

A Listener-Centered Approach to Soundscape Analysis

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Abstract

How do people listen to soundscapes in the built environment? Current soundscape research within urban planning disciplines tends to focus on measuring outdoor spaces in the built environment by interviewing the people within. This thesis, by contrast, followed individual listeners, using a qualitative, Grounded Theory methodology, examining listening preferences and habits across multiple environments. This approach gave a broad range of reactions to different soundscapes, from homes to workplaces to bars, clubs, and places of worship.

This thesis reviews various soundscape epistemologies, methodologies, and methods, and argues that we need a stronger theoretical understanding of all these elements. It questions what is being measured, and how people are measuring it. The thesis suggests some ways qualitative and quantitative research can work together more effectively, and move soundscapes from the current multidisciplinary research landscape to a truly interdisciplinary one. In defining the soundscape as ‘the listener’s perception of their auditory surroundings’, I shift the focus from measuring people’s evaluation of spaces, to evaluating people themselves. This leads to a radically new empirical approach and theoretical description of the soundscape, using social science methods to build thick description of listening habits.

Twenty people were given audio recorders and log books, and asked to record their day-to-day lives for two weeks. They were then interviewed about their experiences. The main finding was that soundscapes are not noticed most of the time, with participants seeming to have a ‘noticing threshold’: affected by factors such as control, expectation, and activity. Soundscapes which were noticed fell into one of four categories: positive–loud, positive–quiet, negative–loud or negative–quiet, with different judgement criteria for each. Participants were also highly adept at using coping mechanisms, such as recorded music and TV, to counteract undesirable sound environments.

Chapter 1

Introduction

The listener, and only the listener, is the composer of the music.

(Stockfelt, 1994, p19)

In this thesis I aim to reevaluate what it is we call a soundscape, highlight the gaps between current ontologies and pedagogies, and turn attention to the most important part of the soundscape: *the listener*. Using a qualitative methodology, I will present a different perspective on what the soundscape *is*, argue for a return to base research principles when analysing it, and aim to complement the large amount of quantitative empirical soundscape research with an in-depth, qualitative theoretical model.

Overall, I argue that the listener should receive a higher focus in research literature, with current research tending to overemphasise both specific and general environments. This document will demonstrate the strengths of a qualitative approach, the novel outcomes that come from researching *people* instead of *places*, and provide a rereading of the research literature with a novel focus.

1.1 Thesis outline

In this *Introduction*, I outline my aims and objectives, the outline of the PhD, define the object under study, and establish a clearly defined vocabulary.

In *Literature Review* (chapter 2), I examine the key literature in soundscapes, outline the research landscape, and explore overall problems of and failings with current research. In this chapter I return to the key texts of soundscape research, and give a new overview of their claims. I catalogue other key soundscape literature, and schools of soundscape research, that seem to have been left aside in contemporary soundscape research. I look at research in other areas that may be of use to soundscape researchers, even if this research doesn't mention the soundscape directly. Finally, I explore the idea of developing a pedagogy for soundscape research, a research area curiously under-explored.

In *Methodology* (chapter 3), I explain how I conceived of and developed my methodology, and the rationale behind it. I develop a qualitative, Grounded Theory approach that answers some of the research gaps in the literature review. I will discuss the benefits and drawbacks of the approach, explain the function and application of non-statistical qualitative data collection, and link back to creating a research instrument that can shed light on my aims.

In *The Grounded Theory Process* (chapter 4), I explain the stages taken in my Grounded Theory approach. This chapter demonstrates my interpretation of Grounded Theory, my iterations of fieldwork development, the process of data entry and analysis, and insights and pitfalls along the way. I also discuss my use of novel software tools, including custom ones developed for this thesis.

In *Analysis* (chapter 5), I present my findings. This chapter demonstrates a new, holistic model of soundscape perception, based on the (empirically justified) premise that *people do not notice the soundscape most of the time*. I examine the factors that affect listeners' *threshold of noticing*, such as *expectation*, *control*, and *comfort*, and suggest that soundscapes which *are* noticed almost always have a value judgement, being either *loud or quiet*

and either *positive or negative*. I evaluate various *coping mechanisms*, or use of recorded sounds, that people use to counteract negative environments. Finally, I entertain the idea of ‘listener profiles’, and talk about the drawbacks of my study.

In *Discussion* (chapter 6), I discuss the successes and shortcomings of my thesis, link the fieldwork back directly to my aims, suggest the research areas I hope it will aid, and suggest some ways that soundscapes can progress as a truly *interdisciplinary* field. I outline some of the research implications, what further research would look like, and compare my data with other authors’ models of soundscape perception.

In *Conclusion*, I summarise all the findings in this thesis.

1.2 Aims

My research questions are broad. As an exploratory, inductive study, these aims are deliberately ambitious.

Aim 1. How do people listen in different environments? How does the design of the built environment affect this?

What effect does being in different environments, such as homes, workplaces, trains, and pubs, have on soundscape perception? These places also have associated *activities*, such as work or relaxation – how do they modify the experience of the environment? To what degree does the design of the environment add to, subtract from, or otherwise modify these responses?

Aim 2. How do people learn to listen?

Is listening a *learnt* competency? What kind of things do people learn about soundscape while growing up? How do people come to have semantic associations for sounds? Is it possible to *unlearn* listening responses?

Aim 3. How, and in what ways, do listeners differ?

What is the extent of difference or variability in responses to the same soundscape? Are there things everybody, or nobody, agrees on? Is 'averaging out' soundscape responses a useful or desirable activity?

Aim 4. Are we asking the 'right' questions about the soundscape? What are good questions to ask?

What is the object under study? What do we wish to know? How can we most effectively find that out?

Aim 5. Why should quantitative researchers care about using qualitative data to inform soundscape policy, environmental planning, and acoustic measurement?

What is it that a qualitative analysis adds that cannot be discovered through quantitative methods? What can people in other academic fields learn from this?

Aim 6. A meta-question. What kinds of things is it possible to know about the soundscape?

Soundscape pedagogy and epistemology seems underdeveloped. What things can we know, and how can we find them out and teach them? What would future jobs for soundscape researchers look like?

While I clearly cannot give definitive answers to all these questions, these are guiding values in my exploration.

1.3 What's a soundscape?

At the time of writing, there is no single definition of exactly what a soundscape is. While the term was not coined by Schafer (1977), with credit for this commonly going to Southworth (1969), Schafer certainly cemented the soundscape as a serious area of academic study. Schafer, as part of the World Soundscape Project, was primarily concerned with the field of *acoustic ecology*. Thus the term connotes a kind of *grand vista*, a sweeping hillside, a jungle; in other words, large, outdoor, rural environments. It is no surprise then that Schafer thought very little of *urban* soundscapes, deeming them low-quality and sonically polluted.

Schafer (1977), however, never defines what a soundscape actually *is*, but demonstrates how it operates in everyday use. Truax (2001) was the first modern author to attempt a single definition.

An environment of sound (or sonic environment) with emphasis on the way it is perceived and understood by the individual, or by a society.

Truax, therefore, shifts the focus from the environment, towards the listener. While Schafer did focus indirectly on the perception of the people within the soundscape, his primary goal was recording sounds that are going extinct, exploring the idea of sounds as a landscape element, or simply cataloguing them for posterity. Truax, however, emphasised the individual and the social context, while still imagining the *environment* as the object under study.

There is then a significant gap in soundscapes research. Payne et al. (2009b), writing for DEFRA¹, proposed a summary of the more recent acoustics research into soundscapes.

The term 'soundscapes' is often considered an adaptation of the visual term 'landscapes' (Schafer, 1977), changing the focus from the visual to the sonic environment. Currently there is no one agreed definition of soundscapes (Genuit & Fiebig, 2006), but a working definition for this report is as follows:

¹Department for Environment, Food and Rural Affairs in the UK

soundscapes are the totality of all sounds within a location with an emphasis on the relationship between individual's or society's perception of, understanding of and interaction with the sonic environment. This definition is based upon original soundscape definitions and landscape descriptions (Defra, 2007; Schafer, 1994; Schulte-Fortkamp & Dubois, 2006; Truax, 1978). Soundscapes can be studied at the micro (individual place, e.g. urban park, street, room), meso (small area, e.g. residential area, large shopping mall) or macro level (large area, e.g. whole city). [emphasis added]

The section I have highlighted in bold is very similar to Truax's definition. However, this definition talks about *relationship* and *interaction*, not simply *understanding*. While this could be seen as a simply less concise version of Truax's much simpler definition, this starts to hint at soundscapes being *interactive* – that is, not simply passively experienced entities. It also mentions *relationship* – suggesting that perception of the soundscape may change based on the listener's relationship with it. Finally, this section explicitly states that soundscapes can be micro-, meso-, or macro-scale entities. This marks an explicit shift from Schafer's outdoor, rural focus.

The most recent attempt at a single, interdisciplinary soundscape definition is ISO/TC 43/SC 1/WG 54, an ISO working group tasked with creating a comprehensive, standardised soundscape definition with 24 participating countries. This is currently in draft stage, but the current working definition of soundscape for this group is:

Acoustic environment as perceived or experienced and/or understood by a person or people, in context. (ISO, 2014)

This is very similar to my definition. In this thesis, my definition simply is as follows.

The soundscape is the listener's perception of their auditory surroundings.

The ISO definition partly places the emphasis on acoustic environments – I completely place the emphasis on the listener. The difference is subtle – I decided on my definition before the current ISO specification was released, but they are relatively interchangeable.

For my needs, I find my definition simpler to understand and apply however. I also solely focus on perception, not on any kind of ‘objective’ measurement – a phenomenological perspective that the only thing that truly matters is how the *listener* feels about the soundscape. Finally, I have no specific *place* in mind: whatever location the listener is in, their auditory surroundings matter – what is considered part of the soundscape is up to them.

1.4 Soundscapes vocabulary

The consensus seems to be among researchers that soundscapes, as a relatively young academic discipline, lack a consistent and expressive vocabulary for describing the object under study. Therefore before beginning, I thought it important to define some words and concepts I am using, so they are unambiguous. I am not suggesting that these words always have to be used in this way, but for the sake of clarity I am describing how I am using them. This section is not intended to be complete, but act as a reference for lesser known terms within soundscapes, in order that I can be both as precise as possible, and include some ‘new’ or less used words into circulation.

There are three main texts which define concepts and language for describing sonic environments. The first is *The Tuning Of The World* (Schafer, 1977) itself, which is analysed in detail on page 17. The second is *Sonic Experience: A Guide to Everyday Sounds* (Augoyard and Torgue, 2005). This book was released in French in 1995 and translated to English in 2005 by Andrea McCartney and David Paquette. English soundscape research seems weaker for not having these words in circulation in the meantime. This volume contains a comprehensive list of sonic effects from acoustic to psychological to semantic, and highlights some in great detail. It uses examples of how some of the effects would be described by various ‘domains’ – physical and applied acoustics; architecture and urbanism; psychology and physiology of perception; sociology and everyday culture; musical and electro-acoustic aesthetics; textual and media expressions (p16). As a result,

it is an in-depth, *interdisciplinary* work (as opposed to a multidisciplinary one) that doubtless will make a bigger impact now it has an English translation.

The third book is Truax's *Acoustic Communication* (2001), which formalises a lot of Schafer's (1977) work. As part of the World Soundscape Project, Truax and Schafer agree on many issues but at times have subtly different interpretations. Less commonly-used words I have added as footnotes where they first appear: the words in this section require explicit attention as I am perhaps using them in a non-standard way.

Soundspace

When I started my fieldwork, I found this term slipping into my vocabulary. As we have discussed, 'soundscape' is a corollary of 'landscape', that evokes sweeping, outdoor vistas. However, I find this less useful for the more day-to-day, indoor, smaller *soundspaces* people inhabit, referred to in the Payne et al. (2009a) description as 'micro- or meso-' soundscapes. Therefore, generally I use *soundspace* to describe individual listeners' private spaces, and *soundscape* to refer to the outdoor, rural, or acoustical definitions. While soundspaces can be outdoor environments, they would have to be small areas, such as courtyards or gardens.

Sound Context / Auditory Context

When describing sound environments, I found it useful in my analysis to think of the *social context* of the soundscape. For example, a recording in the same café can have several different contexts. A person could be trying to have a conversation with a friend, eavesdrop on someone else, read a book, or simply take the world in. The same environment, therefore, has different contexts of activity that can take place there, and it is the suitability of the space for these contexts that often results in a person's decision to be there. For instance, 'voices' is one of the most popular sound sources in many soundscape studies, and was in the top two reported sources in my fieldwork log books.

This can mean many different things, in many different categories, with a selection of them in Figure 1.1 on the next page.

While these are often categorised as simply ‘voices’, the range of meanings here is huge, and can vary in a single environment. When I refer to *sound contexts* then, I am referring to not just the soundscape, but the way the soundscape is being *utilised* for a given task.

Walkman

In this thesis, I have used ‘walkman’ to refer to any personal music player listened to on headphones. While this is a specific brand name that originally referred to Sony personal cassette players, I do not like the alternatives and ‘walkman’ in common usage seems a more accurate and succinct term than ‘personal music player’, ‘iPod’, ‘digital audio player’, ‘music played off my mobile phone’, ‘portable music device’ or any other number of terms that simply trip up sentence structure and hinder clarity. Also, I have use ‘walkmen’ as the plural rather than the correct, but clunky ‘walkmans’, and used it in lowercase for cleaner sentence construction.

1.5 Style of this thesis

This PhD is written in a first person, narrative perspective. While I’m aware this is an unusual format for an acoustics PhD, I find it an integral part of my approach. A basic qualitative research perspective is that *it is impossible to separate the researcher from the researched* (phenomenology), and that to do so is to be dishonest about the process. Also, as I am using a Grounded Theory methodology, I am in many ways telling a story about the process that led me to my findings. As I am using a highly experimental approach, the numerous autobiographical notes and theoretical memos are part of the research process, and are presented as such.

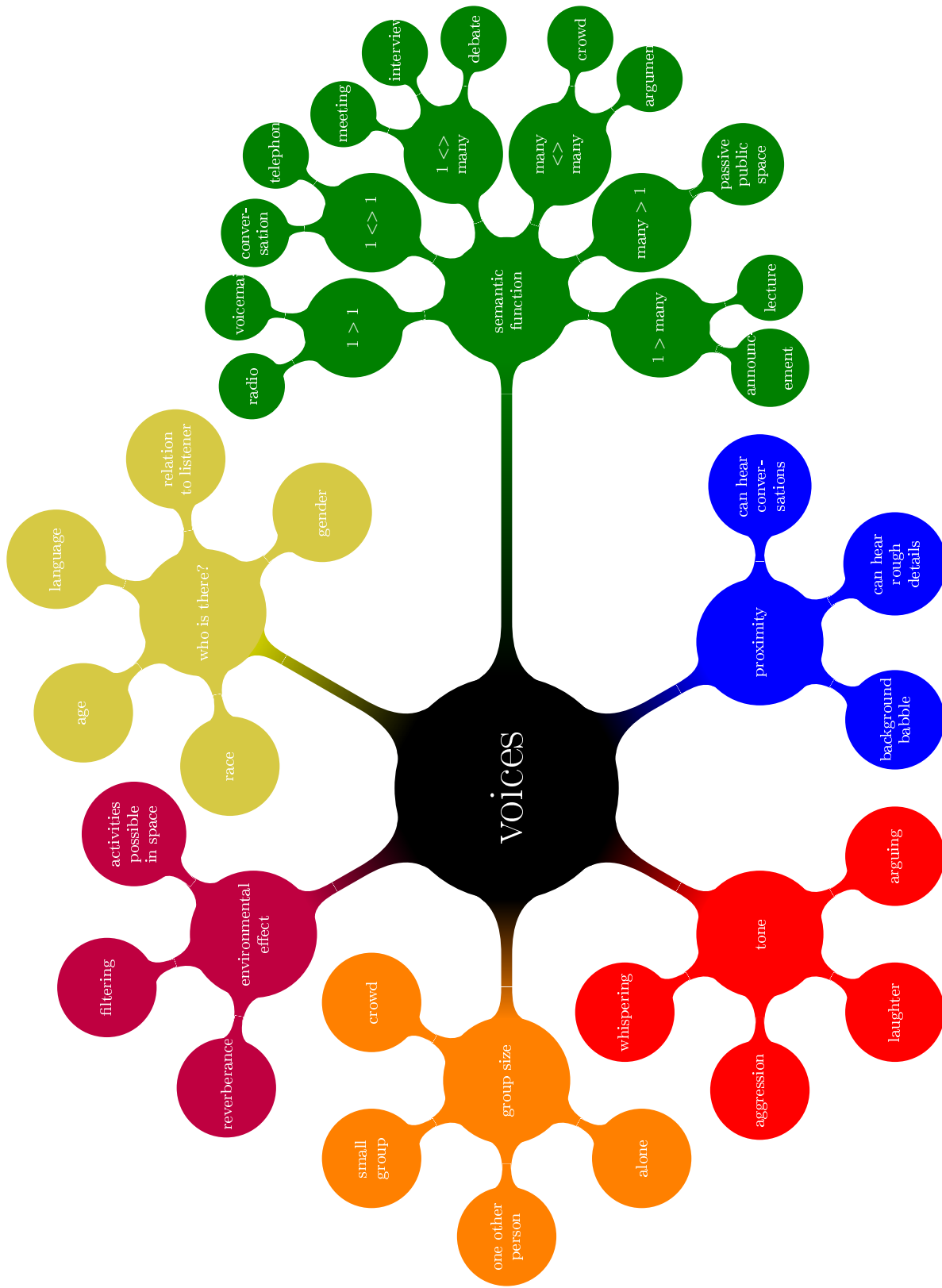


Figure 1.1 – Potential sound contexts for the Voices category

Chapter 2

Literature Review

A comprehensive literature review of soundscapes is a difficult task, given the multidisciplinary nature of the subject and a historically unclear definition of what a soundscape is. Randolph (2009) suggests three literature review archetypes: *exhaustively* covering all literature, choosing a *representative* sample, or examining solely the *key texts* in the field (p4). While this choice is perhaps simpler for single-discipline research, covering multiple subject areas is somewhat more complex. This literature review will combine the latter two: covering both the key texts and a representative sample of other work in various fields. It will start with a chronological examination of how the term came into popular use; afterwards it will split off in several different directions to explore the current research landscape, and while it will not give *exhaustive* coverage of all soundscape research (there are already good literature reviews such as Payne et al., 2009a), it will give an extensive overview of all the potentially relevant areas, prioritising *breadth* over depth.

Research into sounds, soundscapes, and listening happens across a multitude of subject areas, with a concentration within acoustics, architecture and urban planning. In this literature review, I've not only tried to broaden our ideas of what can constitute soundscape research, but also read sounds into works which do not consider it. Soundscape research is a relatively young area, and I'm concerned that a very limited range of methodologies,

and an even more limited range of epistemologies, is being used for its investigation. I will list some critiques of existing research, propose ways current thinking could be developed, and discuss other literature we can look to for inspiration.

Generally speaking there is a large qualitative/quantitative split in soundscapes research: although almost all quantitative research contains qualitative, and *vice versa*, to some degree (Oakley, 1998). While introductions to soundscapes often like to list the disciplines they cover, I am sceptical about how well represented and regarded these are. On one hand, there is now a large body of primarily quantitative research, using methodologies such as closed-question interviews analysed with Principal Component Analysis to give statistical insights on a *large* scale. On the other hand, there is a relatively small body of anthropological, and even smaller one of sociological research, investigating social phenomena on a very *small* scale, in a large amount of detail.

This notion that the division between ‘quantitative’ and ‘qualitative’ methods amounts to a paradigm clash, is supported by a striking feature of much of the argument about ‘quantitative’ versus ‘qualitative’ methods: how little of it is concerned with the appropriateness of the method to the research question. *The choice of method is dictated by the paradigm rather than by the question to be addressed in the research.* (Oakley, 1998, p156, emphasis added)

Therefore, I will critique qualitative work for overwhelmingly detailing localised phenomena without attempting theory building or generalisation; I will critique quantitative work for emphasising the measurement of specific places without an overall model of soundscape attention, and in the process generalising soundscape response too quickly. In addition, I will query the methodologies being selected to answer both sets of questions. These could be seen as unfair critiques, given the nature of the studies – however, as will be seen, my main critiques are in the question *setting*, rather than the question *answering*. I feel that *both* qualitative and quantitative knowledges (although as stated, nothing is ever simply one or the other) can often try and answer questions with inaccurate research instruments, giving spurious results. This will be covered in depth in my literature review and methodology.

I will also explore the potential in reading sound into work that references sound in other ways that the original author may not have noticed, for instance Jacobs (1961) whose analysis of safety in cities seems to ‘cry out’ for an auditory reading. As Glaser and Strauss (1967) assert, “[researchers] need to be as skilled and ingenious in using documentary materials as in doing fieldwork [...] we need to be as effective as historians in the library, but with inquiry dedicated to our own purposes”. The function of this literature review, then, is to synthesise and progress soundscape understanding as a whole.

2.1 Soundscape history

Any history of soundscapes has to recognise the contribution of R. Murray Schafer (1977) and the World Soundscape Project (WSP). While there are now many substantive works in the field, Schafer’s is still by far the single biggest contribution to the way soundscapes are measured, understood, and taught. Schafer’s at times polemic and certainly *ecologically* focused work covers many disciplines: art, music, acoustics, social science, psychology, environmental health and city design. As would be expected from such a broad approach, it lacks a certain rigour: in favour of an exploratory, creative, poetic approach, that seems lacking in today’s formulations.

Schafer’s work is extremely problematic, however. The book is an unacknowledged polemic at times, placing the quiet, rural environment on a pedestal above all else. Schafer’s extreme distaste for the city soundscape comes across at every stage in his book, and although it is far from an academic text, it fails to take into account the complexity and multifacetedness of city soundscapes. Schafer is adept at stitching together a narrative from disparate sources such as the Bible, anthropological fieldwork, sound recordings in Canada, and maps and graphs. When judged as a scholarly document, it perhaps unsurprisingly falls short on proofs or theories; it is perhaps better thought of as a *toolkit*, an outline of intent.

This work was later succeeded by WSP colleague Barry Truax's (2001, first published 1984) *Acoustic Communication*, which did much to introduce a more detailed and specific academic vocabulary with which to discuss soundscapes. In his own words:

I have attempted in my book "Acoustic Communication" to give the field an intellectual basis. That basis can be understood as a twofold critique, firstly, of traditional disciplines that study some aspect of sound, and secondly, of the social science inter-discipline of communication studies itself. This latter critique is based simply on what I have found to be a "blind spot" in the social sciences regarding any subject involving perception. (Truax, 1993)

After the initial work of the WSP, there was a gap of several years in soundscape research with little formal publication, followed by a "soundscape renaissance": with multiple disciplines showing an interest in the soundscape concept. Sometimes these works were connected, sometimes not, and certainly with a plurality of definitions of the object under investigation.

