if you like and I hate when footpaths all of a sudden stop.

Bern: Yes.

M: In the middle of nowhere, so, yes.

G: Stop how? Does the pavement...

M: Well, there’s no more footpath and you’re on, it’s this grassy, it’s the road or maybe the, muddy, or..

Ness: Sometimes they don’t have an actual footpath. Have you never seen that?

M: This is outer Melbourne, you know, the suburbs

G: I guess I have, yeah...

M: Sort of new areas, etc., em, that sort of thing annoys me. [continuity, fluidity] Most of the time I, em, I came in buses and trains and things, I’ve only just started using the trams on a Saturday.

G: Have you, em, yeah have you got any particular way that you….that you’re used to walking, that you know? That you walk a lot? From I don’t know shopping, or home or so, cause...

M: Yes, yes. I’ve got about three different ways that I….that I sort of alternate between (laughs).
G: O.k.
M: Yes, I’ve got bike paths…

G: Can you just maybe pick one of them and just explain very detailed how you do that…how you go about it?

M: Well, I’ve got some sight, so, you know, mostly it’s alright, em, o.k. well, em, if I leave home and go to my local shopping centre, em, I live at the end of a court, em, so, it sort of winds around a fair bit, so I walk…follow the court out, em, and at the end of my court there is a bus stop which I can use or I can continue walking straight up that main street, Buckingham street and that brings me, em, to Burgens road after about fifteen-twenty minutes. Burgens road is a T-junction so you can’t really go further anyway. Then I turn right, em, there is a particular telegraph pole I like to cross at, because in the middle of the road is a white strip, so I get…if there is traffic I can stop in the middle of the road, cause it’s a very busy road, em, so I like to cross in that one particular area, em, and then walk up to the corner, then up to, em, it’s a very busy intersection, cause it’s Stud road and Wellington road intersection, so you’ve got a small bit, I have to cross a pedestrian crossing to get to the lights, em, I hate those things (laughs). I’m inclined to sort of…if there is any traffic I step back two or three metres and let all the traffic go and when there’s no traffic and then I walk across, but I don’t like depending on traffic to stop for me, especially there is a lot of trucks in that area, em, and the lights…I cross over at both lights and from then on it’s just a footpath all the way to the shopping centre, em, …yes…

G: And in the shopping centre?

M: Pardon?

G: In…inside the shopping centre, em, I mean now you’re probably very familiar with it? You’ve been there a lot of times, but is there…what do you look out for or how do you orientate yourself…or when you first walked in there maybe?

M: Yes, o.k., well, walking this way, em…yes, I get to the front of the shopping centre and then I have to walk up the side of the car park and then cross through the car park to get to the shops, em, and I, em, find my way along to the main entrance at the end next to Coles supermarket and that’s like right at the end of the supermarket and, em, I can walk straight ahead down past Coles and Kmart and Bakers Delight and all nice things like that or I can turn left and go to the butcher’s and the chemist and newsagents, pet shop, etc. down the other side, so it’s virtually a square shaped shopping centre inside, so it’s pretty easy. And on the front of the shopping centre there’s the bus stops and also the library where I do a lot of photocopying for my students, yeah it works out quite well.

G: And, em, you don’t have a cane or anything to help you, do you?

M: No, no.

G: So do you rely very much on your sight, or is it a lot also from the pavement or the…

M: A lot of it is automatic, a lot of it is automatic, em, I’m pretty right, but even though I’ve walked somewhere a thousand and one times, one day I might be just sort of daydreaming and I’m starting to think “where the hell am I?”

(Group laughs and agrees)
M: ··(51:15) supposed to go and it takes me while to orient myself, em, so I do have to concentrate on where I’m going. Even though I might know the way, you know, four or five years, if I···especially on a very hot day and if I’m thirsty I sort of···em, I find I can get disoriented very easily, but as long as I concentrate on where I’m going I’m alright.

N: From a different perspective I find that when I’m walking, like, I’ll actually put my hand out, like, for instance I know where my gate is, when I walk out the gate I touch the side of my gate, then I turn and I’ve got my hand out waiting for the other side, cause I come down a laneway and touch the wall on the laneway and···you know where as a kid you hold a stick and you walk along, the ···(52:02) thing? I sort of do that a bit, like I constantly also, you know, tap out there or do something like that, just so I know where things···because I know that they’re there, that I just check to make sure that they’re there even though I go with a cane I still like to do it and reach out and do that. Or like, you know, if there’s hedges I’ll run my hand along the hedge or something like that, which is just an interesting other feature.

G: You do that in a familiar environment and what happens in an unfamiliar environment?

N: Yeah, in the unfamiliar, em, well my cane technique goes from, you know, going ‘tap tap’, in an unfamiliar I tend to go and drag it in front of me. I’m not sure whether you’re familiar with the different caning?

G: Yeah, I’ve read a bit about it.

N: So, em, and ···(52:45), also I click a lot with my fingers, cause I rely on echo, but I’ve got another little sensor thing that, em, vibrates. It’s called a mini guide and you hold it in your hand. I’ve got it here if you want to have a look.

G: That would be great. I just write it down as well.

Brandon···(53:04)

Bernice: They’re good.

G: It’s a sonic device.

N: Yeah, and what you do is when you turn it on and when it reaches a, em, a ···object it, em, vibrates so, em···

Br: That’s good!

D: Where did you get it from?

N: Guide dogs.

Debbie: Do you have to hold it···

N: I’ve turned it on so you can hold that and see if you move it up and around it actually vibrates, em, when it’s got objects.

G: Ah, yeah!
N: And when there isn’t an object, it’s like…cause you can set it at different distances, like two metres, one metre, five metres.

Bern: Ah, o.k.

G: Ah. Can I just pass it around?

N: Yeah, … cont. 53:40??

Margaret: ???

Bern: Oh my goodness, isn’t it tiny?

Ness: You have to get used to it, which…and sometimes it can be confusing, cause it picks up all the little bits.

Bern: It’s picking up rather violently in here because there’s so much around.

N: Yeah, because there is so much. That’s why, but I’d…I’m…I tend to be a little bit of a phobic individual and I don’t go to too many places that I don’t know unless I’ve researched it.

Bern: How is that with steps? Can you use that one on steps? Cause the sonic guide is not good with steps.

N: Em, you can, but it’s very, em, it’s very specific so I don’t rely on it, I’m much more a cane person, I just rely on it for the bigger picture, but …(54:15) that’s good that I can walk around things, rather than walking into them, which is nice, cause then you sort of know what’s coming.

Br: That’s crazy.

G: Yeah.

Br: …

G: It is, it’s great.

Brandon: I pointed out the door and it …(54:28)

Bern: In blank space does it stop?

Ness: Yeah, yeah, in blank space. And, em, it yeah, it pulses the further away, yeah, that’s right. And then when there’s a big opening there’s no pulse, em, and that’s good, but …

Debbie: Oh my god, this is cool.

N: You can actually…if you speak to RVIB or Guide Dogs they actually loan them out to clients, but it’s like a life-long…

Br: You don’t want to give them back, do you?

N: Yeah, it’s a life-long loan, you know what I mean, like for instance you can have it for life, but they
want it back if you’re not going to use it.

Br: Right. It’s like a brother loan thing.

N: Yeah, yeah (laughs). It’s sort of… that sort of a…

Br: ‒‒(55:00)

Debbie: I wonder, would you have to hold it, like, you’d… would you have to hold it or could you wear it like, em, over your neck, just as long as it’s sort of sitting on you?

Bern: No, you’d have to hold it.

N: No, you’d have to hold it, cause you have to point it. The sensors are at the front.

Debbie: Ah, o.k. … aah, o.k., I get what you mean.

Ness: Cause it’s got sensors to see it.

Brandon: Let me show you something, can I grab your hand?

Debbie: Yeah.

Brandon: If you point it out the door, can you feel the difference of the pulse?

Debbie: Pulsing, yeah.

Brandon: Yeah.

Debbie: And that’s saying you’re away, what, your way is clear?

Brandon: ‒‒(55:28)

Ness: No, it’s further away…

Brandon: It’s further, there is something, but it’s further away.

Ness: It’s saying there’s an object, but it’s further away.

Debbie: O.k.

Brandon: And if you point it over that way it… it pulses continuously.

D: Ah, o.k., so there’s…

Ness: Cause there’s something that’s closer.

D: Yes, there was… the more it pulses…

Ness: Yeah, the closer something gets.
Br: And when you’re right about to hit something it goes rrrrrrrr.

D: Yeah that’s what I’m doing now…that is so cool! I’ll pass that to you Gabriele.

G: Yeah, thank you.