2.1.1 Pre-Schaferian Foundations

Arguably the idea of conceptualising the world around us as 'a giant composition of which we are a participant' was initiated by John Cage (1961). His most famous work, *4'33"*, plays on exactly this concept, as do many of his others – that the sounds around us are as much a valid composition to enjoy and to evaluate as anything else.

Which is more musical, a truck passing by a factory or a truck passing by a music school? Are the people inside the school musical and the ones outside unmusical? What if the ones inside can't hear very well, would that change my question? (Cage, 1961)

This infamous quote pokes fun at the idea of composition, and what it is to be a critical listener. To borrow an idiom: *music is in the ear of the beholder*. This concept is a powerful and enduring one. A soundscape could be thought of as the composition of any environment a listener is in.

This specific interest in the *sonic* environment arguably goes hand-in-hand with an increased focus on *visual* means of marketing and communication, however – one extreme causes the other. Both McLuhan and Fiore (1967) and Schafer (1977) describe a shift from pre-literate history to visual culture, arguing that the idea of a society fundamentally based around the visual, not the aural, is a modern one.

The discovery of the alphabet will create forgetfulness in the learners' souls, because they will not use their memories; they will trust to the external written characters and not remember of themselves... You give your disciples not truth but only the semblance of truth; they will be heroes of many things, and will have learned nothing; they will appear to be omniscient and will generally know nothing. – Socrates, “Phaedrus” (cited in McLuhan and Fiore, 1967, p113)

McLuhan and Fiore describe a shift from a bardic society where information was remembered with songs and rhymes. Schafer (1977) describes the auditory method of pre-literate society, noting that what was recorded first was the *word* of god, not his image. Schafer notes, “in his model republic, Plato quite explicitly limits the size of the ideal community to 5,040, the number that can be conveniently addressed by a single orator” (p215). Nowadays however we see amplification equipment in use for a single speaker to address a room of more than 20 or so. Both qualitatively and (arguably) quantitatively, our listening acuity, as well as speaking acuity, is vastly reduced from pre-literate times. McLuhan and Fiore claim, “Most people find it difficult to understand purely verbal concepts. They *suspect* the ear; they don't trust it. In general we feel more secure when things are *visible*, when we can 'see for ourselves'. We admonish children, for instance, to 'believe only half of what they *see*, and nothing of what they *hear*'” (p117). How have we become so ear-illiterate? And how does this shift in “ear trust” affect the modern concept of semantic hearing?

Generally the first credited use of the term ‘soundscape’ was by Michael Southworth (1969). His methodology was to do the same city tour with one group of people wearing ear defenders, another wearing blindfolds, and another group with neither, the idea being

to compare the same locations in Boston when different senses are available. Southworth was a city planner, and had a clear aim with this work.

At a time when technological progress is bringing city sounds to the threshold of bedlam it is no longer sufficient to design environments that satisfy the eye alone. Today's city dweller is bombarded by a continuous stream of invisible but highly attention-demanding sounds, smells, and micro-climates. His experience of the city is a crazy quilt of sense impressions, each of which contributes to the total picture. (Southworth, 1969, p49)

The paper investigates multi-sensory versus 'mono'-sensory experiences, and hints at the idea of what Schafer calls 'soundmarks': suggesting areas that were identifiable solely from their soundscape, and suggesting soundscape interventions in areas which did *not* have such a clear identification. He concludes simply:

This study has suggested that the visual experience of cities is closely related to the sounds that accompany it. If this point is supported by further research, it has real significance to city design; visible form conceived as an isolate can never be experienced as intended by the designer when the sonic form, or even other non-visual factors such as the microclimate or olfactory environments are not designed in correlation. (Southworth, 1969, p65)

Southworth therefore strongly suggests that multi-sensory design is more effective than focusing on any single sensory mode. His relatively naturalistic scientific method also produced compelling evidence for sonic branding – in this case the idea that *unremarkable* city spaces have additional sounds added to make them *remarkable*. Finally, there is a reference here to sounds being *meaningful*.

The most prevalent sounds, traffic and people, communicate the least valuable information, but demand attention the most. They mask the informative sounds which are usually weaker and less frequent. (Southworth, 1969, p56)

In other words, as well as *delight* being an important design consideration, *meaningfulness* is equally important. The idea of how we judge the 'success' of a soundscape will be one that I return to.

2.1.2 Schafer, Truax, the World Soundscape Project and Acoustic Ecology

In soundscape research it's a cliché to talk about Schafer in any condensed introduction, but his contribution to the field is undeniably huge, and in my view, selectively used. *Soundscape – Our Sonic Environment and The Tuning Of The World* is arguably the single most complete guide to creatively exploring soundscapes we have as researchers. It is very broad in scope, and as a result is often (quite rightly) critiqued for its lack of rigour. What it lacks in empirical justification, however, it more than makes up for in imagination and creativity in imagining what the field of soundscapes *is*. The book covers many different aspects, which are often forgotten in modern analyses:

Part One describes soundscapes from antiquity, using aural descriptions in everything from the Bible (“in the beginning was the word”) onward. This part lays out the procession from a pre-literate, aural society to a modern, visual one.

Part Two moves on to an examination of post-industrial soundscapes, where he argues that the appearance of low frequency noise and broadband noise marked a shift from a hi-fi to a lo-fi soundscape, largely due to electrical and industrial machinery. Broadly speaking he argues this is a *bad* thing which gives people a lower quality of life. Schafer is mostly an acoustic ecologist at this time; his analysis reflects this approach to conserving and documenting such sounds.

Part Three is a toolkit of methodologies for measuring and recording soundscapes. This contains everything from a list attempting to categorise all noises, to various graphs, charts and illustrations of the changing soundscape in various areas. The fieldwork involved in some of these is remarkable, with a 24-hour graph of a wildlife area being particularly detailed.

Part Four outlines the concept of a profession called a “Soundscape Designer”. It outlines the positive design contributions Schafer thinks the relevant people (architect,

activist, conservationist, etc.) could have in improving the soundscape, and lays out a relevant pedagogy for soundscape understanding.

Schafer's book is huge in scope – many of the single concepts within have research dedicated to them nowadays. As with any book of this size, there are many problems. Most of all, it's very impressionistic. From the perspective of an academic work, it's short on references, short on self-reflexivity, and rarely mentions the author's own voice. It has a strong bias towards hi-fi, rural soundscapes, which Schafer sees as naturally superior, both aesthetically and ecologically. As a theoretical work though, it's interesting how many of the concepts have been ignored or under-developed in the interim, most notably the concept of what the role of a soundscape designer *is*. Also, there has arguably been very little new methodology design since, with the concepts of literal sound measuring, mapping and soundwalks for the purpose of documentation, still persisting as the main methods of conducting fieldwork.

The soundscapes of urban environments, as a crude category, have historically had a hard time in soundscape literature. Schafer seems to prefer the antiquated model of the Garden City, as described by Ebenezer Howard in the late nineteenth century (Jacobs, 1961). In this model, the city effectively gets dissolved, its participants moved to small, relatively self-sufficient towns and villages producing their own food, complete city units surrounded by greenbelts. As Jacobs notes: “in all utopias, the right to have plans of any significance belonged only to the planners in charge” (p17).

Utopian or not, this model seems the seed of imagining the city as a dirty, unnecessary, immoral, corrupt entity that is no place for civilised people. Later models were just as problematic. Le Corbusier's Radiant City (Jacobs, 1961, p21) visualised huge skyscrapers that took up only about 5% of the land space but housed most of the population, leaving space for parks, space and light, and people commuting to cities to work.

Soundscapes then, started from a place where the *rural* is king, and city planning is the level where change happens.

2.1.3 From the rural to the urban

Modern soundscapes research has largely shifted focus from the rural to the urban. The major, modern change in paradigm focus from the work of the acoustic ecologists (e.g. Truax and Barrett, 2011, Schafer, 1977, Westerkamp, 2002) to more modern research is a renewed interest in the city as research site, and a reclamation of the city as a pleasing sounding place. Arquette (2004) points out that “a city wouldn’t exist if it mirrored agrarian sonic space”. She also takes issue with Schafer’s taxonomy of sounds being ‘man-made’ or ‘natural’, a criticism that could equally be applied to modern research. She goes on:

To return to my above-mentioned misgivings about Schafer’s description of the urban environment, I would maintain that the sonic environment, for all its compacted low-frequency ambience, has not reached a saturation level whereby we become alienated from it. Rather, isolation or displacement from an acoustic environment has, to a greater extent, been achieved by gadgets such as the Walkman or mobile phone. (p163)

Arquette therefore argues that, in contrast to Schafer’s ecologist perspective, what is crucial about soundscapes is that we feel connected, comfortable, familiar. To Arquette, walkmen and mobile phones are the things which alienate, pushing people apart into privatised spaces. The key here though is in the *measurement of soundscape quality*. Schafer judges soundscapes based on the perspective of the connoisseur, judging soundscapes the most pleasurable that have little or no people in, where sound and land respond in tangible, ‘beautiful’ ways. Truax and Barrett (2011) summarise the concepts in this approach as “acoustic composition, temporal dynamics, spatial variability, and acoustic interactions” (p1203) – typical priorities for composers (like Truax), less so perhaps for laypeople.

Truax and Barrett (2011, p1202) unironically refer to Schafer’s analysis as having “[the] aural sensibilities and ethical conscience of the musician”, as if musicians are somehow more important listeners than others, who possess less refined auditory palates. This hints at the snobbery of the ‘sonic explorer’ in this ecological approach – Schafer perhaps sees himself as a kind of acoustic pioneer, ignoring the technology he uses to get to the

spaces (cars, planes and recording equipment) – “paradoxically, the deep wilderness is accessible only either to those who believe themselves to be eschewing technology, or to those who actively embrace it” Bishop (1996, p268) – raising the status of the quiet, the high-fidelity, ‘unspoiled wilderness’ above all others. The WSP defined “criteria such as variety, complexity and balance to describe a positively functioning acoustic community” (Truax and Barrett, 2011, p1204). There seems to be an implicit denial that these can happen in the lo-fi city – “a romantic bias towards antiquarian or rural soundscapes, as if these are assumed to be more refined than their modern-day equivalents” (Arkette, 2004, p167).

In contrast, Arkette is arguing that city spaces are for living, and that an alternative goal is to stop feelings of alienation. The soundscape functions as a moving, socialised, occupied space in itself: “professions without any fixed location tend to mark territory with portable radios” (Arkette, 2004, p165). Not only is the shift from the rural to the urban simply a location change then, it is a shift of ideology (social criteria are more important than aural fidelity) and epistemology (soundscapes should aid spaces, not be objects to be collected), among other things. It’s important to note that the return to focus on the rural is, again, cultural. A late 19th century commentator wrote:

If a man wanted to illustrate the glorious gains of civilisation, he could hardly do better, perhaps, than contrast the rude and monotonous sounds which serve the savage as music and the rich and complex world of tones which invite the ear of a cultivated European to ever new and prolonged enjoyment. [...] Yet flattering as this contrast may be to our cultivated vanity, it has another side which is by no means fitted to feed our self-complacency. If the savage is incapable of experiencing the varied and refined delight which is known to our more highly developed ear, he is on the other hand secure from the many torments to which our delicate organs are exposed. (James Sully, 1878, cited in Bijsterveld, 2001, p45)

This perspective did not last long. Indeed, Bijsterveld (2001, p46), summarising early 20th century European views, concluded that “noise was profoundly anti-intellectual [...] the ‘vengeance’ of the labourer working with his hands against the brain-worker who

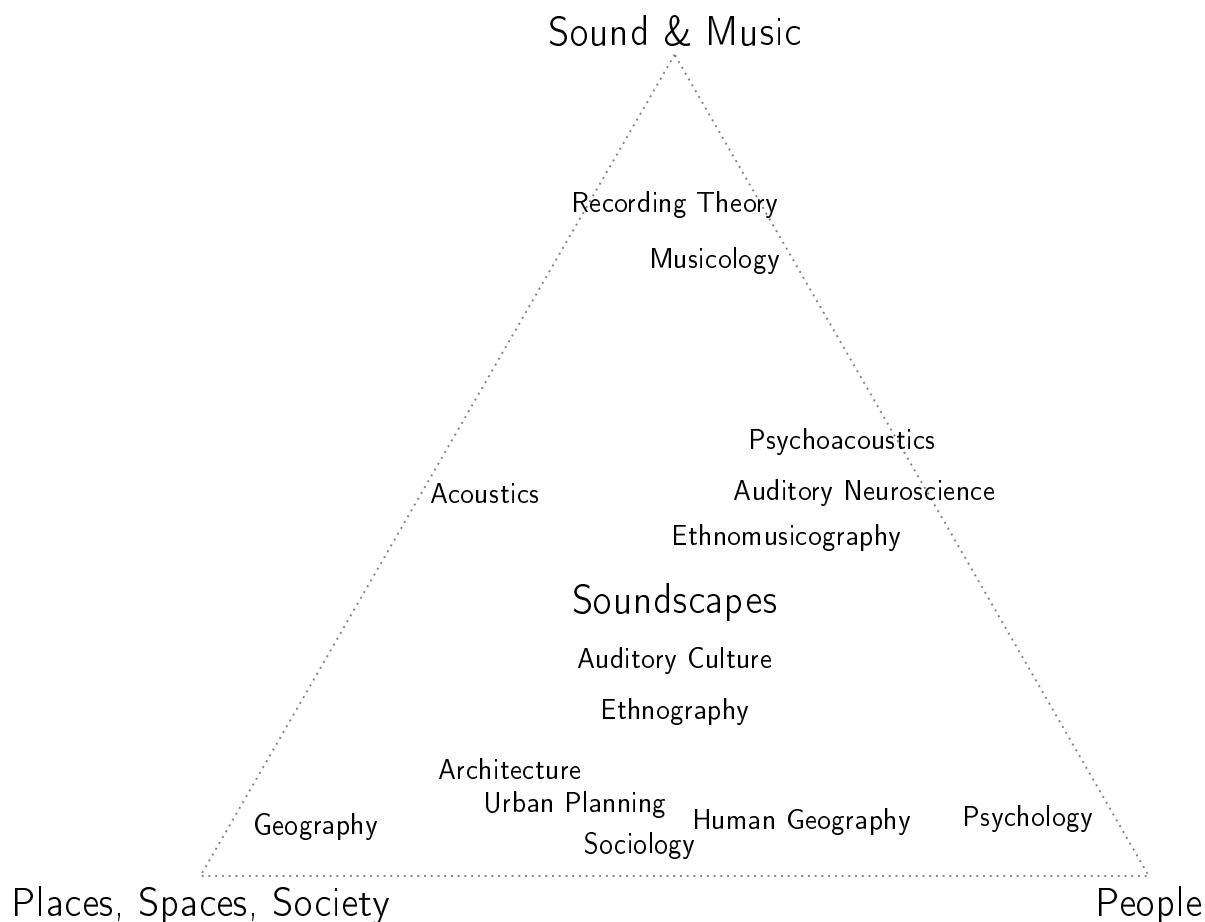


Figure 2.1 – Positioning of soundscape research

laid down the law to the former”. Soundscape preferences then, have fashions: my own included.

2.2 Acoustics-centered soundscape research

After this pioneering work in soundscape research, there was a large gap. Soundscapes nowadays are used in various subject areas, with various aspects highlighted. Soundscapes take an unusual subject position, being in my reading at an intersection of *sound and music*, *people* and *place, space and society*. A diagram showing the positioning of the various fields is shown in Figure 2.1.

Almost all contemporary soundscape research is based within a single discipline, a deficiency which Payne et al. (2009b, p79) identify: the lack of true *interdisciplinary* research. The research landscape is characterised instead as *multidisciplinary* – existing in parallel with little cross-pollination. Using the previous diagram, this may be unsurprising. Acoustics as a discipline for example, sits neatly between *place and space* and *sound* research. Adding in the extra dimension of *people* requires a new outlook and new methodologies. Similarly, sociology has little or no specific methodologies for the analysis of sounds or music, and so analysing sounds from a sociological approach needs a critical rethink of the research space.

While there are clearly different disciplines however, there are certain groupings that occur where aims and outcomes are similar. These practical groupings tend to be where the distribution of literature mostly lies. Acoustics-centered soundscape research has three general characteristics:

- A focus on *outdoor public* space, over *indoor private* space.
- *Quantitative* methodologies are preferred, in order to compare and rate environments.
- *Spaces* are measured rather than social measurements of *people* or acoustic measurements of *sounds*.

There are, of course, exceptions to all of these rules, but they form a broad outline of this research area.

2.2.1 Policy & Planning

The main use of soundscapes in a contemporary context, and the project this PhD came out of, is a way of understanding urban cityscapes from a quantitative acoustic perspective, with an emphasis on *policy* and *planning*. This body of research often has very direct aims: seeking comparisons between different environments of similar types, evaluating

urban public space, and generally aiming to end up with quantitative measurements of city spaces that can be used as best-practice or policy guidelines. This body of research uses the concept of soundscapes as a way to evaluate acoustic environments, using more than simply measures of loudness, which have historically been the methods employed. This body of knowledge generally uses *quantitative* methodologies, seeks to *standardise* responses, primarily measures *spaces*, and has an implicit goal of *establishing standardised measurement tools*.

This approach is needed, as despite the clear and demonstrable negative health effects of noise from stress to raised blood pressure (Adams et al., 2006), governments as a rule pay little attention to sounds: “[French] parliament members [always prioritised] economic development concerns [...] before environmental ones. Noise policies reach ninth place only, far after water control or water management” (Raimbault and Dubois, 2005). Raising the profile of noise as an issue to be taken seriously by all governments then, is an important consideration.

These methods have their heritage in EU regulations (European Commission, 2002) on access to quiet space, which state: “It is [...] necessary to establish common assessment methods for ‘environmental noise’ and a definition for ‘limit values’, in terms of harmonised indicators for the determination of noise levels. The concrete figures of any limit values are to be determined by the Member States, taking into account, *inter alia*, the need to apply the principle of prevention in order to preserve quiet areas in agglomerations.” (p13). Needless to say, this is rather vague. As Nilsson and Berglund (2006) point out though, “absence of harmful noise does not [...] guarantee a good sound environment. Therefore, current guidelines cannot be used to protect good soundscape quality in quiet areas”. SPL¹, therefore, is a poor guide to soundscape quality. Schulte-Fortkamp and Fiebig (2006) state this bluntly: “[the SPL] approach turns out to have failed”.

The ‘Positive Soundscape Project’ (PSP) summarise this shift.

In the acoustics community, sound in the environment, especially that made by

¹“Sound Pressure Level”, a measure of the sound pressure deviation in a given area.

other people, has overwhelmingly been considered in negative terms, as both intrusive and undesirable. The (often tacit) goal of environmental acoustics could be stated as reducing the amount of sound to the lowest possible level. Numerous metrics have been developed to quantify unwanted sound over the last fifty years, but in the last ten years there has been a gradual move in both legislation and research to standardise on some form of L_{Aeq} . A considerable proportion of research and engineering effort in acoustics is expended on trying to reduce L_{Aeq} at the recipient's ears by means of: quieter transport (Oertli, 2006), ingenious noise barriers (Watts et al., 2004) and active control at the listener's head (Hansen, 2005), to take just a few examples. However, there is a growing sense that this effort is not producing wholly satisfying outcomes. The latest National Noise Incidence Study (BRE, 2002) shows that traffic noise is audible at 87% of homes in England and Wales, and 54% of the population is exposed to levels beyond the World Health Organisation guidelines for avoiding serious annoyance. (Davies et al., 2007)

This school of research's quandary can be summarised. Solely loudness-measurement metrics are not working. Soundscapes cannot be judged based simply on the absence of negatives. How then, do we judge sound environments?

The increasing concern of noise annoyance in urban environment[s] has revealed the limits of physical descriptions to account for the subjective impression of acoustic phenomena, and suggest[s] a more cognitive approach to environmental sounds as meaningful events that affect people. Several authors have pointed to the limitations of acoustic parameters [...] which cannot account for annoyance across different categories of noise sources. (Dubois et al., 2006, p865)

There has therefore been a shift towards research utilising semantic responses to acoustic environments. These studies, generally speaking, see the sound environment as an objective entity, which is now measured by taking measurements of the *people* within, instead of using a sound-level meter. There is also both an acknowledgement of, and a desire to move away from, what Schulte-Fortkamp et al. (2007) refer to as "annoyance mapping". While mapping annoyances is more useful than mapping noises, it is also important that positive aspects can be recorded.

Recent research takes this approach to a logical conclusion: exploring how soundscapes can be altered to create more desirable places to be. Cain et al. (2013) for example demonstrate how a soundscape could be designed that is suitable for the activity within the chosen environment, and then how soundscape interventions could create a move towards this designed “ideal” soundscape. This is as yet untested but is a promising research avenue that would link lab testing to real-world interventions.

2.2.2 Pleasure, annoyance, and other rating scales

In keeping with an emphasis on *measurement*, a focus of soundscape research in this category is establishing semantic scales other than ones around ‘enjoyment of quiet spaces’. The key here is that they are *scales*, ideally from one adjective to its antonym, in order to meaningfully rate the soundscape in different locations. The primary methodology used is Principal Component Analysis, in which listeners rate soundscapes or (more commonly) soundscape recordings on multiple researcher-defined semantic scales. These are then processed using an algorithm to determine which axes explain most of the variance in listener response. Davies et al. (2013) collate some applications of this approach, showing examples of the scales at the end of the process.

- [A concert hall] has been shown to have four subjective dimensions: **loudness**, **reverberance**, **clarity** and **spaciousness**.
- Kang’s (2007) perceptual factors can be described as: **relaxation**, **communication**, **spatiality** and **dynamics** [although the original paper names 18].
- Guillén and López Barrio (2007) suggest: **emotional evaluation and strength**, **activity**, and **clarity** account for 66% of the variance in quality judgements.
- Davies et al. (2013) in the results of the same paper, suggest **hubbub-cacophony** relating to the number of sounds and their dissonance, and **constant-temporal**

referring to the amount and frequency of change, although how these axes apply to the diagram given is unclear.

- Davies et al. (2013) also suggest variance can be explained using **calmness** and **vibrancy** as the two main components.