D: Cause I like it, but I’m always walking and I never have a free hand, like …

G: …-(55:55)

N: Exactly, it’s a sneaky little button on the side, so it’s good that you can’t lock it.

D: I can stop every now and then raise it.

G: It’s great.

B: No, you’ve got to have it going.

D: Yeah.

Br: Attach it to your arm or something.

D: Maybe.

N: The difference I think I find is when although I’m an outgoing person I like to know where I go so I research it, like, I won’t necessarily get O&M, but, like, if I’m going to like for instance where I first met my partner they lived in Northcote and I’d never been out to Northcote by train and so I re-searched how to get there first and, you know …

(Mobile ringing)

Bern: If it’s mine it can ring.

G: Ah yeah, it’s yours I think in the bag.

Bern: No, it’s not mine, it’s in a bag.

G: Do you want me to …

Bern: It’s not mine. It’s someone’s close by.

N: Oh, is it?

G: It’s not mine, is it?

Brandon: It’s someone’s out the door.

D: It’s not mine.

N: No, it’s in the bag, it is, it’s in the bag.

Bern: Ah, it might be mine in the bag. Leave it, leave it go.
G: Just leave it?
Bern: Just leave it.
G: Sorry, Ness.
N: That’s alright.
Bern: Sounds like mine vibrating.
N: So I tended to research…
Bern: Sorry about that.
N: No, that’s fine. Research it more and like, her and I had actually walked to the train previously, but, you know, then I’d …(56:54) I memorize it…
(Phone ringing again)
Bern: Oh god, I can’t get to it now.
N: …so when you go once somewhere I’ve just got a memory where I just remember it instantaneously.
G: O.k.
N: So it’s more, like, I like to be taken somewhere once and then I’ll remember it.
G: And what do you remember?
N: Em, how far it was, what walls where next to me, em, was the path straight, was it curved, em, did the footpath, you know, how many crossings did I make in–between the …
G: Sorry, I’ll just get you the bag, yeah. If it keeps ringing and then you couldn’t answer it…
Bern: See, I don’t think that’s the ‘jeep’.
Brandon: Somebody wants you.
Bern: It’s been the ‘jeep’.
G: Is it in here?
D: What’s that device called?
N: A mini guide.
G: It sounds like it’s deep down though.
Bern: It is.
G: Do you just want me … I’ve opened the back, em, front of it.

Bern: Well, thing’s stopped.

(group laughs)

Bern: Yeah, I thought it was mine with the distance. I forget it was on actually, I’m sorry about that.

G: That’s fine. No problem.

Bern: It is deep down cause it’s in me coat pocket. Dear, dear, dear.

G: Alright so, Ness, what was it, em, that you remember? What are the features, the paths?

N: How many path crossings, like, whether it’s a little crossing, like as in just a footpath slopes down or whether it’s a full on road crossing, em, whether it was straight, whether there were buildings next to me or open space, fences, all of that. I’m sort of paying attention to everything that’s built around me and underneath me (laughs) in that sense.

Debbie: Yeah, I use that to get around the same way as you do like that.

N: Yeah, and especially because I put my hand out as well so I like to know whether there’s stuff there or not.

G: Yeah.

N: But that’s why I say, like, if I’m taken once, you can take me anywhere once and I’ll remember it, but if you’re gonna send me out on my own …(laughs)

D: Yeah, I’m the same.

N: …I’m a bit more phobic about it.

G: So what do you generally say, em, what a, let’s talk about an interior, an interior environment in a way, like, you know, office or institutional, em, RMIT University or something, a school or so, or even here, em, it basically doesn’t matter, what is there and the way it’s arranged and things like that, as long as you know where things are and you’ve actually learnt the space, or are there things still that…

N: It does. Like for instance my dad is going through a phase where he likes to have furniture on an angle and that really, really pisses me off, because you can never judge an angle.

Bern: No, you can’t.

N: Like if you can work out, like, for instance chairs, there’s tables, out straight with chairs around it, no worries, but if you would have gone spin this table on a 45 degree angle I just, no, every time I’d come in I’d always hit it, just because you can never judge an angle properly. Does that make sense?

Group: Yes. Yes, it does.
N: Yeah so, like for instance at home my dad put, em, his couch on an angle and his table on an angle…

(Mobile ringing)


N: No, it’s mine. …on an angle and, em, every time I, I’d smack into it.

G: Yeah.