De Coensel and Botteldooren (2006) also attempt this, mentioning: *assessment – strength; pleasantness – eventfulness – familiarity; evaluation – timbre, power – temporal change*; the list goes on. De Coensel and Botteldooren suggest that “the semantic differential [method] has properties that are of particular interest: measurability at reasonable cost, transparency for policymakers and the public at large”. As with the rest of this research area, these methods are all essentially based on planning and measurement, and this is a statement I agree with. On a broad, general scale, there is ample justification that PCA exposes the key perceptual dimensions of a location. However they continue: “moreover, it allows to force those questioned to assess the soundscape in a more holistic way, and to go beyond the identification and description of sound sources”. This is where my analysis begins to diverge from the mainstream.

A PCA approach explains and predicts the variation in *spaces*, but not in *people*. My soundscape definition solely concerns the listeners’ perception of their auditory surroundings. While identifying key axes explains the variation in a place, ‘acoustically measuring’ a location, it does not help with my research epistemology, which asks how people listen differently. There is a significant difference between measuring a space via the people within, and measuring people and describing and predicting their ranges of response: it is here our paths diverge. De Coensel and Botteldooren therefore use the word “holistic” to mean an evaluation of a sound environment as a whole, with embedded semantic meaning and overall measurement, rather than more reductive acoustic measurements. “Holistic” from the perspective of a qualitative, sociological researcher means something quite different: an approach which explains all of the factors in a listener’s response to any soundscape. Simply: my focus is on how people differ, rather than how places differ.

Nevertheless, dimensions of soundscape response now have significant evidence. Calmness and vibrancy, or synonyms thereof (Davies et al., 2013) seem well justified as vital axes in understanding soundscape response for example, and I expect that these are significant factors in listener-centered soundscape analysis.

Sometimes the terms used to describe these scales come directly from fieldwork. In keeping with a location focus, Tardieu et al. (2007) determined if people could localise where a recording was made in a train station, from sound alone, using both a lab listening test and an in-situ questionnaire. They give empirical evidence that people have a strong perceptual representation of space typology, concluding that “listeners are able to extract auditory information in the soundscape of a public place such as a train station” (p15). While to a qualitative researcher this kind of conclusion seems fairly self-evident, the detail and specificity of what makes an area *sound* correct is of use when conceptualising soundscape design requirements for a specific location. Tardieu et al. (2007) found that the free-response verbalisations fit into one of five categories: “sound sources, human activities, room effect, type of space, and personal judgement”, which suggests that sound is only a part of soundscape response: it is this gap I hope to explore using a person-centered approach.

Other proposed scales are not grounded in empirical findings, but scales of interest to different institutions or research objectives. Instead of a PCA approach, researchers select measurements of *a priori* importance.

- Payne (2008*b*) simply uses a 1-7 quiet-loud semantic scale, asking people how loud they think the space is.
- Kang (2007) asks people their “acoustic comfort”, although does not define what this is.
- Kull (2006) examines “soundscape as a continuum from the completely urban environment on the one end to the extremely natural environment on the other” (p898).

- Cain et al. (2008) define “positivity” as important, and seek to establish a framework to judge how positive a soundscape is.

Unlike a PCA approach, these kinds of scales are usually defined as useful by the researcher, rather than emerging from the data. Again, these are therefore scales used to rate places, rather than scales used to understand how people listen to the soundscape, although clearly certain relationships between source and effect will be measurable. A related problem in measurement and categorisation is in how to describe the individual sounds within. Kull (2006) and Schafer (1977) for example define entire taxonomies, in which every sound can be classified, usually using “natural, human and mechanical” as the top-level categories. This is an approach Arkette (2004) refers to as an “atomistic model of sound” (p161) – in other words, describing soundscapes as made up of small pieces joining together to create a whole that can be completely understood by understanding all its constituent parts. While this is a useful tool in recording a soundscape for categorisation, there is a much deeper complexity at work than any single top-down taxonomy can manage.

Perhaps the biggest red flag is the category ‘human sounds’, which is used unproblematically and without clear definition, returning to my initial exploration of the ‘voices’ category at the very start of this thesis in Figure 1.1 on page 10. For example, is an announcement over a public address system a human sound? What about a baby crying, a friend, a street vendor, or football hooligans? How about a man-made forest, or the wood pigeons attracted to public space due to the waste of humans? It seems likely that the primary criteria for judging these sounds are more ephemeral than simply that they emerged from humans.

I argue then that rating scales and atomistic measurement are effective tools to measure spaces in order to compare them to each other, but not tools which *directly* aid my research question. As shown in Figure 2.1 on page 21, soundscapes rest somewhere between research into people, society, places and sound. Measuring sounds and places is well served by measurement scales: understanding how people listen, less so. For

example, a measurement scale can perhaps tell us how relaxing a place is to be compared to another place, but it does not tell us why people go to relax there, or even if that is a place people go with the primary aim of relaxation. This focus on the global over the local is important for planning, standardisation and measurement: and less useful for the phenomenological, person-centered approach I am advocating. Needless to say, it will be interesting to see where the similarities and differences are between the two approaches.

2.2.3 Planning & Architecture

Beginning with Southworth and throughout soundscape history, *urban planning* has been one of the main practitioners of soundscape research. Planners simply want to know how to make cities sound better. Research in this area seeks to create guidelines for scales from entire cities down to individual city blocks, but rarely the level of individual domiciles or rooms.

Kang's *Urban Sound Environment* (2007) comprehensively outlines this approach. Kang identifies three areas. 'Urban noise evaluation' identifies the complexity of sound evaluation, and examines response from two angles: "acoustic / physical" (p21) and "social / physiological / economic" (p23). It then summarises a variety of objective measurements and outlines current urban noise climates. Kang then goes on to examine *prediction* and *environment creation* – in other words, creating more desirable acoustic environments from scratch. This is very much a handbook for a planner or an urbanist, and again, is practical and immediate for designers.

Kang's approach, in keeping with the critiques so far, again measures a space using the people in it, rather than measuring the people themselves. While it gives perspective on overall public hearing habits, it does not give any great insights into the preferences of individual listeners, or any reasons *why* people listen how they do. Most frustratingly, it uses the undefined term, "acoustic comfort" as a catch-all soundscape quality measurement, without asking respondents what that means to them – the details of which would be of great interest to a qualitative researcher. While this therefore is a comprehensive

approach to thinking about soundscapes in an *acoustics* context, it does not really tell us anything about *soundscape* response using my definition, outside some broad, *a priori* measurements.

2.2.4 Quiet Space measurement & classification

Returning to the introduction to this section, many researchers have attempted to unpick the vague EU Directive on quiet space using a soundscape epistemology. The term is a little tautological: “quiet areas are nothing but soundscapes which have the particular quality of quietness” (De Coensel and Botteldooren, 2006). It is interesting to note here that there is an element of going full-circle. “Municipal laws that restricted the shouting and crying of sellers in the streets and the barking of dogs date back to the 17th century, and laws against the blacksmith’s hammer even to the 13th century” (Bijsterveld, 2001). These are all *semantic* noise-based restrictions. How, then, have modern researchers approached the same subject? De Coensel and Botteldooren suggest a number of different indicators with which to judge and classify quiet spaces. These include a variety of qualitative and quantitative measurements, which seem to have some overlap.

1. holistic evaluation of the sound environment by visitors based on semantic differential
2. evaluation of presence and disturbing character of specific sounds (cars, agriculture...)
3. physical background level measured as a statistical level in the range L_{A90} to L_{A50}
4. physical measure for the naturalness or pleasing character of the temporal structure of the soundscape: slope of envelope power spectrum, or music-likeness
5. physical measure of spectral content: centre of gravity of spectrum
6. noise event counts, either manned or based on number of emergences over background

7. non-acoustic factors such as the biological and scenic value or the sensory congruence of the area

This is an exceptionally broad list, varying from the purely quantitative (L_{A90}) to the purely qualitative ('scenic value'): the aesthetic to the mathematical. Again, the root aim here is standardisation: completely justifiable given the needed response to the EU regulations. However, I fear that the list does not justify why these measurements were chosen over others.

To this researcher at least, this seems exhaustive, and with an unclear goal, while simultaneously requiring a reductive methodology with dozens of measurements, which asks more questions than it answers. If the aim is simply to characterise quiet spaces, is a seven-point definition really needed? How are these practical in use, or informative in the final analysis? Where did the stimulus for these exact measurements come from? Predicting listeners' responses based on physical measurements in a place is a sensible goal, but surely the first step in finding out what people consider to be quiet spaces is to ask them, rather than choosing rating scales which seem to have no empirical basis.

A similarly vague criterion to defining "quiet space" is defining "quality". Berglund and Nilsson (2006) tell us: "a useful tool for measuring soundscape quality has to be grounded in an appropriate perceptual model that indicates what characteristics are most important. [...] A tool for characterising soundscape quality would be most valuable if it could be used in real environments with the visual impressions present". Participants in this study were asked to judge soundscapes based on several axes: "soothing, pleasant, light, dull, eventful, exciting, stressful, hard, intrusive, annoying, noisy, and loud". The justification for these axes however comes from works relating to sound reproduction systems, rather than soundscapes themselves. I argue therefore that both these papers need to do much more to justify their methodologies as useful, desirable and practical.

Researchers in Sheffield, UK simplified these arguably overwrought schemas somewhat (Irvine et al., 2009, Payne, 2008*a*). These papers moved towards a two-track system: 'psychological' measurements using questionnaires and semantic scales, and 'objective'

measurements using sound level meters and quantitative measurements of things like percentages of green space and frequency of sounds. This research track results in a “Perceived Restorativeness Soundscape Scale” proposed by Payne (2012). This model uses a psychological model, using Attention Restoration Theory, to judge the effectiveness of various parks in facilitating “recovery from attentional fatigue and reflection upon daily or life issues”.

How to link these measures of quietness to a practical measure, intervention, or policy guideline is an open question, however. While they seem accurate measurements of the effect of the soundscape on the defined psychological dimensions, there is little guidance how to improve the soundscape using these measurements, where they are applicable, or the usefulness of using them in real-life situations. Again, there seems to be a missing research question: a flawed link between epistemology and methodology. While these measurement tools seem accurate and reliable, in my view there is a lot of work to be done to improve their real-world justification and methodological robustness. In other words: we have excellent measurement tools, but a poor understanding of what it is we are measuring.

2.2.5 Community response mapping

Community noise mapping refers to the process of creating physical maps of noise in a location. In keeping with the soundscape approach, while historically this has been done using SPL measurements, there is now an emphasis on measuring semantic details as well. “Community noise assessment is an increasingly important means by which to improve the quality of modern life, particularly in urban outdoor settings. The effects that community noise has on residents, businesses and other stakeholders must be assessed accurately to create the political and cultural climate needed to positively affect the environmental soundscapes” (Schulte-Fortkamp et al., 2007, p8). Many of these methodologies also seem exhaustive.

Detailed analysis of the typology, morphology, and topology of potential test sites must include, criteria like land use and function, urban fabric and its state or condition, qualities of private, semi-private and public zones, analyses of neighbourhoods in terms of architectural shape and scape, specific issues of any existing site development strategies, and specific features related to the site, i.e. differentiating patterns and situations. (Schulte-Fortkamp et al., 2007, p9)

Generally there seems to be a dual approach: ‘objective’ acoustic measurement (with related psychoacoustic considerations) and ‘subjective’ interview or survey responses. To be more specific, and using the language of noise annoyance: “context, source, distance, temporariness and control over noise, are all relevant to whether people would want to see a particular sound source eliminated from their soundscape” (Adams et al., 2006).

The obvious extension from this is considering ‘acoustic communities’, something Truax discusses (Truax, 2001). Again, there is a strong design focus. Adams et al. (2006) ask: “who are the appropriate people to determine what constitutes the local, especially in relation to something as subjective as a soundscape? [...] Should social housing, studios and late-night bars, for example, be included in every mixed-use development?”. Clearly, deciding what we wish our cities to *sound* like is an important question.

While I am critical of the over-the-top approach of Schulte-Fortkamp et al. (2007, p9), there is a lot to be said for this simple statement. By clearly defining the area under study, its details and the demographics of its population, both qualitative and quantitative research can be put in perspective. Simply establishing the possible relationships listeners can have with a space under study, and a deep understanding of the spaces themselves, surely must be an important first step in understanding their soundscapes. Is a public space used for people to eat their lunch, as a pass-through on a commute, or somewhere to play games? The needs for each are distinct, and cannot be detached from soundscape response.

2.2.6 Psychoacoustics & Psychology

While of little use to this thesis, it would be remiss to not mention these subject areas before moving on. Psychoacoustics studies the way the brain perceives sounds received (Moore, 2003), and in general creates *auditory scenes* from a given vibration (Bregman, 1994). Work on sensory connections between, say, aural and visual cues (Spence and Santangelo, 2010, Spence and Soto-Faraco, 2010) is interesting, but hard to factor into a qualitative analysis apart from to acknowledge it exists. Psychological studies into, say, the effect of vibration from railway lines (Woodcock et al., 2012) give an insight into reactions to a specific *source* of vibration, but again, fall short when it comes to soundscape perception. The insight from psychoacoustics has given several, useful terms in common usage – from ‘the cocktail party effect’ to ‘masking’, and forms the basis of a large amount of measurements such as dB(A). This subsection therefore is dismissive, but only because this is an area *prima facie* of little use to a qualitative analysis, focusing as it does mostly on quantitative measurements and lab testing.

It is important to note however that these areas tend to focus on sound sources rather than soundscapes: while responses to specific sound stimuli are of use in understanding soundscapes as a whole, it is not the primary focus of soundscapes research.

2.2.7 Soundscapes & Grounded Theory

There has been a very small amount of acoustics-based soundscape papers using Grounded Theory (GT). GT will be covered in more detail in the Methodology chapter with regards to its use in this thesis. Schulte-Fortkamp and Fiebig (2006) use GT to analyse people’s reactions to a particular street in Berlin.

While there are plural definitions of Grounded Theory, I struggle to understand how it has been applied on an epistemological level given the references in the paper. A diagram on page 876 shows ‘open coding’ feeding into ‘categories’ feeding into ‘core categories’, feeding into an ‘integrative diagram’, feeding back into ‘open coding’. GT is not usually cyclical

in this way – codes, concepts, categories (presumably ‘categories’ and ‘core categories’ in this interpretation) and theories are not cyclical: they feed up and down a linear path. Usually iterative diagrams are not tested with further open coding, as the paper claims: open coding is the process by which new categories are discovered.

While it is possible this application of GT developed during the project, these abnormal claims and applications are not justified in the paper. In addition, ‘theoretical sampling’ is cited as the method of selecting participants, adding that this process resulted in them picking solely a group of long-term local residents. This seems both a category error (‘theoretical sampling’ is what you do with the data, not the people), and a misinterpretation of the point of the process (Glaser and Strauss suggest that interviewees change depending on what is needed to be found out). Finally, there is a confusion between *method* and *methodology* – referring to the analysis process as *methodology*, which it is not.

The key error in this paper in my view seems to be the lack of a clear research question, or list of aims. Equally, the definition of soundscape in this paper is that soundscape “can be understood as the mediator between humans, their activities and their environment” (p875), an unclear statement which, despite citing Schafer, is not a definition that is in any common use. This lack of epistemological direction is something common to both qualitative and quantitative research in my analysis however, as mentioned in the literature review. The interview schedule seems poorly justified.

- contentment with apartment and building structure
- noise conditions inside the house/apartment
- noise report
- routine of daily life
- nature of the experience with public transportation
- spatial orientation of synergistic noise influence

- evaluation of noises by means of scaling (5 point scale) (Schulte-Fortkamp and Fiebig, 2006, p877)

Perhaps phrases like “spatial orientation of synergistic noise influence” are simply poorly translated, or open-questioning prompts which were not directly asked to the respondent, but I am unsure how lay people are to interpret of the majority of these points. “Routine of daily life” and “contentment with apartment” are easy to answer, but what do they actually say about the soundscape? What is a “noise report”? If these were not asked directly, then how were they asked? The *object under study* is not defined: for example, I am arguing it is the listener, whereas this paper switches perspective several times. The methodology seems to be measuring a *space* – in this case, a cobbled city street – rather than measuring a *person*: reinforced by the spectrograms and 5-point scales, whose methodological contribution seems not to be justified. The end conclusion seems to be that removing the cobbled road surface would improve people’s soundscape perception. This seems like a fairly exhaustive piece of research to arrive at a conclusion that could be accessed in a much simpler way.

The eventual evaluation model of Schulte-Fortkamp and Fiebig (2006, p877) is shown in Figure 2.2 on the next page. While they do state that “the depicted arrows in the model do not characterise a changeless, linear direction – the different internal processes take place simultaneously and are complex” (p879), one wonders why they *did* add directional arrows; nevertheless there is a lot of interest here. In keeping with my critique of the lack of clear research question, I wonder for whom this evaluation model is designed. *Acoustical setting* and *source identification* are the realm of acoustics and psychoacoustics respectively. *Disposition* is mysteriously outside the category *internal negation process*, as is *psychological reactions*, and I am unsure what these are if not internal processes. While *social-cultural background* is added as a nod to the social context of this research, none of the factors have links showing how they are related.

Actions, strategies however is an interesting category, and gives the first insight in this body of research into how laypeople negotiate desirable or undesirable soundscapes, using

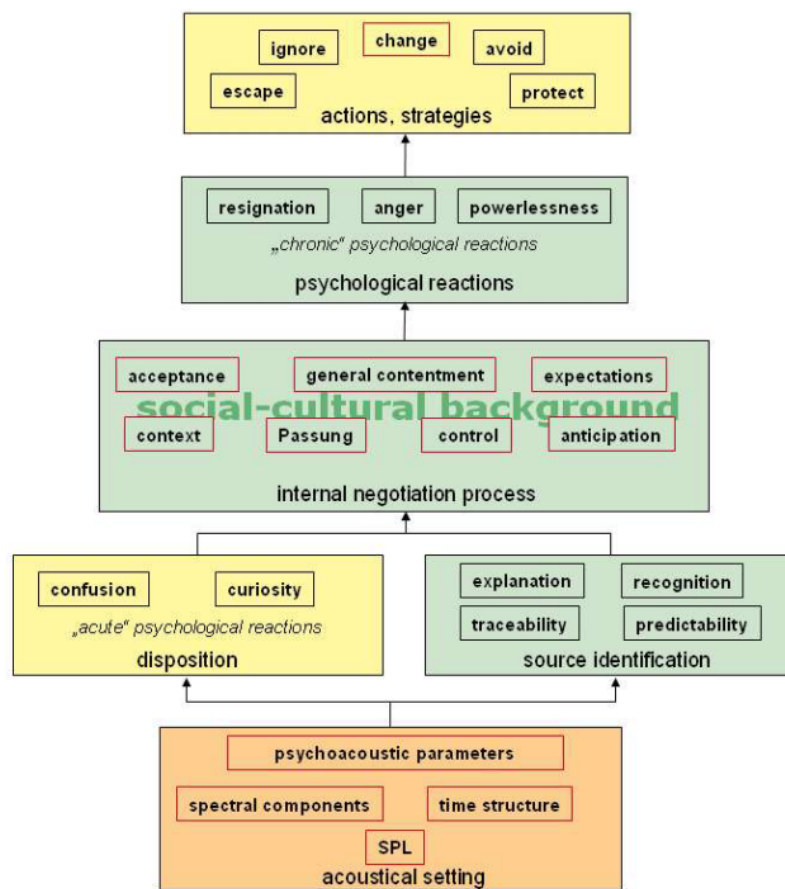


Figure 2.2 – Schulte-Fortkamp and Fiebig (2006, p879) – “Model of evaluation derived from field study”

strategies from *protecting* ones they like to *escaping* ones they do not, although it is unspecific as to *how*. As a list of factors affecting soundscape perception though, the contents of the top three blocks are all reasonable, and useful. They conclude that “the qualitative data analysis shows that the sound evaluations depend on the social and cultural structures in which the individual is inbedded [sic]. It is a reaction to a stimulus, but the reaction is not predetermined, it is learned and it depends on the way people accept those who expose them to the noise”, giving a few examples of how this can happen (p879). This conclusion I can resoundingly support.

I have presented an especially critical analysis of this paper. This is not because it has problems which other acoustics papers do not: but that, in attempting a qualitative approach without letting go of the familiarity and cultural apparatus of the quantitative, it has ended up doing neither effectively. There seems some resistance between methodology and methods, which is common to many papers in my analysis: traditional soundscape methodologies are being used without thorough examination to answer a radically different research question.

A more fruitful approach was attempted by Dubois et al. (2006), who used a psycholinguistic approach to produce cognitive auditory categories. This paper (in the same volume) in contrast to the previous one, has many clear statements about goals and epistemology. They categorise most soundscape research as follows.

Within the psychophysical paradigm:

- stimuli are described as dimensions and parameters **established by natural sciences**
- answers are collected using closed data collection instruments within *a priori* categories also given by the natural sciences
- answers are processed using quantitative data analysis of qualitative judgements (Dubois et al., 2006, p866, original emphasis)

Two clear research aims are identified in the paper as being the goals of the CRESSON research group.

- how [do] people give meaning to urban soundscapes on the basis of their everyday experience? (*psychology*)
- how [are] individual assessments [...] conveyed through language as collective expressions? (*linguistics*) (p867)

A qualitative, phenomenological analysis follows, ending with several conclusions as to the nature of cognitive representations of acoustic phenomena. There are two key conclusions which aid my configuration: “1) it is an **individual, non-observable** subject-centered representation. 2) [It is] always experienced in **context** and in **practices**; therefore may not be unique, but diverse according to the diversity of subjects’ experiences” (p869). Therefore Dubois et al. are arguing for what, in any other words, is a phenomenological approach. They claim that cognitive soundscape response is *non-observable* – and therefore unsuitable in the first instance for being recorded using acoustic measurements of any kind. It is always contextualised and responses are diverse – therefore requiring a need to analyse *difference* instead of averaging out listeners.

In conclusion, Dubois et al. state “soundscapes should be conceived and investigated as ‘acts of meaning’ to **first** identify the relevant semantic features and **further** correlate them with quantitative parameters”. They also point out that use of language is an objective measurement for measuring the physical world as experienced by listeners. In short: Dubois et al. argue that a phenomenological framework is required for progress in *all* aspects of soundscape research.

2.2.8 Conclusions

Acknowledging the critiques above, Payne et al. (2009b), writing for DEFRA, summarise six shortcomings in the field of soundscapes as applied to acoustics.

Ultimately, six important gaps have been identified in the soundscape knowledge base. These are areas where more research would significantly improve understanding soundscape assessments. These gaps have been identified as:

1. a lack of genuinely interdisciplinary projects (characterised by a shared perspective) instead of multidisciplinary projects (where researchers work in parallel within their own disciplines). These are needed to deal with the multidimensional experience of soundscape perception.
2. a lack of basic knowledge on many aspects of soundscape cognition, perception and classification.
3. a need for large-scale robust field trials of soundscape assessment methods instead of the more common experiment of a new method in a single location.
4. a need to develop more soundscape-specific indicators and tools that could eventually be used for soundscape design.
5. a need to rigorously assess deliberate soundscape interventions to understand which design aspects work and which do not.
6. a lack of a close connection between soundscape research, design and planning practice. (p3)

On the face of it, this makes one wonder what we *do* know about soundscapes, especially given points 2 and 4. While I have been highly critical of soundscape work in this chapter, it's important to recognise what acoustics soundscapes research *does* do. It is above all, practical. As someone who does not work professionally in acoustics, it is hard to imagine the work and planning landscape and the need for quantified measurements. Most of all, there is now a wealth of empirical evidence that “time-averaged sound level metrics are poor indicators of acoustic quality” and that “human preference for the sonic environment appears to be unrelated to L_{Aeq} , L_n or spectral characteristics” (Lam et al., 2010). From a legislative and planning perspective, this is an invaluable part of justifying the need for a soundscape approach.

While I have outlined issues with the method of asking, and the impracticality of measurement instruments, the first criticism in the list seems very relevant. A purely qualitative piece of research could equally be criticised for having *no* practical outputs (although this remains to be heard), and simply ask more questions. Therefore *genuinely interdisciplinary* soundscape research, in my view, requires qualitative and quantitative researchers to ask *each other* questions.

Currently, it feels as if questions are being posed and answered within the same discipline, resulting in a certain amount of stagnation – the logical conclusion of the EU legislation seems to be a research dead-end, one that needs reconfiguring and opening up. However, it is significant that no qualitative soundscape research has ever developed enough steam to be *called* a body of research. As we will see in the following sections, and reiterating the DEFRA report, other approaches are left wanting as well.

This “atomistic model” – “a notion that the ‘Real World’ consists of independent particulars” (Moses and Knutsen, 2007, p50), I therefore take issue with. In a soundscape context, ‘atomistic’ refers to the dominant paradigm: measuring a soundscape as a ‘mix’ of several different sound sources at different levels, rather than as a holistic sensory experience. The preoccupation with devising rating scales is understandable, but as I will continue to argue, makes too many preemptive assumptions about soundscape response.

Every tool or procedure is inextricably embedded in commitments to particular versions of the world and to knowing that world. To use a questionnaire, to use an attitude scale, to take the role of a participant observer, [&c. . . .], is to be involved in conceptions of the world which allow these instruments to be used for the purposes conceived. No technique or method of investigation (and this is as true of the natural science as it is of the social) is self-validating: its effectiveness, i.e. its very status as a research instrument making the world tractable to investigation, is from a philosophical point of view, ultimately dependent on epistemological justifications. (Hughes, 1990, cited in Moses and Knutsen, 2007)

Therefore it is not *per se* the methodologies in this section I take issue with, but the link between the methodology and the epistemology. In the next section I will see if other subject areas can give a more useful model than the atomistic one.

2.3 Soundscapes in other subject areas

Why should quantitative researchers care about using qualitative data to inform soundscape policy, environmental planning, and acoustic measurement?

The use of the soundscape concept in other subject areas is much more fragmentary and decentralised. Many authors have used the term, but there is no single ‘school’ of soundscape research with the same kind of institutional focus that acoustics and planning professionals have when grappling with planning regulations. These areas are almost entirely qualitative. The split between different areas is fairly arbitrary, but I have attempted to group studies loosely based on their subject matter and epistemology.

One theme running through this section is the uneasy crossover between *music* and *soundscape* studies. Soundscape research generally has avoided talking about music, likely due to a historic desire to move away from the musical connotations of acoustics. Music, on the other hand, is well studied from a number of qualitative perspectives, but qualitative perspectives have given soundscapes (and more broadly sensescapes) a wide berth. While I will therefore use music research to suggest things about the soundscape, it seems both a curious void and a fruitful future research angle to bridge this gap, and analyse soundscapes as phenomenological research objects. It is an uneasy match though, and there are doubtless several problems with using soundscape and music studies interchangeably.

2.3.1 What’s ‘noise’, anyway?

Since Cage’s infamous *4’33”*, and his later work *Silence* (Cage, 1961), what is considered *noise* has been open to a plethora of modernist and postmodernist definitions. For now, let us assume that noise is the opposite of silence, or the presence of sounds. Ola Stockfelt (1994) points out in dramatically absolute terms, “silence [is] [...] practically, and even theoretically, impossible except in a dead universe devoid of human ears” (p23). T Stockfelt (1991) suggests three different definitions of silence.

- *Silence is lack of sounds.* Practically this is of course impossible, as there in every situation exists some amount of energy and energy always to some degree

is manifested as sound. It is, however, theoretically possible, that is, the definition can be used in the construction of a model of soundscapes.

- *Silence is a lack of expected sounds.* This is very common in music. Pauses, syncopes and other rhythmical experiences come when the subject, by previously listening to the musical phrases, has learned that a special sound is to be expected – but finds that it does not come. [...]
- *Silence is created by sounds that signify silence.* This is also very common in music. A singer changes between a loud and a soft voice [...] if he whispers, we can hear the silence around the tone – or noise that prevents us from hearing the silence. We can imagine the silence of a forest, if we hear a forest bird sing in a noise city. (p369)

Therefore silence is either defined as an *absolute* (as many authors have established by now, an impossibility), an *absence* of an expected sound, or a sound which *semantically connotes* silence. A common-use definition would perhaps be “silence is the lack of human-created sounds”. Gurney suggests that noises are essentially weeds, a plant in the wrong place: “noise is a sound which is out of place” (Gurney, 1999, cited in Atkinson, 2007). As with weeds, what is a suitable plant for one person may be hideous to another. The simile holds up to analysis; some people like wildflowers, some formal rose gardens, some herbaceous borders, but all would notice something out of place in their preferred environment.

To provide opposites to the schema of Stockfelt (1991) then, we can define noise three ways.

- *Noise is the presence of sounds.* In every situation noise exists: we can measure its level. This is the realm of acousticians.
- *Noise is the presence of unexpected sounds.* These can be wanted or unwanted sounds: the key value is arousal.

- *Noise is created by sounds that signify noise.* These are sounds which the listener has already decided connote noise – headphone bleed on the bus, music the listener strongly dislikes, or the neighbours hoovering at an inconsiderate hour.

It's also important to note that 'noise' is an especially pejorative word, which does not translate well into other languages. Dubois and Guastavino (2006), in a footnote, point out that:

[...] the French word *bruit* (noise) was primarily used to refer to sources producing noise (*bruit de voitures*, literally noise of cars), whereas *son* (sound) was used to describe acoustic phenomena as physical abstractions from the sources. Hereafter, the word noise will refer to the French word *bruit*, and sound to *son*, and to the corresponding concepts, even if these terms are not used as such in common English discourse. (p867)

So in French usage, the word *bruit* we translate as *noise* is a non-pejorative prepositional phrase that simply refers to 'the sounds something makes'. In German, *Lärm* simultaneously means noise, and the *state* of noise, and is *always* negative: as with English, where is it also *almost* always negatively collocated. In some cases though, noise can be a positive, cathartic term, such as a clubnight (a DJ shouting "make some noise!") or a positive adjective to describe (for example) heavy metal or free-noise music. These uses are relatively rare.

I wish there was a neat conclusion to this discussion, but there is none that I can offer: any and all of these definitions are in both common and academic use, often interchangeably. What is important perhaps then is simply to keep all of these ideas in mind when conceptualising soundscape terms. It is very difficult to discuss sounds without using words. How can we be sure then that the words are not leading on researchers, or influencing listening habits directly? All we can really do is be *aware* of these collocations and aim to test them as often as possible.

2.3.2 Human Geography, Cultural Studies and Sociology

Research under this broad category tends to focus on *models of human behaviour*, and how *listeners are affected by, and adapt to the built environment*. The approaches tend to be similar, using interviews, textual analyses or participant observations as primary methodologies. The foci can be significantly different though. Human geography papers focus more on built environments, cultural studies focuses more on culture, and sociological papers focus more on social power and role.

The most preeminent researcher for my applications is Michael Bull (2001), who talks extensively about how people use walkmen, and later, iPods (Bull, 2010) to manipulate their soundscape interactions. Although people put varying amounts of effort in deciding *what* to listen to, “users habitually turn their walkman on the moment they leave their homes” (p186). It seems walkmen are used as a coping strategy; use of a walkman affects the user’s relationship with others, allowing them to stop or start communication at any point (p189). Both symbolically and literally, the headphones ‘privatise’ personal auditory space, and indicate the listener does not want to be interrupted.

Bull’s analysis focuses on how lived experience of public space has changed through walkman use. These changes are subtle, and not always linked solely to the act of listening, but to the tacit ‘leave me alone’ message wearing headphones connotes. One of his participants said: “it’s easier to have eye contact with people, because you can look, but you’re listening to something else. You don’t feel like you’re intruding in on people, because you’re in your own little world” (p190). On first glance, users of Walkmen chose to block out the soundscape as a whole. Further analysis showed how adept listeners are at setting volume levels at a level which allows them to attend to sound sources they need to, such as train announcements and traffic.

Portable music player use seems to be a profoundly overlooked element of much soundscape research. Barely any papers ask survey respondents if they are wearing headphones when in that space normally, or even if respondents took out headphones to answer the

survey. Bull answers a lot of interesting questions about the whys and wherefores of walkman use, but as soundscape researchers we have yet to really examine the impact of walkmen on soundscape perception. Could incidence of walkman use be a simple metric for the desirability of a certain soundscape for example, the visible headphones being a direct reflection of an undesirable location? This brings to mind Schafer's study of ambulances in a museum, demonstrating that measuring the increase in city background level could be measured simply and cheaply by measuring the sirens which needed to be heard over them (Schafer, 1977). Or is walkman use a part of positive place perception, with a volume being set that allows people to attend to only the necessary, while enjoying the *sharawadji*² of the busy city location?

Some authors have examined the socialisation of listening and performing, as a bodily, learnt act such as Jarviluoma et al. (2003*b*). Others examine music as social text (Carpignano et al., 1990, Shepherd, 1991), with a distinct gap around soundscapes or sounds as social text from within the sociology discipline, these still being the realm of the ethnographers (more in the next section) and the WSP (Truax, 2001, Schafer, 1977).

2.3.3 Anthropology, Ethnography and Ethnomusicography

This rough grouping tends to concern itself with providing thick description and in-depth insights into localised listening habits. A volume edited by Jarviluoma (1994) exemplifies this approach, with detailed analyses of cow sheds (Poysko, 1994) motorbikes and masculine identity (Tagg, 1994) and music in a soundscape context (Vikman, 1994). Chuengsatiansup (1999) investigated the soundscape as a health problem for “women suffering from an illness prevalent in the Kui communities of Northeast Thailand”, with ethnographic accounts as to the kinds of unpleasant or unwanted sounds causing real

²“An aesthetic effect that characterises the feeling of plenitude that is sometimes created by the contemplation of a sound motif or a complex soundscape of inexplicable beauty. This [Chinese] term [...] designates ‘the beauty that occurs with no discernible order or arrangement’”(Augoyard and Torgue, 2005, p117).

regional health problems. Colombijn (2007) describes the (incredibly noisy) urban soundscape in Indonesia, and the connection with power.

While written in different subject areas and being in many different countries, social contexts and with different listeners, the overall aim here is *thick description* (Geertz, 1994). All of these papers, when read, give the reader a remarkably complete auditory ‘mind-soundscape’: they transport you there, while giving a cultural context that would not be apparent from a recording. While it would be nice if papers could come with recordings of the places in question, anthropological accounts tend to be more focused on experience and explanation. For example, Poysko (1994) discovered that, despite the deafening racket of the machine that cleans out faeces from cow sheds, farmers loved the sound as it reminded them of the work they did not have to do. Similarly, the farmers perceived the cows as preferring certain radio stations: Poysko eventually decided that it was more likely that the radio stations put the farmers in a good mood, so therefore the cows responded in kind.

Tagg (1994) examines the connections between motorbikes, heavy metal, and masculine identity. This is both on a musical level and one of social power, casting lead singers and guitarists as “figure” and backing as “ground”. While this is a non-empirical chapter, again it invites the reader to *imagine* a soundscape, associated social text, and experience. Tagg examines the sounds of motorbikes and Steppenwolf, social power and masculinity as one and the same social construct: the sounds of power and the power of sounds.

A volume edited by Erlman (2004) examines *Hearing Cultures* – asking if how we hear has changed over history and across different countries and cultures, and provides compelling evidence that, indeed, hearing is a cultural phenomenon. In this volume, Smith (2004) provides a crossover between acoustic ecology and an anthropological soundscape approach, documenting the challenges in producing acoustic readings of antiquated texts. “The second challenge I faced in writing [my book] was teaching myself to hear, and not just see, the evidence encoded on pieces of paper”. Many plays from the time instructed the reader that they are to be performed “as it hath been performed sundry times at

London” (p24). The researcher then, has two problems: firstly, having the breadth of knowledge to know what this likely refers to, and secondly, to imagine how this would have sounded.

All of this is clearly of little *direct* use to planning and architecture. I suggest however that the value here for acoustics soundscape researchers is pedagogical. In developing a closer and more detailed *understanding* of soundscapes, it’s important that we challenge our minds and ears to think and hear things we may miss. Also, we need to work as well we can with the evidence that both *sounds* and *listening* are cultural, and therefore require a critical ear and a higher degree of scrutiny before presuming that a given piece of soundscape research is *universally* applicable. While anthropologists and ethnographers may have a different agenda, for a project with direct outputs, reading any of these accounts is a way to improve the imagination of the soundscape researcher, ‘opening them up’ to alternate ideas of social context. In terms of this thesis, they form strong jumping-off points for Grounded Theory theorising – the researcher should presume nothing in interpreting listener responses or reacting to soundscapes.

To reiterate: while the obvious, direct applications are few, the knock-on effects of thinking about *known* sounds in *new* ways is surely valuable. We can measure sounds and soundscapes on whatever scale we like, but cannot know their social or cultural value without social or cultural research.

2.3.4 History

While there is a lot of writing on music, there is little on soundscapes. Attali (1985) has produced the closest thing to a crossover, analysing music production and more specifically, commissioning from the perspective of political and cultural demands.

Schafer’s input has already been covered: a whistle-stop tour from the “sacred sounds” of the gods, through industrial to the present day. More recent histories are much more specific. Corbin (1998) writes about the culture, class and religion connotations of village

bells in 19th century France. Corbin outlines the roles church bells took in French rural agrarian societies. The acoustic radius of a church defined parish limits, start and stop times for workers, weddings, funerals, special events: indeed, what they were rung for and when became a source of social conflict. With the church going out of favour as the seat of local power, but yet church communities being vital elements of local identity, there was an uneasy relationship between the owners of the church bells, village councils, and people.

The bells become highly symbolic symbols of social power. Villagers conspired with the clergy to hide village bells when the calls for war required them to be melted down for cannon. Bells by necessity were forged *in situ*, in public spaces where pits were dug and families added some of their silverware for luck. Parishes with overlapping acoustic radii became rivals, and constantly tried to 'out-do' each other, ringing them more often, more loudly, and for longer.

Bijsterveld (2001) examines noise abatement in Europe and North America from 1900-40, which is much more than simply a rundown of the legislation, taking in as it does the historical and social contexts of the individuals self-tasked with introducing noise abatement legislation. It examines changing attitudes to sounds and soundscape preferences, and how these came about through social values at the time. Social text again is key to the analysis: what sounds represent – in this case, the move to an industrial landscape – is much more important than the sounds themselves.

There are other historical texts: these two are given as examples of acoustic readings of historical documents. We do not have recordings from the time about the sounds discussed, and are reliant on archival evidence. There is a heavy emphasis on sounds as social text, something which seems abandoned in modern quantitative contexts. Perhaps it is worth considering modern soundscape research in a historical context: the direct lineage much of it has to the European noise directives, and the political context from whence they emerged, would be an interesting area of study.

Future historians will have ample sound recordings to base their opinions of early 21st

century sounds: what will they make of how our cities sounded? As a pedagogical approach, considering the tastes of the present time in context could be an interesting way to attempt the mode of listening that Schafer associates with the tourist, surely a valuable skill for any critical listener. Even *with* a recording, the social values of our time will clearly be lost, and the skills that Smith (2004) suggests will still be as important as now.

2.4 ‘Hearing’ sounds into non-soundscape texts

This is a very awkwardly titled section, but further following Smith (2004) and his pedagogical focus reading *listening* styles into antique texts, I attempt to read soundscapes into other authors’ works. The most obvious candidate here is the classic flâneury of Jacobs (1961), who produced one of the most engaging, free-form and compelling texts on the urban experience and urban planning, cited over 10,000 times in other works (according to Google Scholar³). In many ways this is a clear match with Schafer (1977), but for the built environment rather than the soundscape: many bold ideas, held together convincingly, using a combination of life experience, statistics, media analysis, and at times, unadulterated personal taste: but tempered with a lack of self-reflexivity and a Western, middle-class overtone. As Nash (1996) points out, “landscape imagery and the ability to view landscape according to ideas of picturesque taste, helped secure the social and cultural authority and status of white, upper- and middle-class men in Britain in the late eighteenth century”.

Jacobs focusses on city use and safety, and has a premise that the latter can only be assured through making the streets a place people *want to be*. Contrary to the architectural practice of the time and its focus on vast, single-use developments, Jacobs highlights the need for city blocks to be mixed use. People then act as the unconscious police of a space,

³As of 24/2/2014

she argues – an example being the amount of, in her view, unsavoury behaviour that happens in city parks: in other words, places away from the streets people inhabit.

While Jacobs does not mention *any* sensory mode, her idea of self-policing streets seems unerringly about *acoustic* surveillance, even though the book itself focusses unerringly on the visual. Many buildings she speaks of that are designed to compartmentalise and separate people are badly acoustically designed from a safety perspective – it is unlikely a person shouting on the street would be heard by someone on the 15th floor of a tower block, for example unless the window is open – and then they are very unlikely to take action.

Jacobs' analysis has many drawbacks however: not least the concept that if *she* feels safe somewhere, then *everyone* will. In the grander scheme of things, violence meted out to sexual dissidents and ethnic minorities is almost sanctioned in some places (Namaste, 1996, Vanderbeck, 2005). As an upper-middle class, white western woman, doubtless her bias is inherent in her writings. However her attack on the paternalistic city designers who also seem to want to decide how people *live their lives*, or just move everyone to the country, is insightful and cutting, and it seems slightly remiss of Schafer (1977) to not acknowledge her contribution to theory, when they seem obvious contemporaries.

It would be interesting to see how sound propagation affects people's perceptions of public safety. A study by Valentine (1990) highlights the architectural features that women find threatening in public spaces. Like most works, it is very visually focused, yet the acoustic subtext is there. The statement "women feel safer in the presence or visual range of others" (p288) seems to be lacking the crucial acoustic dimension. What is more likely, that someone would be in visual range when an attack occurred, or someone would be in aural range? In Jacobs' example, is it more likely that someone would *hear* something on the street, or *see* it? I would suspect that the *imagined* help that could be summoned acoustically was a factor in feelings of safety in Valentine's study.

The places women felt uncomfortable were: "multi-storey car parks; public transport – bus and train (both waiting for the bus or train, and during the journey); open spaces (parks,

woods, canals, the countryside) and pathways (alleys, subways)". To me these reduce to two archetypes – where there is *no one to hear* (open spaces, waiting for a bus, car parks) and where there are *acoustic reasons sounds cannot propagate* (alley and subways, car parks). One participant said: "I hate public toilets and other closed places. I mean nine times out of ten the lights don't work. It's like subways and they're most dubious anyone could attack you there, and nobody would see" (Valentine, 1990, p291). 'Enclosure' and 'lack of other people' are the two key themes: and while these can be attributed to visual factors it would be interesting to further research people's perception of safety in different environments. For instance, it seems doubtful that people use portable music players or sing to themselves in places they feel threatened.

Examples of reading soundscapes into texts which do not mention sound are legion, but this section gives an idea of the kinds of readings possible for soundscape researchers. Again this is an example of how other disciplines can give hints to different cultural and social readings of the same soundspace. It may be that increasingly reverberant spaces actually create a *higher* degree of comfort due to how unsettling loud footsteps are at night. It may be that the same spaces feel like more communal areas in the day, reinforcing the sound of human chatter over that of traffic. Regardless, a thorough examination of the trade-off between increased noise level, feelings of safety, incidence of crime, sound propagation and architectural design could be of great value to soundscape research, and doing this would require a literature review covering many disciplines.

2.5 The social power of sound and music

This section broadly falls into two areas. The first is structural power, or political power: the ways that states and cultural establishments use their positions as arbiters of taste to inform general opinion. The second is individual power, or the sounds associated with social roles.

The political economy of music has been written about for decades. Attali (1985) traces musical patronage from Bach through to contemporary composers, analysing the political decisions and their influence on modern music. In a more modern context, Frith (1998) examines popular music, the social texts constructed, and the political intrigue of the music industry. It does not seem a leap to suggest that soundscapes also have political, social and moral goals, and reflect the cultures they are produced within. Bijsterveld (2001, p40) outlines Schafer's position on "sacred sounds".

Creating such noise – in religious festivals celebrating the harvest, in rituals exorcising evil spirits, in ringing churchbells, in playing the organ – is aimed at making the deity listen. Those in society in possession of Sacred Noise, Schafer stressed, not only made 'the biggest noise', but actually had 'the authority to make it without censure'. Where noise was granted 'immunity from human intervention', 'a seat of power' could be found. The gods with their thunder and lightning, and the priests with their drums and bells, were traditional examples of this phenomenon. Schafer extends this line of thought to technology. Sacred Noise, he claims, was eventually transmitted to machines. Its power descended from 'God, to the priest, to the industrialist, and more recently to the broadcaster and the aviator' (Bijsterveld, 2001, p40).

Equally, *silence* is highly symbolic. "Monks were supposed to be quiet in the presence of God, courtiers in the presence of the prince, women in the presence of men, children in the presence of adults, and servants in the presence of their masters" (Bijsterveld, 2001, p43). The ability to create the loudest, or simply most constant noise therefore, is a symbol of social power. The most obvious contemporary example of this is 'muzak'.

A key example of the territorial control of commercial, and increasingly public, space can be heard in the functional music, or muzak, of many urban spaces. This low-volume background music is designed to fill uncomfortable conversational gaps but also to amplify purchasing behaviour through subtle uses of tempo and the tastes of desired lifestyle groups. (Atkinson, 2007, p1910)

Apart from these obvious (or not-so obvious, depending on the music) interventions in urban space, there are more subtle ways that soundscapes are used for social, economic or political reasons. John Shepherd (1991, p15) notes: "Society is quintessentially symbolic.