N: Whereas if you’ve got things, it’s not a matter of just saying them and let me know where they are unless it’s somebody else’s house where I respect, you know, where their things are, but if you’re actually going to set something up, or make a, an interior structure I’d be better to have things set out so you don’t have so many sharp angles, sharp corners, lots of passage ways next to each other, things like that.

G: Yeah, o.k. And the, em, topography, where the street is going up or dropping down, there’s a slope there or things like that, is that really important? Or does that make things more …

N: You use it as a landmark.

G: Yeah.

N: If you’re gonna say when you come down it’s…

G: Does that make it more difficult as well, or is that, doesn’t matter?

N: …(1:00:40) I’m feeling lazy, but (laughs), em, no it’s like if you’re gonna say that when you come up the top …(1:00:45) and it’s right on the left actually makes it easier.

G: Yeah, because it helps orientation again, yeah?

N: Yeah, yeah.

G: Yeah, Debbie what’s your experience with these things?

D: Em, well, inside, like, I find that once I’ve been around an area once, after that I don’t need, em, any guidance at all, I remember the area, but it has to be inside for me to be able to do this, like, em, the first time I’ll go into a building I’ll use my cane, em, I’ll do the technique, where I’m waving, like, roll it in front of me, make sure I know that there’s no obstacles and then, em, I can go back that same building, like, provided that, em, like, it’s a short time, so I know nothing’s really changed, I can go around there, em,
without a cane. I don’t, I’m not exactly sure how I do this, but I sort of have a sense that, em, I can stop before I’m gonna hit something, but I have to have gone around the room once to know where everything is. It’s hard to explain, it’s something in my brain that sort of knows that sort of knows that there are obstacles around and where they are. And the thing that really annoys me is if someone say changes the layout of the room, like, they’ll change objects, say, at the moment we’re in the board room And I know there’s a square table in the middle of the room, I can see it, but, em, if I hadn’t, like if I came in the first time I’d still have the cane, but then if say someone changed, like, moved it and I came in, em, I would most likely trip over it or something, because it would be in a different area and at home it’s very annoying, because my mother likes to shift furniture around a fair bit and, em, I’ll get used to the lounge room, say, we’ve got the couch near one wall and the bracinas (1:02:48) next to the back wall near the fire place and the table will be near the other window, the coffee table and it takes me a couple of days to get used to that arrangement, maybe a week, so it’ll stay like that for a while and then my mum will decide that she wants a change. I don’t know it seems to…I don’t know, some side of people do it. Yeah, she will decide she wants a change of the lounge room and so she’ll move the furniture in that and it takes me awhile to get used to it.

G: Yeah, yeah.

D: Again. And the other reason is, we have a dog so their stuff is usually scattered everywhere, which makes things a bit difficult. I have to clean it up, I have to make sure that it’s clean before I go in the lounge room and obviously upstairs, which is my domain, well, that hasn’t changed for…since it was set up, because I have a, like, I’m very fussy, I leave furniture and that where I know it is and then I can move around in complete darkness and it doesn’t faze me. Like I’ll often have the lights off if it’s only me, even though I’ve got some sight it’s not really that usable so I’d just turn the light off. But if I’m in a completely new area I like to, I don’t know, have the light on and use the cane. And sometimes if I go upstairs to go across to the computer, if I think that the lounge room has been changed I’ll sort of flick the light on and go across, because I’ve got enough vision that, if say there is an object about this far away from me, which is, em, about, I don’t know, thirty centimetres to a metre I can see and, em, I’ll notice a shape and I’ll notice stop quickly, but, yeah, em, obviously I prefer that nothing is changed and then I don’t have to worry about it. And I can just head straight over there, straight over to my destination. In my case it will be going from one side of the upstairs lounge room, making a b-line (1:04:44) for the computer and provided nothing’s changed, well, I sort of, I don’t …(1:04:49), it’s like a bodily instinct or something that I can just sense where everything is. And I use that technique when I’m being dropped, driven around places, the same thing, like, I don’t know, I sort of sense how many steps I’m going, em, and I’m able to judge distance and my direction is really good. So that’s kind of how I navigate interior areas and obviously when I’m outside it all ..(1:05:20) over my cane, because I have…there’s too much space. But inside I, I’m able to sort of judge the space around me and get an idea of where I’m going.

G: Is that in a familiar environment again or also in an unfamiliar environment that you can …

N: I’m sorry to interrupt, I just need to head off, I’m sorry.

G: Ah, yes, yeah, that’s fine. Thanks very much.