That is to say, world senses – the meanings of society – are created and maintained in and through people’s collective externalisations”. The filters cultures and people make are inescapable; music as an ever-present part of public society is essential to evaluate in dissecting the soundscape. While a cultural studies analysis of the potential power of soundscapes is well outside the scope of this PhD, it is worth considering some of the ways that gender and class may be reflected in the design of the soundscape.

Susan McClary (1991) describes how cultural production of music is gendered. Firstly, she points out “there have been many obstacles preventing women from participating fully (or, at some moments in history, from participating at all) in musical production” (p18). She explores the musical legacy of gender in the notes themselves – “the hierarchical distinction between major and minor triads [were] regarded as both natural and God-given – the respective powers of male and female” (p11).

Gender performance in a more modern musical setting can follow this theme. Helmi Jarviluoma et al. (2003a) links this directly to soundscape.

Soundscape researchers not only associate music with power, but also everyday background hum. It’s not only the high volume soundscape of ‘cock-rock’ that can be regarded as a wish to manifest power. It is said that the steam engine could in technological terms have been less noisy, but its noise level was raised in order to make it more authoritative. (p102)

If we accept that gender is performative (Butler, 1990), then also is not producing sound and listening? Loudness, is as Bijsterveld (2001, p41) tells us, “in 20th century Western culture [...] associated with strength. [...] Men were held to love the din of the internal combustion engine for its expression of speed, risk and power”. Listening is a bodily act – it is necessarily based on the semantic expectations of lived experience. While Raimbault (2006a) notices differences between “holistic hearing” and “descriptive listening” for men and women, other texts (Kang, 2007) show a negligible gender difference. Likely, this is in the question setting, but nevertheless it seems remiss to not give this some consideration, living as we do with idioms such as “silence is the *kosmos* [good order] of

women” (Sophocles, cited in Bijsterveld, 2001), and the realities of gendered turn-taking in group discussion:

More specifically, in all meetings, men’s turns were $1\frac{1}{4}$ to nearly 4 times longer than women’s in [meetings where there was one speaker at once], 32.87 words per turn for men and 8.58 for women. By contrast, [in meetings where there was cross talk], turns for both women and men averaged about 6.5 words. (Edelsky, 1981, p415)

Expectations of when to be quiet, or make noise, seem to be socially constructed, then. Linguists and conversation analysts have been writing about this kind of interaction since the 1980s (Tannen, 1992). While soundscape analyses of gendered spaces is a way off, there is more than ample evidence to suggest this is worth a thorough analysis. On the issue of socialised listening, Peter Martin (1995) argues hegemonic ways of listening to music are defined by the cultural establishment, who manage to convince people they are “‘not really very musical’ in comparison with a tiny minority who are” (p33). There is nothing ‘natural’ about the diatonic scale:

The whole process of symbolic interaction through language depends on our acceptance of normal, proper and conventional usages which are neither subjective nor self-evident but are created, maintained, and changed in the course of collaborative social interaction. The very existence of a language implies a community of – literally – like-minded people [...] a community of hearers. (p53)

Martin goes on to demonstrate how the cultural elite secures the majority of public funding for itself in ‘classical’ and opera music, even though 4.8% of adults go to more than one classical performance a year, and the proportion for jazz concerts (5.9%) is the same as opera (p11), even though jazz receives very little funding. Martin argues therefore that the idea of beauty or acceptability is set by the funding bodies, and by extension government, and outlines the degree to which cultural establishments dominate the accepted culture of hearing.

Philip Tagg (1994) gives a more straightforward example. Although Tagg is talking about soundscape interaction as a whole, he suggests attitude to sounds is based on factors such as class and age.

Imagine firstly that you play a positively active and audible part in the soundscape, for example that you enjoy the discrete engine hum of the expensive car you drive to a well-paid and satisfying job or that you switch on the lighting (with its white noise) and ventilation (with its lo-fi hum) of your successful shop in an up-market mall. Next imagine yourself as young and unemployed, without your own wheels, without anywhere to go, out there on foot amidst the noise of city traffic or the ventilation rumblings of a shopping mall. (p55)

Indeed, this soundscape dispossession is *actively* designed on occasion.

[...] the Port Authority bus terminal in Manhattan uses classical music in waiting rooms with the aim of promoting a civilised reading of the environment by its transient population. Under these conditions, sonic wallpaper becomes urban aural text, by which recipes for action can be issued and potentially wild spaces subtly demarcated, rather than the deployment of more obvious and expensive security. In another example, this time from the UK, Virgin Railways used classical ‘piped’ music to put off gangs of youths hanging around its stations but found that while this was effective it also irritated residents living nearby highlighting that strategies are rarely contained experiments. (Atkinson, 2007, p1912)

The same music choice then, in different contexts, is used to actively encourage one group while simultaneously discouraging another. This deliberate sonic place deterrent can be much more extreme however. Akiyama (2010) describes the “Mosquito”, introduced in 2005 in the UK: “a powerful sonic deterrent [...] people under the age of 25 plugged their ears and fled. Bystanders older than a quarter of a century likely noticed nothing but the irritated and pained expressions of fleeing youth; for them the Mosquito was completely inaudible”.

Social interaction is learnt. The connections between political and cultural power, and personal expression are highly complex and not something that it is desirable to go into in detail about here. It is important to note though the degree to which these behaviours

affect our perception of the soundscape is as much a part of our social context as any other. Reaction and contribution to the soundscape is a lived, bodily experience.

This has a further impact on spaces. It doesn't seem a stretch to suggest expectations of degrees of quiet and private space are likely linked to home environments growing up; for example, being able to close a window or move to a quiet part of a house has been shown to be a significant mitigating factor in otherwise very noisy environments for city-dwellers (Lam and Chan, 2008). These expectations of what a quiet home environment *should* sound like are intrinsically linked back to the question of "which locations are being studied?".

2.6 Linking epistemology to methodology

Summarising my findings so far, I feel we have too many questions, a poor understanding of soundscape epistemology, and too few methodologies. Given this, it is perhaps surprising that there have not yet been any large epistemological or pedagogical rifts. The following list of 'objects being measured' however suggests a wealth of different requirements.

- Measuring single sound sources by themselves
- Measuring single sound sources in the context of a soundscape
- Measuring how soundscapes change over time
- Detailed description of specific soundscapes or contexts
- Establishing measures to replace SPL, especially non-pejorative ones
- Discovering what people consider *positive* soundscapes
- Discovering the character of local areas and their soundmarks
- Discovering what creates soundscape expectation

- Creating design recommendations: from architecture to planning to making quieter shutters (Kang, 2008, Adams et al., 2006)
- Creating meaningful maps of sonic environments
- Comparing one soundscape to another

While I have discussed methodologies in practice, I will now review the main methods in use. Any given methodology will combine one or more of these methods: soundwalks are usually followed by interviews, or questionnaires with PCA, for instance. There are currently a lot more methods for gathering data than analysing it. They are given in no particular order.

Data gathering methods

It should be noted that most methods both gather data and suggest a way to analyse it, so this split is tricky. However, all these methods collect data.

‘Objective’ measures are the traditional measures that soundscape studies are attempting to get away from: various decibel scales and their related weighted averages (e.g. Tardieu et al., 2007, Axelsson et al., 2010). ‘Objective’ is placed in quotes here as I think that while making physical measurements of *spaces* is reasonable, objectively measuring *people* is somewhat more complex.

Lab research typically revolves around either playback of ‘real’ soundscapes, or user manipulation of simulated soundscapes, generally in order to discover listener preferences and generate rating scales (e.g. Lundén et al., 2010, Bruce et al., 2009*b*). Like my concerns with the term ‘objective’, I question if a soundscape can be ‘real’ if it is played over loudspeakers, without a social context. The concept however is to isolate purely the sounds of an environment for a set of fresh ears and allow rapid comparison of a range of variables.

Artificial neural network creation is an even more abstract version of the above, which attempts to create a program to model soundscape response based on known reactions to a corpus of sounds (e.g. Yu and Kang, 2009, Kang, 2008). The aim here is to create a computer model of listener response, in order to predict responses to buildings at the design stage, for example.

Soundwalks are now a venerable method, while Southworth (1969) is perhaps the first published practitioner, it seems likely this method is much older. The method has been used within a lot of disciplines (e.g. Adams et al., 2008, Hong et al., 2010, Semidor, 2006, Venot and Semidor, 2006). There are generally two desirable outputs here: getting a group of people to walk a similar route establishes a common set of environments for an interview context. Secondly though, this method is often used with a political aim: to teach local policy makers and urban designers to attend to the sound environment.

Interviews can be open, closed, or semi-open. These generally follow another method, such as a soundwalk. Interviews can focus on the listener themselves, their reactions to a space, or their feelings about sounds in general, for example.

Survey or questionnaire methods arguably are a kind of interview: usually however they are a series of checkboxes or rating scales with fixed answer categories (e.g. Fyhri and Aasvang, 2010, Irvine et al., 2009). This is often done at the same time as a study involving ‘objective’ measurements, be they decibel based or count-based. Surveys are commonly done with the aim of finding a standardised response.

Participant observation is the most common anthropological method, with researchers making detailed fieldnotes and providing thick, accurate description of the situation they are participating in (e.g. Poysko, 1994, Jarviluoma et al., 2003*b*).

Acoustic diary or sound diary methods are surprisingly few in soundscapes, given the ability of diaries to capture life ‘as it happens’ (Bolger et al., 2003, Cunningham

et al., 2007, Latham, 2003). Schulte-Fortkamp and Nitsch (1999) task ‘experts’ with keeping a paper diary, but to my knowledge there is no research involving audio recorded diaries in the soundscape discipline.

Soundscape design case studies examine existing environments, whether to get insights into what works, or to retrospectively measure the success of a given building project (e.g. Dökmeci and Kang, 2012, Coensel et al., 2010).

Data analysis methods

There are much fewer methods here, or at least, categories of methods. These two categories do not gather data themselves, and are generally used to analyse data from the previous section.

Statistical analyses of various types are used, most notably principal component analysis (PCA). PCA is a common analysis method for surveys and lab tests, and is often used in conjunction with closed or semi-open interviews (e.g. De Coensel and Botteldooren, 2006, Berglund and Nilsson, 2006). Respondents are asked to evaluate soundscape recordings on a large number of axes. This data is then fed into an algorithm which determines what the primary criteria are for that data set. Therefore *principal components* emerge: the biggest predictive factors in evaluating the quality (or other criteria) of a location or recording. In soundscapes, the two primary components are often synonyms of the psychological terms ‘valence’ and ‘arousal’.

Qualitative analyses such as Grounded Theory coding attempt to convert messy qualitative data such as interviews, into codes, categories, concepts and theories. This is covered in detail in the methodology chapter.

2.6.1 Critiques of existing methods

It is important to note before proceeding with critiques of these methods that I am not saying any of them are invalid: but simply that they are not an obvious fit for answering my person-centered research questions. PCA approaches for example are of more use in measuring the range of different spaces, rather than the range of different people. My critiques therefore, are in two categories: one set questions the suitability of a given method in answering a given research question. The second set questions the gaps in these methodologies, questioning the range of things that can even be answered using existing criteria. There is a key epistemological difference in my approach compared to the majority of soundscape papers. A more quantitative paper might define a soundscape as ‘a fixed object which can be measured and rated by measuring the space directly, or measuring the responses of the people within’. My definition however is: ‘a soundscape is the listener’s perception of their auditory surroundings’. The difference is fundamental: the former rooted to measuring spaces, the latter rooted to the lived experience of a listener.

My main issue with many of the methods listed is the presumption of a single or “average” soundscape response, void of cultural association and social context. Lab research and artificial neural networks for example, generally do not take into account *context*: or what the listener would be *doing* in that space. The overall contribution of the soundscape to place perception, and the factors which affect this, are also generally not discussed. In my analysis, a soundscape is the embedded experience of a listener in an environment with all the social context and other sensory stimuli that go with it: therefore the removal of context from these studies seems a crucial missing factor. While the scientific method generally imposes boundaries on research questions, this variable simply seems to big to ignore. On the face of it it seems likely that these studies run the risk of producing findings that the researcher expects: given the cultural nature of hearing, removing the cultural context risks simply reinforcing existing ideas of soundscape perception.

Principal component analysis of fixed-question survey responses, while an improvement on objective measurement, is unsuitable for my research questions as it seeks to standardise vocabularies and categories, and struggles with eliminating nostalgia or double-checking participant satiating. It also has almost entirely been used for specific places; it's hard to imagine how it could be used without the central constant of a location under study. Again, a cultural default is presumed that it is hard to extract using the method.

Perhaps surprisingly, soundwalking, which at first glance would be an obvious methodology for a qualitative researcher, isn't reflexive to people's personal lived experiences, and is only really of use when measuring responses to a specific area. With a researcher present, it also prompts potentially unwanted reactions from those trying to please the researcher, and again presumes people care about the route under study. Ethnographic and interview methods seem more in keeping with my research aims. Ethnographies however would either require me to shadow people in their lives, or do a single account of my own, selecting arbitrary locations or situations to study. Given the broad need for a more general understanding of listening habits, this is both too specific and too invasive. Interviews are by far the most promising methods – there is a distinct lack of research simply allowing people to speak about soundscapes in their own words. This contains several problems. Firstly, people are simply not used to speaking about sounds, and the desire to satiate a researcher is evident with some studies showing, for instance, that *squirrels* are an identified sound source of one park (Payne and Devine-Wright, 2007), when no-one I questioned could tell me what a squirrel sounds like⁴. Another paper (Hedfors and Berg, 2003) claimed that the *sound of a workperson raking gravel* contributed to an 'impression of care' of another park. Without an explicit discussion of this tendency and a control for it in the methodology design, it seems much more likely that participants, when placed on the spot, simply named things they could *see* in an attempt to impress the researcher.

Another, more subtle effect is also at play. Sound memory is culturally highly nostalgic

⁴Reportedly very similar to dogs barking.

(Ray, 2006, Tacchi, 2003), and anything based on past memory is subject to question. People intuitively seem to remember strong *dislikes* and strong *likes*, ignore the simply *mediocre*, and learn sound preferences that in reality they may rarely encounter, but on the spot they will say they love or hate. An interview method therefore must have mechanisms in place to defeat both the issue of satiating, and the issue of nostalgia.

In summary, a research design capable of answering my questions needs to: follow people not locations; allow people to use their own language – with time to reflect on and think about the language they use; eliminate nostalgia; and allow the largest possible opportunity for people to talk about their own experiences, in their own words, as listeners. It should allow people to report areas that are important to them, rather than presuming which areas people care about. Finally it should allow for maximum comparison of: different places, times of day, and social contexts, giving a complete overview of potential soundscape responses.

2.7 Pedagogical approaches

A meta-question. What kinds of things is it possible to know about the soundscape?

Concepts of what non-academic professionals working within the soundscape would do are few. There are two main concepts I have found: Schafer’s “Soundscape Designer”, and Lefebvre’s (1992) “Rhythmanalysis”.

2.7.1 The Soundscape Designer

Schafer’s “Soundscape Designer” (Schafer, 1994) is the common paradigm for built environment researchers. As we have already established, the majority of soundscape research has a heavy policy, planning and design focus. Schafer imagines that one day we have professionals who design soundscapes: someone who would work with an architect perhaps, or be consulted when new housing developments are planned, or construct sound contexts for a new library. The soundscape composer might also cross over with ‘sensory

branding’, designing complete sound experiences for chain restaurants or shopping centres for instance.

Ideally the soundscape designer would have a background in acoustics, soundscapes and architecture. As a pedagogue, they would aim to teach others in the profession of soundscape composer, advocate soundscape attention to other built environment professionals, and generally be advocates for listening as a key aspect in design.

While an undoubtedly invaluable job, it’s worth thinking about the implications. The soundscape designer may have little or no relevance to laypeople. It is solely a professional occupation, and the soundscape designer must be careful to not project their own sonic tastes on the locations they design. There is a heavy emphasis on *intervention* – to justify the job in itself, with less emphasis perhaps placed on learning about why things are how they are, or using the soundscape as a social barometer, a tool to judge other aspects. Nevertheless, design is something that can be taught, that people can get better at, and within which tastes are established. Opening dialogues on all these issues seems important in concert with the competency most laypeople have at judging visual design as well.

2.7.2 “The Rhythmanalyst”

Lefebvre’s *Rhythmanalysis* covers in great detail the author’s ideas of how rhythms both literally and metaphorically permeate everyday life. Lefebvre defines the competencies and interests of the eponymous profession:

The rhythmmanalyst will have some points in common with the psychoanalyst, although he differentiates himself from the latter: the differences go further than the analogies.

He will be attentive, but not only to the words or pieces of information, the confessions and confidences or a partner or client. He will listen to the world, and above all to what are disdainfully called noises, which are said without meaning, and to *murmurs* [rumeurs], full of meaning – and finally he will listen to silences. (p19)

[...]

The rhythm analyst will not be obliged to *jump* from the inside to the outside of observed bodies; he should come listen to them as a whole and unify them by taking his own rhythms as a reference: by integrating the outside with the inside and vice versa.

For him, nothing is immobile. He hears the wind, the rain, storms; but if he considers a stone, a wall, a trunk, he understands their slowness, their interminable rhythm. This *object* is not inert; time is not set aside for the *subject*. It is only slow in relation to our time, to our body, the measure of rhythms. An apparently immobile *object*, the forest, moves in multiple ways: the combined movements of the soil, the earth, the sun. Or the movements of the molecules and atoms that compose it (the object, the forest). The object resists a thousand aggressions but breaks up in humidity or conditions of vitality, the profusion of minuscule life. The attentive ear, it makes a noise like a seashell. (p20)

This passage outlines the kinds of aspects a rhythm analyst should and would notice, with a specific focus on the unwanted or unnoticed, and over different time periods. In this context, Schafer's soundmarks and soundscapes are spectacle in the true Debordian sense (Debord, 1983): Lefebvre invites the listener to notice the sound and rhythms of everything, not simply search for the 'perfect', spectacular soundscape. "Capitalist production has unified space, which is no longer bounded by external societies. This unification is at the same time an extensive and intensive process of banalization" (Debord, 1983, para 165). Perhaps Schafer, then, bored of the city, and as a lover of novel sounds, sought refuge in the border wilderness. Lefebvre however wants us to examine the minute, the unnoticed, the silences and *murmurs*.

Lefebvre also specifically discusses *rhythms* outside the simply diurnal – interesting, given that sounds take *time* as much as *space* to produce. Is time, and therefore rhythm, a neglected factor in soundscape research? I would argue it is – plenty of research describes the *what* or the *how* under investigation, or even the *when* in very simplistic terms, but doesn't report the gaps, the timings, the ephemeral nature of the in-between aspects to a sound environment. Again, social context is a factor. Waiting for an intermittent alarm to begin again can be nerve-wracking if it is every day – passing one on the street though

is unlikely to be noticed. Lefebvre also describes a job that is fundamentally about *bodily* experience, measuring and reporting on the environment as a music critic would respond to a recording – in keeping with Cage (1961).

Lefebvre goes on to describe some useful nomenclature regarding the semantic inferences of analysing rhythms. In parallel with Butler (1990) he develops the concept of *Dressage*, a form of performativity akin to “breaking-in” horses.

Gestures cannot be attributed to *nature*. Proof: they change according to societies, eras. Old films show that our way of walking has altered of the course of our century: once jauntier, a rhythm that cannot be explained by the capturing of images.

[...]

Humans break themselves in [*se dressant*] like animals. They learn to hold themselves. Dressage can go a long way: as far as breathing, movements, sex. It bases itself on *repetition*. One breaks-in another human living being by making them repeat a certain act, a certain gesture or movement. (Lefebvre, 1992, p38-39)

Therefore Lefebvre implies that humans learn how to listen, how to perform sound, when to perform sound, and what is appropriate. In terms of understanding what is acceptable, right, or decent – what an appropriate noise level is – it is therefore vital to remember this is *bodily*, and *situated* knowledge. Similarly, our knowledge of what is an appropriate noise for something to make influences our cultural sense of listening.

Lefebvre and Schafer, therefore, have very different approaches as pedagogues. Schafer epitomises the architecture-planning-acoustics school of soundscape thought, where design, improvement, measurement and recording are the key values. Schafer has a tendency to the *spectacular* – emphasising the novel, geographically distant, or “hi-fi” over the mundane, geographically local, or “lo-fi” – but nevertheless is an emphatically practical approach for soundscape evangelism. In contrast, Lefebvre epitomises the ethnographic, the social text, the critical theorist’s attention to the unnoticed. This is an approach of detail, of sensitivity to the ebb and flow of life. There are few little practical applications

however: this is a guidebook for an essay writer rather than a city planner. Together, the two contrast well however, and provide a spectrum of pedagogical guidance.

2.8 Types of listening

As well as the more general views on listening as a socially constructed and mediated phenomenon, several authors have suggested listening ‘modes’ or models. I will review these separately, then analyse differences and similarities.

2.8.1 Dishearkening

Stockfelt (1994) examines what it means to be a listener, crucially stating that “the listener, and only the listener, is the composer of the music” (p19). Taking Cage’s concept of *all is music*, this places the emphasis entirely on individuals to decide what the soundscape is for them. A key corollary process is “dishearkening” – how we decide which sounds to *dis*regard in any specific situation. “Dishearkening is an active process, performed with a competence that is practised more continuously even than walking, and constantly adapted to new situations” (p21). This suggests that many models lack a crucial element – that people are adept at ignoring things they don’t want to hear. Lo-fi soundscapes are therefore not necessarily a bad thing, if the listener can dishearken unwanted or meaningless sounds. Stockfelt argues that soundscape elements such as recorded, amplified music that in Schafer’s terms would lower soundscape fidelity can aid social cohesion, and create an identity for people in the city.

Dishearkening then, is the competency of *not* listening, whether because sounds are boring, irrelevant, familiar, or any other reason. Augoyard and Torgue (2005) call this “asyndeton” and McLuhan and Fiore (1967) refer to “earlids”. The effect is the same, but “dishearken” I find the most evocative and literal term.

2.8.2 Reduced, semantic, causal

Michel Chion (1990, p25), a film studies writer, gives us three methods of listening: ‘causal’, ‘semantic’ and ‘reduced’. ‘Causal listening’ is “listening to a sound in order to gather information about its cause (or source)”. This ranges from recognising the identity of a speaker, to tapping a wall to discover what it’s made of. ‘Semantic listening’ is decoding meaning or messages in sounds. Whereas the meaning in ‘causal listening’ is generally denoted by the source (ambulance siren), semantic listening is generally connoted by the listener: ‘that thumping is my inconsiderate neighbours’. The same ‘beep’ might be used for a microwave, mobile phone, or computer startup for example: it is the semantic context that gives it meaning.