N: I will see you at 12:30 again on Monday?

G: Yeah, I’ll be here, yeah, thanks very much, you’ve got chocolates? (To Brandon and Debbie) And you two haven’t got chocolates, so I give you one. I’ve got, em…

Brandon: Chocolates?

G: Yeah I’m giving out a little one.
Brandon: …(1:05:54)
G: (laughs) Yes, that’s how.
Brandon: Craving ..(1:05:59)
G: But, em, just milk chocolate or caramel?
Brandon: Have a milk chocolate and caramel, doesn’t really matter…(1:06:05).
G: (laughs) That’s fine.
Brandon: Doesn’t really bother me.
G: Debbie? Caramel or···
Brandon: Nice to meet you ⋅⋅⋅(1:06:11)
N: ⋅⋅⋅(1:06:12) see you on Monday then, Brandon.
Brandon: Ah, ⋅⋅⋅(1:06:13).
G: Thanks very much you too, Margaret⋅⋅⋅
D: See you then. Are you coming ..(1:06:19) on Thursday, Ness?
N: Em, I might be next week, yes.
D: Cool, ah well, I’ll probably see you on Monday, yes?
N: Yeah, definitely, see you later.
Group: Bye
G: Thank you, bye.
D: One of the⋅⋅⋅
Bern: This is all getting recorded.
G: Em, do you like caramel?
D: Ah, yeah, thank you.
G: I’ll give you both as well.
D: Oh, thank you, oh, you are sweet.
G: You get another one, too, Bernice.
Bern: Thank you.
D: You are a sweet person.

G: So, now…

Bern: Thank you very much.
G: I love chocolates so think that’s the best thing I could give someone.

Bern: ...(1:06:45) phone. I just hope it wasn’t the minister of housing, that’s all I hope.

Brandon: Sorry, what was that?

Bern: I just hope my phone wasn’t the minister of housing. Bad luck if it was.

Brandon: No, no they wouldn’t have called for that long.

Bern: Oh, no it’s probably my schizophrenic son if anything.

G: Em, do you need to go as well, Brandon?

Brandon: Ah, I should, I’m…I think, when you’ve finished if you want you can just pop by and ...(1:07:10), if you want I can give you a, a quick run down if you’ve got time?

G: Sorry, of what?

Brandon: If you wanted to I’ll, em, you can come around to my office if you wanted to afterwards and I can fill you in on anything else if you wanted to.

G: Yeah, yeah. Your office is…?

Brandon: Em, if you just the reception I’ll come and get you.

G: Alright, o.k., thanks very much.

Bern: That sounds good (laughs).

D: It’s nice to meet you, Brandon.

Brandon: Nice to meet you. ...(1:07:31).

G: Thank you very much. Don’t forget your chocolates.

Brandon: Did you do some, em…

Bern: Computer work.

Brandon: Kick start stuff with Gary Weber(1:07:38)…a few years ago?

D: Yes, in 2004 I did, I might have seen you there.

Brandon: At the beginning of the year?
G: (To Bernice) Would you like some more water, Bernice?

Bran: Yeah, I did a talk there about a research.

D: Yes, I’ve seen you.

Bran: Yeah, yeah.

Bern: No, I use ..(1:07:46) if you don’t mind. It’s a good idea.

G: There you go.

Bran: Do you know your way around here at all? Around with that ..(1:07:54), with that…

Bern: Oh.

G: Em…kind of. (laughs)

Bran: Just, just…

Bern: …(1:07:57)

G: Not really, so…

Bran: …ask the, em, reception.

D: Is the seat pushed in, or…?

Bran: Yeah, just ask the reception, cause this place is a bit weird.

G: Yeah. Yeah, it is, it’s a little bit hard, isn’t it?

Bran: Nice to meet you Bernice.

Bern: All the best.

G: Thank you.

Bern: …(1:08:07) it’s worse.

G: Em, Debbie, would you like some water?

D: Oh, no, I’m alright, thanks, I just had a drink.

G: O.k.

D: Em, you asked me before was, em, what I explained to you in a familiar environment, yes, it was. In an unfamiliar environment, well, I treat it as though I’m outside.

G: O.k.
D: I have to use my cane at all times. It’s like you’ve got this big space around you and until I get familiar, it’s like I need to know where the four walls are of a room before I can feel confident enough to negotiate it without a cane.

G: O.k., and, em, if you say the four walls does mean in any unfamiliar room you come in you actually go along the walls?

D: Ah, yes, I always do.


D: Yes, I always do.

G: O.k.

D: Only when I’m confident enough will I move about the room without sticking close to the walls, because I do have some sight, but I mainly just use light and shade to get around, because I can’t trust my colour or detail vision, so I just rely on the light and, em, yes, so if I get used to a building in, say…, well, an example is, when I went to my friend Megan’s house on Friday night last I, because she’s totally blind, so, she doesn’t bother having light’s on at all. Em, when I came her parents…

Bern: Which is crazy.

D: Not really, you save power.

Bern: Yes, it is, because people don’t know, whether you’re alright, or you’re not.

D: Oh, I suppose, yeah. I have lights, like, I’m never in complete darkness, she…, I suppose there was daylight, but anyway, or she was on alright (1:09:45), I don’t know why, but…

Bern: A lot of people do (1:09:47) don’t think because they can’t see.

D: Yeah, I’ll turn lights on, if I’m just sitting on the computer I don’t, because I’ve got the backlight of it, but, yeah, em, Megan had her light off and so, I don’t know, I the sort of person who doesn’t like to, I don’t know, like…

Bern: You like if you know, you’d like to know you are in a strange place so you use your cane.

D: Yeah…

Bern: Yeah.

D: …but, like, no, the reason I didn’t ask her to turn the light on is, I don’t know, I don’t like…

Bern: Intruding.

D: Yeah, that’s it! I don’t like intruding on anyone’s, what they do, so I just go with the flow and I, em, so, yeah, I’ve got used to it in, well, the environment that she would use, em, which is no light and then her parents came home and…
Bern: ··(1:10:31) all the lights.

D: put the lights on everywhere and I just had no idea where I was so I had to basically relearn the house again. With the lights this time.

G: So that makes a difference?

D: It does.

Bern: Yeah, yeah.

G: How does that make a difference? That is hard to understand for me.

D: It’s hard to explain, like··

Bern: Can I just put it short?

D: Yeah.

Bern: I think what Debbie is trying to say is, like, she gets the feeling her way, suddenly this light comes on, it gives a different feel and sense to the room, because light is warm.

D: Thanks, Bernice.

Bern: And light in certain areas casts shadows or doesn’t cast shadow, which can also make it conflicting to see where you are or to work out between the lights what is there and the reason I’m saying this, I have this problem all the time, em, and that’s what it is, it’s a different feel with the light to the light off. I mean with the light off you’d, you just, well, you know you can’t see so you just go with the flow as she said.

D: Yeah.

Bern: Where once suddenly that light ..(1:11:33) suddenly you’re seeing a little bit, but what are you seeing, because your eyes haven’t adjusted enough to accept what is there.

G: hmhm.

Bern: It’s like you’re going into a dark room and then going out into the sunlight, you have the same issue.

D: Thanks Bernice.

Bern: Is that the sort of thing you wanted?

D: Yes.

G: Yeah.

Bern: Yeah.

G: It, it’s, em, it’s, em, quite curious, because I··for me, em, that shows in a way that the moment
there is light and you’ve got some sight you can perceive the light…

Bern: It’s sort of a relief isn’t it.

G: O.k.

Bern: It’s a relief. ‘Ah, I can see there. Where, oh, I can’t see, because…’, you know.

D: Yeah.

Bern: It, it, you get sort of a little bit of a relief, as if that ‘I can see that, now I know what I’m trying to find. Where, when you’re doing it all by feel it is just by feel, no, whether there’s something above your head or below your head and you bang into it, bad luck, bad luck, that’s it. But when you can see you can see to move away from what’s sticking.

G: Yeah.

D: Yeah, see if I…

Bern: Where, where you can’t if…

G: Yeah, Debbie was saying that, em, her, her, you got used to the environment being, the house being dark, because your friend didn’t turn the lights on, yeah?

D: They, couldn’t, ah, they, they’re just lazy. They don’t do things like that.

G: Yeah so, but you were able to get around anyway with…

Bern: Well, I have this situation… I have this every day of my life.

G: Aha, aha.

Bern: And night is nothing unless I’ve got fluorescent light on, night, light, even ordinary light doesn’t, I mean, I know it’s on, but it doesn’t mean, it doesn’t tell me anything, it doesn’t let me see anymore. (1:13:03) what I should see, you know. Like where, like fluorescent light, it’s, especially at night if you go to your. (1:13:10) like daylight, in some cases, and it will let me see what I want to see, but just standard light globes in most homes, forget it. I just don’t… I register there’s a light, but I can’t say, see how these lights are here…

G: Yeah.