‘Reduced listening’ focuses purely on the acoustic properties of sound, “independent of its cause and meaning” (1990, p29). This would be the mode with which one listens to electro-acoustic music: the sounds themselves are the message. This could possibly be regarded as the most naturalistically viable; psychoacoustics focuses on physical reactions to generally abstractly conveyed sound. However, Chion notes reduced listening is “an enterprise that is new, fruitful, and hardly natural” (1990, p30). He is suggesting that analysing hearing without investigating semantics is an unnatural, modern process, although clearly not without benefits.

These three modes all refer to alternative ways to listen to the *same* sound. Sounds can be attended to on a purely acoustic level, as direct denotations of phenomena, or read as atomistic objects with embedded semantic meaning.

2.8.3 Soundscape approaches

Truax (2001, p21) identifies three methods of hearing more or less congruent with Chion (1990) – ‘listening-in-search’, ‘listening-in-readiness’ and ‘background listening’. Generally speaking, these refer to attention levels; he rejects the idea that all listening requires full attention. *Listening-in-search* is the most ‘active’ level, involving “a conscious search of

the environment for cues” (p22). The ‘cocktail party effect’ is the psychoacoustic corollary of this – being able to discern distant details out of a mass of sound. *Listening-in-readiness* is a more detached level – examples given are waiting for a delivery, or a parent being woken by their child, but not woken by loud traffic sounds. Background listening is the most detached. This is where we are not consciously listening, but afterwards could probably recall elements of a soundscape: for example, the hum of computers is ever present but we do not *actively* attend to it.

Manon Raimbault (2006*b*) gives us two listening modes as part of a study of a French boulevard – “‘holistic hearing’ [...] which refers to the soundscape as a whole, without semantic processing of any specific source versus ‘descriptive listening’ [...] which refers to the identification of acoustic sources or events”. These arise out of a quantitative study, and interestingly form one of the few mentions of gender in quantitative soundscapes papers:

Results showed that subjects who were on boulevard locations for work and services purposes mainly used “holistic hearing” and judged the situation louder (strength) and more disorganised (spatial) than other subjects. On the contrary, female subjects, inhabitants of the neighbourhood of market places largely used “descriptive listening” and were more likely to positively evaluate the situation, and described it as varied (activity) and changing (temporal features). (p925)

It is unclear to what degree this is a cultural mode of listening specific to France, or something more universal, and there is no further research or evidence for these two modes of listening, however.

These modes more closely relate to Truax’s definitions than Chion’s – ‘holistic hearing’ seems an analogue of ‘background listening’, to the extent that ‘hearing’ seems more accurate than ‘listening’ for what Truax describes. ‘Descriptive listening’ seems to characterise Truax’s ‘active’ listening states, ‘listening-in-search’ and ‘listening-in-readiness’.

2.8.4 Alternative measurement criteria

As well as examining listening modes, it's important to think about *what* we are measuring. Quantitative measurement criteria for soundscape measurement are well documented. It is worth considering though other possible, albeit more ephemeral criteria.

Ola Stockfelt (1994) suggests sounds have one or more aspects of “truth, justice and beauty” (p26). Schafer’s soundscape model only values “beauty” or “a romantic bias towards antiquarian or rural soundscapes, as if these are assumed to be more refined than their modern-day equivalents” (Arkette, 2004, p167), themes made concrete with quiet space measurement research. However perhaps cities, with their polysemetic meanings and plurality of activity must forgo the subjective ‘beauty’ in return for the more objective ‘truth’ and ‘justice’. Perhaps Schafer is missing the point in focusing entirely on beauty, when what matters more in the city is being able to discern useful, semantically rich information about our surroundings. In such a busy environment as a city, common ideas about aesthetics of composition will not match well with the sheer amount of activity taking place.

Perhaps soundscape research needs to look past aesthetic sensibilities, and see how cities aid or hinder city communication. Indeed, this is another aspect of the study of Southworth (1969), who documented in detail the cues blind people use to navigate familiar environments – establishing ‘truth’, in Stockfelt’s terms. Truth can be imagined a number of ways. The most obvious applications are related to safety – the beeping of pedestrian crossings, or the artificial clang of a tram – and indeed a fear of electric cars is that they do not provide sufficient sound to allow nearby listeners to know they are there. Emergency service sirens would be an extreme example: designed as they are to allow the listener to gauge distance and bearing from a long way away. Other truths are more subtle: entering a bar and deciding how busy it is from the chatter within, or the soundmarks of Southworth’s study that allow the listener to get a sense of place where they may be lost visually.

‘Justice’ is harder to define. One method may be to suppose that the soundscape privileges all users equally: so that one sound source does not drown out all else, except where needed, such as the sirens above. A listener should be able to hear all that is needed. A 2-stroke motorbike or quad bike on a city street may be annoying, as a fundamental covenant of city living is ignored: *do not make more noise than you need to*. Perhaps justice is better thought of as appropriateness – yes, pneumatic drills are a necessity, but using them at 5am, or starting them up just as people walk past is deemed unpleasant, potentially physically painful, and rude.

While PCA retroactively designates axes which explain sound source contributions then, it is also worth considering which criteria are desirable. Justice and truth have social contexts: they cannot be measured without first understanding what they mean in a social context.

2.8.5 Comparison of listening models

Chion’s three, overlapping models: *reduced listening*, *semantic listening* and *causal listening* are a relatively close fit to Truax’s *listening-in-search*, *listening-in-readiness* and *background listening*. *Background listening* seems to tie in with *reduced listening*. Both suggest a state where the listener is not consciously paying attention, but can nevertheless detect disturbances and afterwards recall things they were not actively aware of at the time. *Listening-in-search* while not quite as neat a match, fits in with *causal listening*. Here, the listener is using specific acoustic information to inform them of their surroundings. The listener is an active participant in the soundscape, probing and evaluating. *Listening-in-readiness* and *semantic listening* is our worst fit. *Semantic listening* is a much bigger, broader category that overlaps almost every sound we hear. *Listening-in-readiness* connotes the idea of the listener detecting changes to the soundscape: and while this is a part of semantic listening (it could possibly be argued that there is an expected soundscape, deviations from which are noticed much more than the regular background noises), *semantic listening* is by far the broader category.

As well as considering *how* people are listening, it is worth considering *what they are listening for*. Stockfelt’s idea of *truth, justice and beauty* is one set of criteria: it is important to keep in mind that polysemetic meanings are possible, and to foreground social context when thinking about soundscape response.

2.9 Summary

I’ve talked a lot about research gaps in the field of soundscapes, and many examples where I am unsure about the line of reasoning between ‘real world’ aim, epistemology, and method, but to reemphasise: in my view, *all* these pieces of research are part of a bigger puzzle we are still starting to understand as soundscape researchers. Qualitative *and* quantitative methodologies and epistemologies offer not just different knowledges but different ways of knowing and thinking about sounds. Figure 2.3 on page 74 roughly outlines the research space, showing what different subject areas have to offer. The next chapter will move on to the development of my own methodology: this final section summarises the critiques I have highlighted in this chapter.

As a way of visualising the research space, I’ve compiled some of this data in Figure 2.3 on page 74. The columns denote the population under study. “One person” is studies focused on individuals, or biographical studies on the explorations of an individual, or with the emphasis on people, not place. “Specific listeners” is a group selected for their relationship with a specific environment – the residents of an area for example. “Average listeners” is for where a standardised human response is sought.

The rows denote the place under study. “General public” is for large-scale studies of general populations or urban environments as a general concept, or research where location is not directly being studied. “Specific public area” is where a specific environment is being reported on – a specific geographical location or general concept of a place, like a car interior. “Interior, private...” is any private place, or a specific investigation into the listener.

The colour-axis (red, purple and blue) represents very crudely whether the studies' methodologies are qualitative, quantitative or mixed. Again, this is imperfect and hard to generalise, especially as some papers don't make it clear if they're based on empirical research. The quantity of papers in each table cell is not intended to be directly indicative of the overall quantity of papers: but nevertheless the research landscape does strongly favour general outdoor public areas.

2.9.1 Examples of questionable question setting

Are we asking the 'right' questions about the soundscape? What are good questions to ask?

Moving forwards, here is a brief summary of some of my worries and feelings about methodological, epistemological or empirical holes in soundscape research which have been outlined in this chapter.

- Various authors have offered different ways and models of listening (Chion, 1990, Truax, 2001, Raimbault, 2006*b*). These are not generally tested methodically or empirically. Do they match how people listen in the real world?
- Studies done using survey methods (e.g. Payne and Devine-Wright, 2007, Dubois and Guastavino, 2006, Tardieu et al., 2004) on large populations tend to categorise everything in a single, complete taxonomy. Sometimes both the terms and categories are chosen by the researcher, sometimes only the categories are, and sometimes both are done in collaboration with the participants. Where participants generate the categories, are they spontaneous, or a simple listing of visual elements in order to satiate the researcher, and would participants use the categorisation in question without prompting from the researcher? Where researchers generate the categories, there is rarely an empirical justification for the taxonomy (e.g. Brown et al., 2011). In both cases, to what degree is cultural response controlled for, and what is the relevance of the categorisation system?

WHERE?	WHO?		
	One person	Specific listeners	'Average' listener
<p>General public area Non-specific public place, general research into cities, built environment etc.</p>	<ul style="list-style-type: none"> • Columbjin 07 • Arquette 04 • Jarviluoma 03 	<ul style="list-style-type: none"> • Corbin 98 • Raimbault 06 • Southworth 69 	<ul style="list-style-type: none"> • Botteldooren 06 • Kang 08 • Brambilla 06 • Bijsterveld 01 • DuBois 06 • Zhang 07 • DeCoensel 09 • Irvine 09
<p>Specific public area Specific locations or populations like 'Sheffield Town Center', 'a biker gang'</p>	<ul style="list-style-type: none"> • Bull 03 • Jacobs 61 • Tagg 94 	<ul style="list-style-type: none"> • Adams 08 • Berglund 06 • Gidlof-Gunnarsson 07 • Tardieu 04, 07 	<ul style="list-style-type: none"> • Semidor 06 • Valle 09
<p>Interior, private. Specific listeners. Homes, interior area, private places. Specific listeners, walkmen use etc.</p>	<ul style="list-style-type: none"> • Bull 01 • Foale & Davies 12 	<ul style="list-style-type: none"> • Chuengsatiansup 99 • Schulte-Fortkamp 06 	<ul style="list-style-type: none"> • Dökmeçi & Kang 12 • Lam 08

Key: [Qualitative methodology](#), [mixed methodology](#), [quantitative methodology](#).

Figure 2.3 – Research literature outline

- Measurement units can be vague, or unwieldy in practice – for example Kang’s (2007) “acoustic comfort” is never really defined, and the practical applications of ‘arousal’ and ‘valence’ as measurement axes are as yet unclear. What is “acoustic comfort”? In what contexts are arousal and valence suitable concepts to use, rather than simply asking people their sound preferences? What units are suitable for measuring soundscape response, if any?
- Largely due to soundscape research coming from investigations into green space and community noise response (e.g. Irvine et al., 2009, Gidlöf-Gunnarsson and Öhrström, 2007), there is a focus on establishing and measuring the primary axes of importance, and then proposing design changes based on the measurements. These all presume a standardised listener, however. Are ‘pleasantness’ and ‘annoyance’ good or relevant measures in all contexts? Tagg (1994) for example suggests that ‘Truth, Justice and Beauty’ could all be important in different situations. Are the relevant semantic axes the same for all listeners, in all places, doing all activities?
- Anthropological studies (e.g. Jarviluoma, 1994) can give in-depth insight into localised phenomena, but can then struggle to make any broader claims. What can an in-depth investigation tell us about potential soundscape responses in general?
- Work on making lab models of the soundscape (e.g. Valle and Lombardo, 2010) I feel is often trying to model things that are so essentially situated and social in nature, that even an effective lab test won’t really tell us much about the underlying experience. I feel this kind of research rarely explains what it is trying to find out when the model is complete, that isn’t more effectively researched using other methods. Researchers seem to wish to abstract listeners to the lab very quickly, rather than using social science methods to gain responses to real locations, and *then* double-checking this in a more rigorous manner.
- The idea of ‘expert’ or ‘non-expert’ listeners and listening is often used unproblematically, with experts being acousticians and musicians, for example. Is this the only

way people can be experts? Is it a useful distinction? Dubois et al. (2006, p867) claim “‘experts’ (acousticians) organised sounds according to **physical properties** such as frequency or temporal evaluation, while most ‘novices’ categorised sounds according to sound **sources**”. Could expert listeners perhaps actually be *worse* at describing culturally situated soundscapes? Again, this question depends on the research goal.

- Social context and social power is largely ignored when discussing sound sources. To what degree does social status and social context affect both a listener’s sound production and attitude to sounds they hear?
- Is it always correct to use scales to measure soundscape properties, or are some measurements discontinuous, non-linear, or in discreet stages? For example, Cain et al. (2013) present a hypothetical map of a soundscape in Figure 2.4 on the following page. Are vibrancy and calmness perceived as continuous scales, however? What would a sound at the origin of the graph represent? Something which is rated as neutral on both calmness and vibrancy axes could arguably simply go unnoticed. Are sounds noticed on a linear scale, or simply noticed or not? It seems presumptuous to assume that these scales are all completely linear.

Overall, I feel there needs to be more thorough examinations of the presumptions, epistemologies and methodologies used in soundscape research. As mentioned, there has yet to be a large rift in soundscapes research, and perhaps a more critical reading is the next step in soundscapes’ advancement as a field. The following sections will examine my key critiques from the literature review.

2.9.2 Location

How do people listen in different environments? How does the design of the built environment affect this?

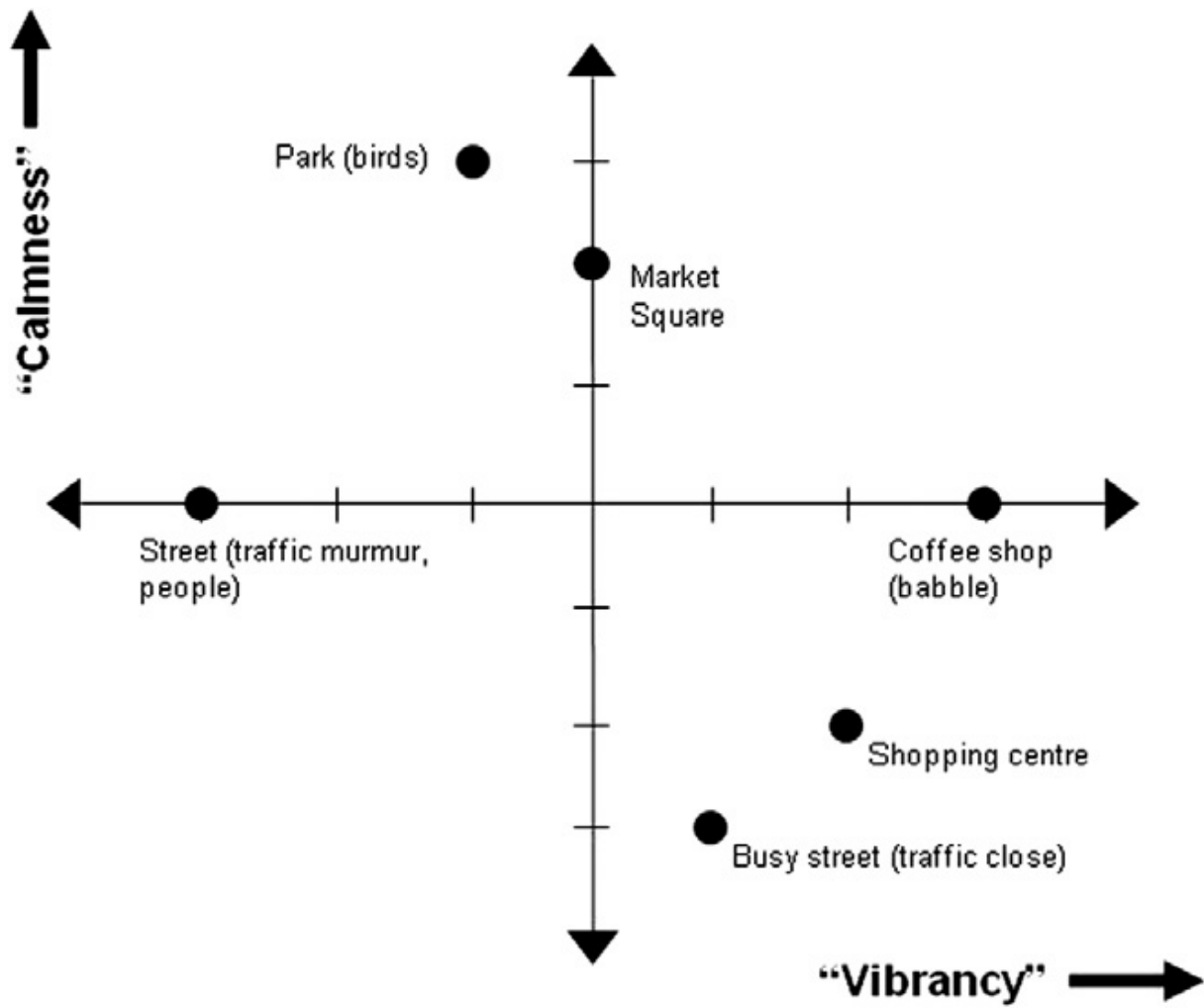


Figure 2.4 – Map of an existing soundscape from Cain et al. (2013)

Soundscape research in general is very *location*-centric. It aims to record spaces or places, either directly, or through measuring or reporting on the people in them. They aim to create an ‘average’ response, rather than documenting the range of experiences in a place. An average response however does not show if there are multiple sets of reactions, and removes the ability to study inter-listener difference – instead, it allows comparison of different locations.

To date, soundscape research in acoustics has focused heavily on urban public space. This rarely seems to be justified as a research location, or justified in passing, such as Davies et al. (2013, p226) who simply state: “early on, the team chose to focus on external urban soundscapes, partly because these represented potential for variety, conflict and the need for design”, without outlining why urban public spaces are the best site for these criteria. Numerous studies have investigated, for instance, parks (Raimbault, 2006*b*), urban squares (Kang, 2007, Zhang and Kang, 2007), fountains (Yang and Kang, 2005), streets (Schulte-Fortkamp and Fiebig, 2006), and train stations (Tardieu et al., 2007). In fact, the “environment” in soundscape studies seems to have a *de facto* definition of “outdoor, large-scale, urban public space”.

In addition, few papers that talk about “urban public space” look at anything *but* outdoor public streets and parks – disregarding city apartments, workplaces, shops, places of commerce, restaurants, and places of worship, for example. This tends to reflect the agendas of the funding bodies and EU directives on noise pollution (European Commission, 2002) and “quiet space” legislation (Brambilla and Maffei, 2006), inadvertently foregrounding the spectacular over the mundane, in keeping with a Schafarian view of soundscape design. While Raimbault (2006*b*, p340) tells us “Soundscapes are always variable in space and time, and can be viewed from a global to a local situation”, it seems rare that space, time, or an acknowledgement of the differences between global and local is investigated thoroughly.

Anthropological and historical works tend to investigate more varied environments, and use a more Lefebvrian analysis. These works can investigate environments such as cow

sheds (Poysko, 1994), specific villages (Chuengsatiansup, 1999) and historical periods such as 19th century rural France (Corbin, 1998), but again end up focusing on the people within a specific environment, rather than the people themselves. Indeed, in my reading it is only Michael Bull (2001) who has specifically followed *listeners*, in this case investigating their use of walkmen and iPods on public transport. Jo Tacchi (2003) investigates the nostalgia of radio users which gives some agency for location selection – however, in both cases the studies are not really about the *listener* but the *listener's use of music*.

A key critique of the vast majority of soundscape research then it that it foregrounds the place, situation, or device, over the listener. This seems a huge oversight to this researcher – it seems an *a priori* truth that if you want to know how listeners listen, then you start by simply *asking* them. How can we know which soundscapes people care about unless we start from the listener, not the location?

2.9.3 Standardisation

How, and in what ways, do listeners differ? How do people learn to listen?

Soundscape research generally seeks to make *generalisations* about listeners' preferences across an entire population. While this is very useful for comparing different buildings, judging the success of a project, or highlighting areas of concern, it also obscures the difference between individual listeners, and the cultural context within which listening happens. Exploring the *range* of listeners' responses then: seeking diversity rather than standardisation, will offer a very different kind of data.

Following my argument that we should also be measuring the *people* rather than the place, we therefore need to investigate the *variety* of listening styles. There is very little research on demographic factors and their potential impact on soundscape response. However, many other subject areas related to soundscapes contain suggestions that people both produce and listen to sounds based on a variety of demographic factors, even if they don't mention them directly. Some of the most thorough investigation of this comes from texts

about the production of music: as we have already covered, the role of social power and political influence in these areas is well documented. Other inputs come from human geography, musicology and urban planning literature.

Instead of taking guidance from existing noise campaigns, or proposing alternative solutions for specific noise annoyance or local cases, researchers tend to be using existing acoustics methodologies without strong justification. Instead of specific solutions to local problems, there is a focus on general solutions to general problems, without an explicit discussion of the appropriateness of this strategy.

2.9.4 Weak links between epistemology and methodology

A meta-question. What kinds of things is it possible to know about the soundscape?

Soundscape studies is a very broad subject area, covering many disciplines. However, the concept of “soundscape” is ill-defined, with various definitions proposed defining it as everything from a landscape characteristic to a way of understanding listening. In practice, the concept is also used in many different ways, with printed definitions not always linking up with the ones used in the fieldwork. Linking my critiques of both *standardisation* and *location* is an overarching failure to clearly define what it is that is being studied. There is a general lack of review papers critically investigating the links between epistemology, methodology and methods, both in theory and practice. While no paper or research project can ever answer everything, it is still important to discuss these strengths and weaknesses. A default epistemology seems to be in use, perhaps its heritage in EU regulations: one where spaces are measured via the humans in them, by way of PCA methods. While knowledge of soundscapes has advanced a long way from this directive, it feels as if our philosophical understandings and discussions of the soundscape concept have not kept pace. The most problematic part of these approaches is perhaps the uncritical use of atomistic models of sound perception. To reiterate, none of these methods or rationales are inherently wrong: but from this researcher’s perspective, more work needs to be done to justify the links between methodology, method and epistemology.

The first step to a true interdisciplinary approach must be to thoroughly consider what questions which disciplines are most adept at answering, and who is best set to answer these questions: and this must begin with clear statements of intent.

2.9.5 Final thoughts

This chapter linked my research aims to current literature, outlining the field and critiquing it. I'll return to my research questions, and briefly summarise some of the key critiques in this section.

Aim 1. How do people listen in different environments? How does the design of the built environment affect this?

It seems likely that the biggest missing aspect to this question is that of social context, discussed in Sections 2.5 on page 52 and 2.3 on page 41, with examples of how this could affect soundscape research questions given in Subsection 2.9.1 on page 73. Soundscapes as a rule tend to significantly downplay social context: I argue that this is an oversight, and one which gives only part of the total picture. As well as listening, we should also examine *not* listening, or 'dishearkening' – the idea that people can ignore aspects they do not like. While we have tools to measure and categorise environments, I worry that these are being applied exhaustively, and that as a result we are generating metrics of limited value in understanding soundscape perception.

Aim 2. How do people learn to listen?

Listening has changed throughout history, and when and how people create sound is undoubtedly rooted in the culture it comes from. This is mostly documented by anthropologists, as discussed in Subsection 2.3.3 on page 46 and documented extensively in *The Tuning Of The World* (Schafer, 1977). Soundscape response then is most likely learnt, as is the language we use to access sound memories. As researchers this needs to be kept

in the forefront of our minds: while eliminating our own cultural conditioning is all but impossible, we should be as aware of it as possible.

Aim 3. How, and in what ways, do listeners differ?

Soundscape research seeks to measure environments rather than explain listening habits, as discussed in Section 2.2 on page 21. Exploring the differences between listeners to discover difference is as valuable as being able to measure spaces in a standardised way, as discussed in Subsection 2.9.3 on page 79.

Aim 4. Are we asking the 'right' questions about the soundscape? What are good questions to ask?

There are poor links between question setting, and answering (covered in depth in Subsection 2.6.1 on page 61), with many papers never clearly stating a good research question at all. It is important to be mindful of what it is we are really trying to find out when doing any research: something as interdisciplinary and vaguely defined as soundscapes needs special attention, as acknowledged in the DEFRA report (Payne et al., 2009b). A good piece of research should begin with a clear epistemology, and then link this to fieldwork in a logical way.

Aim 5. Why should quantitative researchers care about using qualitative data to inform soundscape policy, environmental planning, and acoustic measurement?

Archetypally qualitative researchers are very good at discussing things, and poor at suggesting practical changes to make the world a better place. On the other hand, archetypally quantitative researchers rely too strongly on discipline-approved methods and methodologies, rarely have to justify their epistemology, and have a lack of creativity with research approaches. Overviews of these areas were covered in Sections 2.2 on page 21 and 2.3 on page 41. While this is grossly oversimplified, both groups need to work together to design studies which are useful, engaging, accurate and relevant.

Aim 6. A meta-question. What kinds of things is it possible to know about the soundscape?

Plural definitions of soundscape are in use (see Section 1.3 on page 5), which complicates this question somewhat. Soundscape as a concept though could be analysed from many perspectives, from a representation of social text to a psychological mind-state. Again, it's important to be as honest about what we *don't* or *can't* know, as what we *do* know.

This review has been highly critical of a wide range of literature. I hope that the main lessons learnt though are that soundscape studies is still a young field, in many ways struggling to find exactly where it sits. It is an optimistic, broad and multi-faceted concept, which straddles many fields, and does not attempt to adhere to one discipline. As a result the space it occupies is unclear. The critique, then, I propose as a way of moving forwards, of coming to terms with the shortfalls in the field, and cleaning up some epistemological 'fuzziness' along the way. In the next chapter, I show how I convert these critiques into a working methodology.

Chapter 3

Methodology

This was a difficult chapter to write for a very different reason to the rest of this document. In many ways, ‘methodology’ is an unsuitable word for the process that goes between *thinking* and *doing*. Picking holes in the work of others is fairly simple on the face of it: using anything from an ontological disagreement to a mislabelled graph. Data analysis is a very difficult task, which constituted the majority of the fieldwork research period. Joining up *critique* to *action* is a fraught process. “The only principle that does not inhibit progress is *anything goes*” (Feyerabend, 1993) – easy to say when embarking on a piece of research, difficult to epistemologically make water-tight after the fact.

Advice I received from colleagues, supervisors and Strauss and Corbin (1998), my biggest methodological guides, was to *be creative* in research. Good research is not just about generating (or refuting) theory: it is about *imagination* and *creativity* (Thomas and James, 2006). A research method was generated, in good faith, that would be responsive to the data. The majority of this chapter was written after the fact – and therefore justifying the methodology can feel like a listing exercise, a systematic refutation of various authors’ various critiques.

This thesis is not a flawless exploration of soundscape epistemology. While I suggest several *theories* as a result of this data, I also stress the importance for soundscapes for

thick description, creativity of approach, and above all, *imagination* about the research process as a whole. This chapter is a joining-up phase: a conversion of research aims, into critiques of other research, into creative solutions for complex questions. It gives background to the big metaphysical questions – those of ontology, epistemology and pedagogy – that in my opinion, are not questioned nearly enough. *Imagination* and *creativity* are the primary research goals, and the entire research process is oriented that way. Objectivity and validity are also important goals, but, in my view, are putting the cart before the horse at this stage in our soundscapes understanding.

3.1 Introduction

I will outline my assumptions and critiques from the literature review, justify my methodology choice, and finally document the steps I took in the research. Silverman (2005, p306) suggests a qualitative PhD methodology chapter could just as easily be titled ‘the natural history of my research’, which seems fitting. As an integrated, iterative process, the methodology was developed at the same time as doing a literature review, with the primary aim being to create a methodology responsive to that which I wish to find out. Therefore both the critiques and solutions to them were developed somewhat in parallel, with the decision to use a qualitative, and then more specifically Grounded Theory (GT) methodology made relatively early, colouring a lot of the design process. While this chapter is linear, the decision making process was not.

There are some key values guiding my work, outlined in the previous chapter, which primarily relate to epistemology and ontology. These are the research framework – not the methodology itself, but the context within which it is developed.

Epistemology A qualitative, phenomenological approach is needed to complement, guide, and creatively explore both existing and new research. As a young, under-explored field, it seems important that more in-depth, theory-building research is done, outside of any specific location-based research context. Using this approach allows

thick descriptive analyses of a range of individual phenomena; whereas quantitative research has a “tendency to simplify complex research entities into binaries, to rank order these binaries, and ultimately to present them as antagonists” (Sandelowski and Boshamer, 2008).

Location The listener has been under-represented and rarely studied directly in soundscape research. As a result this is foregrounded both in my analysis, and my definition of what a soundscape is. My line of reasoning therefore requires the *listener* to be the object of study, not any one specific sound environment.

Standardisation I reject attempts to standardise attitudes to fixed environments without first understanding what it is that makes people respond to the same environment differently. Our vocabularies and range of knowledges about sound environments should be lucid, detailed, and complete. To do this requires investigation of *difference*, not of similarity.

The study consisted of twenty participants, each given a digital audio recorder (Zoom H2) and a log book, who kept a diary for two weeks. At the end of the fortnight, they were interviewed for up to an hour. The log books, interview data and audio recordings were then analysed using (mostly) qualitative methods. The aim was to allow people to highlight soundscapes that matter to them the most, collecting insights into what, where, and when people care about. My aims here are not statistical, or to judge or compare specific environments on a quantitative basis, but to explore what a soundscape *is*, see how stories from individual listeners correlate with models of listening (covered in section 2.8 on page 67), and to propose new models of soundscape evaluation, from the perspective of the listener, as guided by my *aims*.

A more traditional approach would be to analyse methodologies one by one, rejecting or approving aspects of each. Using an inductive-deductive (rather than the more common hypothetico-deductive) approach has resulted in a new, novel methodology, combining

aspects of Visual Sociology, Grounded Theory and the Diary-Diary Interview Method. There are three main aspects to the justification of this methodology:

1. *How* and *why* the methodology design speaks to my critiques of existing soundscape research.
2. A justification for the *Grounded Theory process*: both as a research framework and qualitative data analysis methodology.
3. A rationale for the *research design itself*: the sound diary method.

The application (and continuous development) of the method is covered in chapter 4. My *methodology* is Grounded Theory. My *method* is the *Diary-Diary Interview Method* for gathering data, and Grounded Theory *theoretical coding* for analysing it.

This chapter covers development of the methodology. The rest of this chapter is therefore split as follows:

Design requirements revisits my aims, and critiques of other soundscape research, summarising each research goal.

Grounded Theory explains what GT is, why I chose to use it, and explores the key critiques and schools of thought surrounding its application.

Research design covers the development of the method itself: the diary-diary interview process.

Key criticisms looks at what this study is *not* good for, but explains why these are inevitable.

3.2 Design requirements

To meet my criteria for investigating the soundscape, the research design needs to be as reflexive as possible to all these points. These link directly to *Aims* in chapter 1. Each

is also based on a key critique of existing soundscape literature, covered in chapter 2. In combination, these critiques have led to the development of the methodology.

3.2.1 Research should be person-centered as much as location-centered

As mentioned (Subsection 2.9.2 on page 76), a key critique of existing research is the lack of justification for the *where*. While many studies are location-specific (often for good reason), it doesn't follow that their results and categorisation systems are generalisable to *all* environments, and indeed there is an inbuilt presumption that people even *care* about the sound of say, urban parks, which a very large amount of soundscape research focuses on.

In following *people* rather than measuring *locations*, I can better evaluate the relative importance of the soundscape in different areas. It will allow people to talk about the areas of most affect and least, which areas they really care about, and what they don't. A design that follows people will also allow access to spaces researchers cannot generally physically access easily – homes, workplaces, and other aspects of day-to-day routine.

This requirement alone suggests a diary method. Other ways of following people would be exhaustive, impractical and intrusive. By keeping a diary, listeners can log soundscape responses in their own times and places.

3.2.2 Research should use the participant's natural language

I feel that some research has forced a vocabulary or categorisation system on the research participants. While this has its merits when it comes to comparing one site with another, the vocabularies in question may not be the ones that listeners choose themselves.

My methodology therefore needs to give people a chance to think about the soundscape on their own terms, using their own language to describe sources. Think about the subtle differences between these descriptions of the same potential source, for instance:

- traffic, traffic hum, cars, road noise, road, cars driving past
- talking, shouting, conversation, people talking (also see Figure 1.1 on page 10)
- radio, Radio 4, music, music on laptop, *Don't Stop Believin'* by *Journey*

In condensing these to a single category, a lot of the contextual data is lost – is the person reacting to the location, the sound source, their emotional reaction to the source, or simply listing it as they are sitting with a sound diary in front of them trying to be comprehensive? Would the participant notice any of these sounds at all, or would they simply refer to all of the above as ‘background noise’? Do descriptions of the same sound source change based on other factors? Without giving people the freedom to self-report how they wish, it is very difficult to know the answers to any of these questions.

This requirement indicates a need for a qualitative method of data analysis. ‘Standardising’ response categories would throw out important data. The research goal should be to use participants’ natural language wherever possible, and to evaluate any potential responses from as many different perspectives as possible.

3.2.3 Research should allow people to have time to reflect on the soundscape concept before answering questions

It also seems important to question if people are really listening *at all* when queried by a researcher, or simply visually inspecting an environment when put on the spot by a researcher. A well designed piece of fieldwork should be reflexive to satiating, being aware of when participants aren’t actually *listening*, saying either what they *think* they heard, or the researcher wants them to hear.

Using a diary method over a period of time allows people to have time to develop a response, more on their own terms. The process of writing and recording forces people to attend to the soundscape, and this is unavoidable. However, being in contexts that are otherwise completely normal (as opposed to say, a lab experiment or on a soundwalk)

means there is only a single aspect of the context changed, which hopefully allows listeners to decide if they care about the sounds they are now being forced to attend to.

Finally, listeners will also become aware of if their soundscape perception has changed over the duration, and have had a chance to notice the same environments while both recording them, and not. A period of time allows even the process of fieldwork to become relatively ‘normal’, allowing the concept to become part of their lives a little more. It also allows time to pass between recording soundscapes and reflecting on them – theoretically allowing for the remembered response to be compared with the sonic reality.

3.2.4 Research should have built-in mechanisms to defeat nostalgia and mis-remembered sounds

While it’s important to allow people time to think about soundscapes and report what’s important to them, it’s also important that any fieldwork keeps the participants ‘honest’, and has built-in checks to stop ‘sonic nostalgia’: or remembering things which aren’t there. This especially relates to noise annoyance – it’s important to ensure that these are recorded accurately and honestly. While there is an issue here about retrospectively imaged soundscapes, this is in the realm of a psychological analysis, not a sociological one.

For example, people can tend to have pre-wired collocations of potential noise annoyances. These might be things like ‘music from mobile phones on the bus’, ‘dripping taps’ or ‘screaming children’. Similarly, things like ‘dawn chorus’, ‘rain on the roof’ or ‘perfect silence’ are stereotypically seen as ‘good’ sounds. However, these may all be pre-wired, ‘learnt’ responses rather than things the listener has given any thought to. A *Favourite Sounds of Manchester* study reportedly found that ‘trams’ were the most ‘liked’ sound of Manchester¹. Was this a genuine response about sounds, or simply a scan of people’s place

¹Based on Peter Cusack’s survey, website at <http://favouritesounds.org/>

memories to locate something unusual, and central to Manchester city centre? Without keeping a diary, again it's very difficult to know.

From another perspective, it's possible that people do not notice certain aspects of familiar environments, such as their home. Having a recording gives a kind of objective record, although many ephemeral sounds may not be apparent over a short recording period.

3.2.5 Research should be open to plural definitions of what the soundscape is

Current definitions of soundscape and the language and priorities it studies are top-down, specified by academics, in technical language. Fieldwork should be able to confirm or refute definitions of everything from models of listening, to the definition of soundscape itself as being useful, if it is to be self-reflexive. Existing models of listening and perception are generally non-empirical, being based on simply the author's instinct about how soundscape perception works.

Using a Grounded Theory methodology allows any potential definitions to emerge from the data, rather than starting with a pre-formed idea of what it is people are responding to. This is the most complex of these concerns though; it may be that any differences in description are subtle enough as to not matter, but I feel this is something that should be taken more seriously in soundscape research.

3.2.6 Research should establish theoretical frameworks for understanding soundscape response

While there are a small number of models of listening to the soundscape (e.g. Truax, 2001, Chion, 1990), these are rarely based on empirical data, but hypothetical conjecture. PCA approaches have identified some key axes that affect listeners' soundscape perception, however these are not as yet linked to overall models in a holistic sense. Models and scales should be tested and retested to judge the boundaries of applicability, relevance

and accuracy – for example, Truax’s listening modes have not been rigorously tested empirically or taken into account when conducting PCA analyses.

Grounded Theory excels in this area – creating theory from observation and induction is what it was designed to do. In any under-studied area it’s easy to jump to conclusions, or heavily develop one aspect at the expense of another, and soundscapes are no different. By taking the biggest possible range of data, it should be possible to find the edges of soundscape response, and generate theoretical models for how this response works, based directly on fieldwork data. This is certainly a substantive area where qualitative and quantitative approaches have potential to work together: using qualitative and quantitative findings in iteration to arrive at increasingly accurate, empirically justified listening models.

3.3 Grounded Theory

Grounded Theory is a specific type of qualitative research methodology.

By the term “qualitative research”, we mean any type of research that produces findings not arrived at by statistical procedures or other means of quantification. It can refer to research about persons’ lives, lives experiences, behaviours, emotions and feelings as well as about organisational functioning, social movements [and] cultural phenomena. (Strauss and Corbin, 1998, p11)

Strauss and Corbin provide two very good reasons for using qualitative research for my research in particular:

Research that attempts to understand the meaning or nature of experience of persons with problems such as chronic illness, addiction, [etc], lends itself to getting out into the field and finding out what people are doing and thinking. Qualitative methods can be used to explore substantive areas about which little is known or about which much is known to gain novel understandings. (Strauss and Corbin, 1998, p11)

Given I am both attempting to *understand meaning or nature of experience* and *gain knowledge in an area in which little is known*, a qualitative method is justified. Grounded

Theory then, is a specific *type* of qualitative research. Qualitative methods are legion. Grounded Theory was “discovered” by Glaser and Strauss (1967) while developing new ways of investigating care for dying patients. The basis of GT is “the discovery of theory from data systematically obtained by social research” (p2). Glaser and Strauss argue that data and theory should be very tightly linked, with theory “derived from data, and then illustrated with characteristic examples of data” (p5). GT does not aim to tell ‘truths’, but to make sense of *phenomena* in the world (phenomenology), by developing theory to explain empirical findings.

As described in my aims and design requirements, this is a direct fit for my overriding objectives. By *inductively* building soundscape theory, I can illuminate my research aims. “Theory derived from data is more likely to resemble the ‘reality’ than is theory derived from by putting together a series of concepts based on experience or solely through speculation” (Strauss and Corbin, 1998, p12). This section lays out what GT is, the range of what different authors say it is, and outlines key critiques and strengths. As mentioned in this section’s introduction, GT is both a methodology and a method. I will discuss how I used it for both.

3.3.1 Introduction to GT

Grounded Theory is a systematic, qualitative methodology which works in an almost reverse fashion to traditional natural science research. Unlike an archetypal hypothetical-deductive ‘science experiment’, where a hypothesis is suggested and then an experiment designed to test its accuracy, a GT study starts by collecting data, and then attempts to build theory inductively and recursively. There are key differences in different authors’ versions of GT, but the nomenclature is similar. GT researchers aim to generate *codes, concepts and categories* and then finally build them into *theories* from data.

Code A basic theoretical unit of Grounded Theory analysis. This could be a straightforward association like grouping ideas related to ‘traffic’ together (cars, buses, road

noise etc), or more complex ones such as ‘kitchen sounds’.

Concepts Collections of *codes* into functional groups. A concept could be ‘noise annoyances in the workplace’ or ‘instances of low environmental control’.

Categories Broad groups of *concepts* that build towards *theories*. In this case, ‘role of expectation on soundscape perception’, or ‘positive loud sound environments’, could be considered categories.

Theory Overall models relating to how categories link together, that predict and explain future observations. Theories in this thesis are about ‘noticing threshold’ and ‘coping mechanisms’, for example.

These terms are all relatively vaguely defined, inter-related, and sometimes more than one thing at once. As a result, they are not strictly adhered to once the research process has begun, but rather a starting point for conceptualising theoretical units. There are various systematic approaches to this process. When beginning, researchers commonly use *open coding* – an exhaustive and highly intensive approach which attempts to read every possible meaning that a participant may have given in an interview response. When codes and concepts start to flow however, and the researcher is drowning in codes and concepts, the researcher may choose one or more to study *explicitly* in the data – this is referred to as *selective coding* (Strauss and Corbin, 1998).

Initially, building *codes* into *concepts* is the primary goal: attempting to find responses which can be grouped together. Then, *concepts* are built into *categories* and *theories*. After this point though, the model can be added, altered or revised on any scale, with the caveat that *everything must come from data*. Often this results in rereading the same interview sections with new perspectives and new theories: reevaluating, confirming, modifying, or bounding existing theory. In a nutshell, this is why Grounded Theory is *grounded*. All theorising is based *entirely* on data.

3.3.2 Key texts and concepts in GT

A discussion of various authors' interpretations of Grounded Theory would be exhaustive and possibly a thesis in itself. However, a brief overview is useful. Broadly speaking there are two 'schools' of Grounded Theory, with an acrimonious academic rivalry behind it. Glaser and Strauss (1967) coined the term, and then the two authors took it in very different directions after their landmark text.

The Discovery of Grounded Theory (1967)

This book was borne out of Glaser and Strauss' analysis of social contexts around dying in hospital. A core method used in this text is the *constant comparative method*. This has four parts.

1. comparing incidents applicable to each category,
2. integrating categories and their properties,
3. delimiting the theory,
4. writing the theory. (Glaser and Strauss, 1967, p105)

In this method, the key factor for discovery is *comparison* between incidents in the same category. Firstly, this consists of collating and comparing responses, in the process generating categories. In our context, this could mean (for example) comparing responses to the same sound source, investigating identical responses to different sound sources, or examining the range of listening strategies in certain social contexts. Next, categories are integrated – how can these incident categories be grouped, or their properties generalised? Thirdly, the applicability is outlined – *where is this theory useful or relevant?* – and, if necessary, modified. Finally, when a comprehensive picture of the research space is described, theory is built, with connections between factors established where they emerge in the data.

<i>Elements of Theory</i>	<i>Type of Theory</i>	
	<i>Substantive</i>	<i>Formal</i>
Category	Social loss of dying patients	Social value of people
Properties of Category	<i>Calculating</i> social loss on basis of <i>learned</i> and <i>apparent</i> characteristics of patient	Calculating social value of person on basis of <i>learned</i> and <i>apparent</i> characteristics
Hypotheses	The higher the social loss of a dying patient, (1) The better his care, (2) The more nurses develop loss rationales to explain away his death	The higher the social value of a person the less delay he experiences in receiving services from experts

Figure 3.1 – Substantive vs. Formal Theory (Glaser and Strauss, 1967, p42)

The idea is not to generalise, but to *theoretically saturate* every emergent category. Simply, theoretical saturation is the process of asking the same question until no significant new responses emerge. When this happens, the researcher can aim to build theory which explains the reasons for these responses. During this process, the researcher may move between *substantive* and *formal* theory – see Figure 3.1. This consists of moving from the *specific* to the *general* – in Glaser and Strauss’ case, from the literal, embedded fieldwork about ‘social loss of dying patients’ to the general, theoretical question of the ‘social value of people’.

The vague side of this theory comes in what is called ‘theoretical sensitivity’. The authors suggest that a GT researcher should be ‘theoretically sensitive’, but do not outline how this should happen. This forms the crux of the eventual fallout between Glaser and Strauss.

Emergence vs Forcing

A critique of this methodology is that on one hand, it advocates researching with a clear mind, a ‘*tabula rasa*’: while at the same time remaining grounded in qualitative research theory, and the process of coding. Clearly, *tabula rasa* is impossible, as *all* researchers use default epistemological and ontological lenses to make sense of the world around them.

“The leap from particular to general is not without the danger of errors, of illusions, in a word, of ideology” (Lefebvre, 1992, p5).

Strauss and Corbin (1998), acknowledging that “any empirical investigation needs an explicit or implicit theoretical framework which helps to identify categories in the data and to relate them in meaningful ways”, set out to develop a framework especially aimed at novice researchers – an identity I happily wear. Strauss and Corbin present a set of analytical tools, including “axial coding: the process of relating categories to their subcategories, termed ‘axial’ because coding occurs around the axis of a category, linking categories at the level of properties and dimensions” (Strauss and Corbin, 1998, p123), and “coding for process” where a process is “a sequence of evolving action/interactions, changes in which can be traced to changes in structural conditions” (Strauss and Corbin, 1998, p163).