Bern: How they’ve got the space. Well, I can’t pick the space between that light and that light, there’s just, to me there’s nothing, and sort of that’s what you say, the spatiality when you’re not seeing at all feels different. You use your body senses…

D: yes.

Bern: …to recognise a lot of things, like, a room with a light is warm, a room with no light is cold and that’s a lot of what we go on is our body senses, our smells, you know, the sense of smell, the sense of hearing, the sense of touch in all directions cause I even use my toes, em, it’s very, very important.
D: I’ve seen a few…(1:14:11)

Bern: I’m sorry, Debbie, if I took over from you, but I could sort of pick up on what you were mean-
ing.

D: Thanks, Bernice. Cause it’s…

Bern: Because that is, is the sense of touch, regardless of what your sight is, is very important, be-
cause you can see to do everything with your vision, you would not as careful with a knife, fork or a
spoon as we would be, because we have to feel our way with that.

G: Yeah.

Bern: Where with you, ’Ah, I can see that’, chop, chop, chop, oh, I’ve cut myself, so what.

D: Ouch! (laughs)

Bern: Em, we don’t, we try not to cut ourselves, we certainly know we do, like everyone else does,
but 99% of vision impaired, no matter what it is, is… a lot of it is touch reliant.

D: Well, I learnt in my…

Bern: I hate to say that, but that’s, that’s how it goes.

D: It’s true. I learnt in my course actually a lot of vision impaired people take occupational health and
safety more seriously. We hardly have any accidents in the buildings.

G: Ah!

D: Because we are very slow, well…

Bern: Actually, we are inclined to have less accidents, because of our sense of touch.

D: I’m just read…, well, this is what I read and it’s accurate, because we walk around very slowly…

Bern: Oh, I don’t.

D: Oh, I do.

Bern: Yeah, but you’ve got a reason to. I mean a lot of us don’t. It’s surprising that people who can
walk very fast that have absolutely no sight whatsoever.

D: I think if you’re familiar with the envir…

Bern: That’s right.

D: Well, my friends are…

Bern: I mean, look how Georgie gets around sometimes without the dog, em…

D: Around here?
Bern: Yeah.

D: I’ve never seen her go fast, which she probably does.

Bern: Oh, she can. Em, …and …(1:15:39) Kate Stevens was another one. She had the dog, but half of the time that I was in the classroom she was wondering around without it.

D: Rominda Mandy’s one.

Bern: Rominda Mandy was the same.

D: She actually, em, uses her feet, she did it at my house.

Bern: Yes, I do, too. I use me toes. I use my toes.

D: I can’t…

G: How, how your toes?

D: I can’t explain. You have to ask Bernice.

Bern: I feel the way with my feet. Em, and I’ve done that from birth, well, right from the time I could walk. Cause my mum never even knew I was walking, cause I used to wear all these slippers out through the toes, em, and that’s quite interesting saying that, because when I was very small I didn’t know how to walk not on my toes. I had to be taught not to do it, because that was how I was used to doing it by ..(1:16:21) if anything was up on me toes.

G: Really?

Bern: Yeah, I’d stand on me toes. It was very interesting, because I don’t know that many blind people that experienced it, because I had so much hospital and was always on a hospital bed, to reach the ..(1:16:34) up on your toes, right. So you just didn’t learn the difference.

G: Aha.

Bern: And then suddenly I had to learn to walk, well, I found it quite difficult, but eventually I got there, but even then the toes went down before the heals, where really, to walk properly your heals go down before your toes. Well, I did it the reverse.

G: Yeah, like a dancer. Dancers sometimes walk like that with the toes first and then the heal.

Bern: Yeah. That’s right, but that’s incorrect.

G: Yeah, yeah.

Bern: Em, I did that for years and years and years and I’ve always wondered why I wore me shoes out so quick on the toes. …(1:17:09) my life.

D: Ah.
G: Isn’t it exhausting to be walk…having so much…

Bern: Well, you didn’t notice it, because it was such a habit that you developed from a small child, it was the way you moved, it was like, just what you did and it was actually, it was a blind man that showed me what I was doing wrong and he actually massaged my feet and he said ‘no, do this’, and when I put the heal down I nearly screamed.