Glaser however pejoratively saw this as *forcing* theory as opposed to having it ‘naturally’ *emerge*, and that the ‘true’ method of GT is entirely *ad-hoc*. At the same time, he suggests a slightly gargantuan 14 ‘coding families’ around concepts such as “terms, which relate to the degree of an amount or property [...], to the relation between a whole and its elements [...], [or] which refer to cultural phenomena” (summarised by Kelle, 2005).

Kelle (2005) continues:

Glaser’s approach overall to theoretical sensitivity is therefore of limited help for novices in empirical research who will have serious difficulties to handle the more or less unsystematic list of theoretical terms from various sociological and epistemological backgrounds offered by Glaser. And a researcher with a broad and extended theoretical background knowledge and a long standing experience in the application of theoretical terms, on the other hand, would certainly not need a list.

At the root of this is a debate about how the GT researcher goes about *noticing* emergent theory.

Creativity

To return to *creativity*, while all approaches to Grounded Theory can seem very formal and daunting, Strauss and Corbin (1998) stress that “[the methodology] will never develop if researchers focus solely on the procedures presented in this text and apply them in a *rote* manner [...] the importance of this methodology is that it provides a sense of *vision*, where it is that the analyst wants to go with the research” (p8). This is key to my approach: developing a new method for soundscape research *necessarily* requires creativity, and it is a clean match with a methodology that *requires* it.

While GT has been instrumental in guiding my approach then, it is vital to note that it is not a road map to follow so much as a ‘guidebook to the wilderness’. As mentioned, an almost constant element of doing GT at Salford University has been an emphasis from supervisors and colleagues to simply *get on with the process of gathering data*, and to stop worrying about letting theoretical issues get in the way when the method is clearly and intuitively responsive to my needs. Theory alone cannot be a complete guide to exploring the unknown.

My approach

The more formal, novice-friendly approach of Strauss and Corbin’s (1998) GT was highly appealing for my research. Just as members of the public generally speaking have a lack of experience describing sounds and sound environments, I was highly aware in many ways starting the process that *I’m not sure what I’m listening for*. Taking a highly structured and intense approach to interviews and interview analysis allowed me to see connections in data I may have missed due to my own preconceptions of what’s important, or what I thought was being communicated in an interview.

Conducting an unstructured interview allowed my own techniques as an interviewer to improve. After most interviews, I learnt something about asking people about sounds I didn’t know before. A more fixed process would have seen me doomed to repeat mistakes

in the fieldwork process. While the twenty interviews are presented as a whole within the data analysis, my memos, hypotheses and conceptual categories were advancing between the interviews. As will be shown in the next chapter, the process changed considerably over the course of the research.

3.3.3 Criteria for judging success

GT, perhaps unsurprisingly, has different criteria for success than traditional quantitative research. Grounded Theory is not said to be ‘valid or invalid’ in a traditional naturalistic sense, but judged based on the following criteria.

Fit How closely do proposed theories and concepts match the ‘real world’?

Relevance How relevant are the findings of the studies to academics, participants, and the general public?

Workability How useful is the theory in practice? Does it yield useful results *in situ*?

Modifiability How easily can the theory be adapted to include new elements? (Glaser and Strauss, 1967)

A good Grounded Theory study should score highly on all these criteria. What is important then is not (*per se*) validity, statistical accuracy, or universal application; but the production of theory which *fits* observations from the real world, is *relevant* to the needs of different groups of people, *works well* when applied, and can easily *expand and be modified* when new observations come to light.

Fit will be judged by how helpful the theory and analysis comes to matching testimonies of listeners. This will hopefully be relatively intuitive – everyone (apart from deaf people), including soundscape researchers, has experience of listening – and therefore has the experience to judge any models I propose. This is in contrast to a lot of social research, where the reader may not have any experience at all in the area under study. One of the advantages of this piece of research is that, in researching listeners and not specific places,

it is theoretically *relevant* to *everybody* with an interest in listening, and its usefulness will be judged by listeners themselves.

Workability is a harder trait to outline. I hope the results of the study will have many outputs; these are difficult to imagine before beginning, but at the very least I'd hope that it will give a more holistic overview of soundscape response. *Modifiability* should be simple as well, given the extremely exploratory nature of this study. There is a lack of theory in this area – anything created will be an outline that doubtlessly can be improved, partially refuted, or adapted to include new listening methods.

All research – qualitative and quantitative – has similar values. Lincoln and Guba summarise these as follows:

Truth value: How can one establish confidence in the ‘truth’ of the findings of a particular inquiry for the subjects (respondents) with which and the context in which the inquiry was carried out?

Applicability: How can one determine the extent to which the findings of a particular enquiry have applicability in other contexts or with other subjects (respondents)?

Consistency: How can one determine whether the findings of an inquiry would be repeated if the inquiry were replicated with the same (or similar) subjects (respondents) in the same (or similar) context?

Neutrality: How can one establish the degree to which the findings of an inquiry are determined by the subjects (respondents) and conditions of the inquiry and not by the biases, motivations, interests or perspectives of the inquirer? (Lincoln and Guba, 1985, p290)

I argue that the ways we establish these values within soundscape research are limited. ‘Truth value’, or *consistency* is often established using statistical data and closed interviews: I aim to show how other ‘truths’ can be derived using in-depth interview data. In this figure, *truth value* is linked heavily to *fit* and *workability* – accurately describing soundscape responses, and creating useful theory, is of great use regardless of the methodology used to do it.

‘Applicability’, or *transferability*, is the measure of how much any research can be applied outside the context in which it was performed. In this case, I will show how ‘thick’ descriptions of individual listeners can give insight into the habits of a broader group of listeners. While my research demographic is limited, the range of responses is not. ‘Theoretical saturation’ is the goal here, to use GT nomenclature; ideally, theory created will be applicable to *all* listeners, with any ‘new’ responses in future research either fitting within existing categories, or the model being flexible enough to accommodate extra categories. This links to *relevance*, *workability* and *modifiability*.

‘Consistency’, or *dependability*, and ‘neutrality’, or *confirmability*, both relate to the process of ‘auditing’ (Seale, 1999, p45) the data – which can be done in a qualitative context using the rigorous and methodical coding of Strauss & Corbin’s (1998) version of GT. However, it is also hoped there is a certain *intuitive correctness* with this study in particular – in a field underexplored with qualitative methodologies, I hope to be able to formalise some of the more ‘self-evident’ truths in soundscape research. Admittedly, *dependability* is a weak point with GT, but then any new attempt at theory building is going to struggle in this area.

Success therefore is judged along different lines when judging qualitative research. While it may initially seem at odds with more quantitative methodologies, the core aims of all research are generally similar, but achieved in different ways. As stated repeatedly now though, my goals are to create something intuitive, broad, colourful, and descriptive, that helps re-frame the way soundscape research is done. As a final note, it’s worth referencing Thomas and James (2006), who cite the biologist Peter Medawar:

There is little real distinction in fact to be made between deductivism and inductivism. These words merely relate to “postures we choose to be seen in when the curtain goes up and the public sees us”. Diffidence is the hallmark of the modern natural scientist when it comes to reflection on method. (p13)

Despite all this, in many ways the epistemology is less interesting than the results. Diffidence should of course be challenged: what really matters however is the end result

in many ways.

3.3.4 Methodological criticisms

None of this is to say that this style of research does not come with criticisms. These critiques come in two camps: critiques of qualitative research as a way of finding knowledge (abstractly: quantitative critiques) and critiques of GT from within qualitative research (qualitative critiques).

Quantitative critiques of qualitative research

While I have spent most of this chapter justifying a qualitative approach, it is worth explicitly examining the problems with writing it up. Silverman (2005, p303) raises the following issues with writing up qualitative research:

- the (contested) theoretical underpinnings of methodologies
- the (often) contingent nature of the data chosen
- the (likely) non-random character of the cases studied
- the reasons why the research took the path it did (both analytic and chance factors)

The theoretical underpinnings of my methodology are directly called for by the enormous literature review conducted by Payne et al. (2009b) for DEFRA. Contingency, or the critique that my findings are reliant on my sample group and methodology, is a reasonable concern. This point comes from a naturalist scientific principle that results should establish *credibility* through *reproducibility*. However, any theory grounded in data should also be credible to the reader. “The same problems and issues should arise regardless of whether they are conceptualised and integrated a little differently” (Strauss and Corbin, 1998, p266). Credibility is on some level always based on the intuitive “truth values” of the reader: qualitative research simply accomplishes this in different ways.

Validity is a complex issue though. With a lack of qualitative research, it will be hard to compare and contrast with other works. This is, therefore, the main drawback of this methodology from a quantitative standpoint. I would hope though that the emergent results are useful, thick, intuitively and demonstrably correct, and give new insights into soundscape response.

Qualitative critiques of Grounded Theory

Critiques of Grounded Theory from within qualitative research are varied, and often subtle. My application of it has been highly creative, with GT research questions not usually being quite as vague, or sensorially-oriented as mine. This is the point where it would be possible to disappear into a black hole of metaphysical debate and never emerge; however I will briefly outline some key critiques of GT.

Thomas and James (2006) outline three critiques.

- Why is grounded theory ‘theory’? What makes it ‘theory’, and not accurate description?
- What is the ‘ground’? Where do things ‘emerge’ from?
- Are things really ‘discovered’, or are they invented?

Firstly, Thomas and James question why “people expect their methods-for-making-sense to be called ‘theory’” (p6), likening the use of the word “theory” in GT to be akin to “I have a theory why my geraniums are dying”. They stress that “everyday knowing” is important, and that GT, by reputation alone, seems epistemologically solid: its reputation unimpeachable in supporting a claim. I would contend that, at this stage in soundscape research, both these criticisms are moot. While Thomas and James take issue with the nomenclature used, for our needs this kind of methodological sophistication seems like a critique to take on board on a third or fourth iteration of qualitative soundscape analysis, not a first or second one.

‘Emergence’ and ‘discovery’ are critiqued along similar lines. What *really* emerges – how can grounded theorists find anything without *a priori* assumptions? And how can the findings of Grounded Theory ever be conceived of as *discovery*, when discovery is for comets, or Tutankhamen’s tomb, for example (p23)? Both of these critiques are reasonable, but to me eventually end up as a quibble over nomenclature. Thomas and James argue that GT has the potential to blind the researcher to other forms of qualitative enquiry, but again, commend the approach of Strauss and Corbin and emphasise the potential for GT in an educational context.

To return to the chapter preface, it is not that these critiques are not relevant or correct: but they are not particularly *useful* in unpicking our research question. As a novice researcher, investigating a fresh, fertile area, GT has proved both retrospectively and prospectively fruitful.

3.4 Design of methods and methodology

To summarise the research process, before justifying it: 20 students were asked to keep a sound diary for a week, consisting of making around twenty recordings each and filling in a log sheet at the same time. Participants were then given an hour-long interview. The diaries, recordings, and interview transcripts were then analysed. This section explores the detail and rationale for the steps in the method development.

3.4.1 Sample Group

University students were chosen as a sample group, for both ease of access and a (perhaps naïve) presumption they are used to thinking critically, and giving thoughtful, in-depth answers to questions which may not seem obvious. Southworth (1969, p54) had a similar rationale, selecting “subjects [...] who could be relied upon for reasonably articulate expressions of their perceptions”. The initial pilot consisted of two postgraduates and one

undergraduate. These people responded to posters placed around Salford, Manchester, and Manchester Metropolitan Universities.

Glaser and Strauss (1967) suggest that Grounded Theory sampling should shift focus as and when new codes and theory become apparent, to maximise the variety of answers. For example, it could have been beneficial to also survey lecturers or clerical staff. However, due to time commitments, restrictions of the university research ethics council, and limits on transcription time, an upfront estimate of the quantity and type of people surveyed was required. Given the (initially) vague line of questioning, it was also useful having some kind of consistent life experiences to compare.

3.4.2 The Diary-Diary Interview Method

A diary method was chosen for several reasons, as outlined in *design requirements*. To summarise: a diary gives people the time and space to think about sounds for a while, on their own terms, reducing as much as possible my tendency to prompt or prime people with certain words or phrases. It allows people to use their own vocabulary, and notice what they notice free of an academic theoretical framework, or the stress of an on-the-spot interview.

I elected to use the *diary-diary interview method*, which is tightly integrated with the next section on interviews. This methodology was coined by Zimmerman and Wieder (1977), and simply put, requires participants to keep a diary, which they are then interviewed about. The primary reason for this is that having a physical record of a period of time can significantly reduce nostalgia, or mis-remembered sounds (Zimmerman and Wieder, 1977).

Referring back to a specific ‘slice of hearing’ is a much more precise tool than generic memory. “The traditional alternative to using aggregated diary data has been the use of single reports in which participants attempt to recall their experience. Such retrospection is often plagued by biases. Participants’ limited ability to recall often results in

retrospective ‘aggregate’ responses that reflect faulty reconstruction of the phenomena of interest” (Bolger et al., 2003). Put simply: it keeps people honest.

This methodology is heavily influenced by Visual Sociology. Visual Sociology uses images, especially photographs, as key tools for interacting with participants. In the study mentioned above by Bolger et al. (2003), child participants were given disposable cameras to document their workplaces, for example. The parts of their workplace which were recorded said as much as the ones that were not, but the photographs formed a strong starting point for an interview process about work experiences.

A diary method couldn’t be more person-centered – aside from the instructions on how often to keep a diary, it is potentially a free pass for participants to use it to record what is interesting to them. This also opens up a large amount of environments other methodologies would find it difficult to access. “As we see it, diary studies serve one of two major purposes: the investigation of phenomena as they unfold over time, or the focused examination of specific, and often rare, phenomena” (Bolger et al., 2003).

The main drawbacks are:

1. The potential for participants to try and record especially interesting or annoying sounds for the sake of ‘satiating’ – saying things they think I want to hear. While I can try and actively discourage people from doing this, people apologised in interviews for having a “boring” life, or not getting anything “interesting” for me.
2. It is far from easy to compare and contrast respondents on a direct basis. One person’s home situation can be radically different from another’s, and there is potentially an extremely large number of factors in people’s lives that need to be taken into account when discussing soundscape.
3. There is a balance here between giving people time to think about sounds, and almost forcing them to notice things they wouldn’t unbidden. Therefore there is a theoretical assumption here that *people do care about their soundscape*, they just rarely have the time or vocabulary to discuss it. Indeed, in the final study, many

people said that the research enabled them to notice things they wouldn't have done normally, sometimes to the point of creating a new distraction or irritation in a familiar environment.

The first and third points here are criticisms of *any* research. In soundscapes, papers which ask participants to use top-down attention to evaluate bottom-up sound sources are perhaps suffering the most from these points. As previously mentioned, the second point is specifically what I am seeking, and is a critique of qualitative research in general. The benefits here are huge though. Firstly, I will produce a very large amount of empirical data about the soundscape, in a new and unexpected format, in places that matter to the participants. Secondly, I will have an accurate testimony to refer to in any interview process. Thirdly, I will have primed participants by making them think about the soundscape for a little while. Finally, there will be the possibility to analyse the diary data explicitly at a later date, to see if there are any connections, although this is not a primary focus of the methodology.

3.4.3 Interview

The diary was then used as a prompt for an interview process. Initially I wasn't sure which area would be more interesting – the diaries, the log books or the interviews, but it rapidly became apparent that the interviews allowed sometimes uncertain participants to really 'open up' when talking about sounds. The interview data forms the basis for the majority of the findings in chapter 5.

The interview process used the diary as a starting point, following Zimmerman and Wieder (1977) and their *Diary-Diary Interview* method. By using the diary as a starting point for an unstructured interview, I can double-check their responses to soundscapes. "A fundamental benefit of diary methods is that they permit the examination of reported events and experiences in their natural, spontaneous context, providing information complementary to that obtainable by more traditional designs" (Bolger et al., 2003). Rather than talking

about soundscapes in the abstract then, I have something tangible and familiar to the participant to discuss, in a ‘spontaneous’ context.

Striking a balance between directly asking for responses to sounds, and trying not to force a response, was difficult. Skipping ahead slightly, initially in my interviews I tried a ‘round-about’ approach, prompting people with fairly neutral questions. Later on I became more explicit about my question asking and this yielded better results – and actually came to realise that people just didn’t quite understand what I was asking them for, despite what (to me) was a relatively clear brief. The interview process let me do several things, among others:

- Suggest theories and models for individual participants, gaining their immediate feedback if these theories sound accurate to them or not.
- Gain a context for each diary entry, and double-check if the sounds actually matter to them, or if it was just done due to the recording instructions.
- Encourage people to speak about sounds, and use my role as an ‘expert’ to help them explore what they experience.
- Follow up the sometimes obscure paths that really ‘get to grips’ with aspects that cause high arousal. This was especially marked with the international students, as they had a contrasting home environment for comparison to the Manchester (and Salford) soundscape.

Interview data was then transcribed, and analysed using Grounded Theory methodology, as discussed.

3.5 Conclusion

This chapter has laid out the justification for the eventual method, in detail, from a variety of standpoints. Its function is as a kind of theoretical glue, sticking together the

theory and *practice* of a new soundscape methodology and epistemology. It is necessarily casting the broadest net possible, using new and untested epistemological standpoints (for soundscape research), and is a step into the unknown in no uncertain terms.

Chapter 4

The Fieldwork Process

The previous chapter focused on the theoretical stages of methodology development and the practical aspects of method design. This chapter is a discussion of the practical application of both Grounded Theory as a methodology and the Diary-Diary Interview Process as a method. It covers the various iterations of data analysis, and how they fed back into interview technique, the tools, both existing and new, that I used to do this, and reflections on the process as a whole.

Unlike the rest of this thesis, this chapter is linear, and follows the timeline of events as they happened. Also unlike the rest of the thesis, this chapter is fairly literal and non-analytical, following instead the precise processes used to deliver the analysis.

4.1 Method design

The process, from gaining participants to completing interviews, was as follows:

1. Posters were distributed around university campuses, and emails sent to university student lists.
2. Respondents were asked to meet for a brief screening meeting, where the research process was explained, and they were given a sound diary pack.

3. After participants completed two weeks of diary entries, I met them for an hour long interview.
4. Interviews and log books were transcribed for analysis, sound recordings were backed up.

The rest of this section discusses these in more detail.

4.1.1 Participant Selection

The final fieldwork is based on data from 19 postgraduates and 1 undergraduate, totalling 10 men and 10 women. The mean age of participants is 31 years old. 15 were from the UK (2 Welsh, 1 Irish, 13 English), 2 from Nigeria, and one person from Malaysia, Brazil and Jordan. 5 people dropped out part-way through the fieldwork, generally due to work or time commitments. The fieldwork took place from January 2010 to April 2014.

My sample group was students at Salford, or any Manchester university, but after a highly unsatisfactory interview in my pilot (Brian), I decided to limit it to current postgraduate students. This is because I wanted people adept at explaining and describing things in detail, and I felt that most postgraduate students learn this as a necessary part of the research process. The group size was twenty, as a trade-off between casting the net wide, time available, departmental budget (each was given a £20 Amazon voucher), and the transcription time offered to me as a disabled student. This has resulted in a very large data set: as will be shown, several tools were needed to break this down for analysis.

All participants responded to posters placed around Manchester University, Manchester Metropolitan University, and Salford University. Five people dropped out for personal reasons, generally work-related stress. End-to-end, the fieldwork took around four years as a part-time student.

All respondents are anonymised, with the first letter of the first name showing the order of participation. Thus, Andrew was the first participant, Brian the second, Claire the third, and so-on. Pseudonyms were given to match the participant's gender and ethnicity, using

an online baby-naming dictionary to pick a popular name from the participant's country of birth. References to family members and friends were converted to relationships rather than names.

As will be seen later, especially in Section 5.9 on page 250, this group of people gave an exceptionally large range of responses on a number of different scales. I therefore suggest that this group is reasonably representative of a more general population, but more work would need to be done repeating this methodology to claim this group covers all eventualities.

4.1.2 Diary packs

The diary packs were designed to be ergonomic, and easily fit into participants' bags. I used clear plastic pencil cases, and provided a pen, log book, spare rechargeable batteries, a battery charger if people wanted one, as well as the audio recorder itself. This is shown in Figure 4.1 on the following page.

Zoom H2 digital recorders were used. This was a trade-off between size (small and portable), price (cheap), quality (high enough to record a room accurately), use of SD card memory (generic format for cost and ease of management) and a simple interface. They worked ideally for the process, although some felt self-conscious using them at first – in future I would consider using something that looks more like a mobile phone, or allowing people to use their phones themselves; however this would open a whole other list of difficulties. Also, people didn't want to take them into nightlife venues for fear of losing them.

The logbook contained information about what the fields were for, my contact details, and the log entries themselves, shown in Figure 4.2 on page 114. They were designed to be easy and quick to fill in, intuitive, and collate all the data that would not be on the recording.



Figure 4.1 – Sound diary kit for participants

Sound Record Sheet		Filename:	
		Time:	
Location:			
Purpose:			
Conditions:			
Sounds:			
Impression:			
With who?			
Notes:			

(a) Blank record sheet

Reminder!		Filename:	<i>On the recorder display</i>
		Time:	<i>Rough time and date</i>
Location:	<i>Where the recording was made.</i>		
Purpose:	<i>Why you were there - working, travelling, meeting a friend?</i>		
Conditions:	<i>Any details about the place eg. Weather conditions</i>		
Sounds:	<i>Make a list of everything you can hear.</i>		
	<i>Underline the most prominent sounds.</i>		
Impression:	<i>How you feel about this place.</i>		
With who?	<i>Who you are there with, if anyone.</i>		

(b) Instructions for participants

Figure 4.2 – Sound diary record sheets

4.1.3 Meeting and briefing

After agreeing a meeting, participants were given a recording pack, asked to sign a consent agreement and read a statement describing the research process, this is given in full in Appendix A on page 293. Participants were given a copy of all this information in full. In summary, participants were given instructions to make two recordings a day for two weeks. I asked participants to focus on three main areas when recording:

1. Spaces they inhabit every day, such as their usual work, home and leisure environments, routes to work and other spaces they frequently occupy.
2. Times they're aware of a change to those spaces, due to feeling more or less comfortable than normal, different times of the day or night, or any other changes that make them perceive the space differently.
3. Any unusual or atypical places they're in, such as being on holiday or a day-trip somewhere they wouldn't normally go.

I stressed that I'm interested in a record of their lives – that I'm trying to shed some light on people's day-to-day sensory environments and they absolutely *do not* need to go out of their way to be in spaces they don't normally inhabit; in other words, points 1 and 2 are much more important than point 3. I instructed them to make the recordings when they are able, but to try and get a reasonably representative cross-section of their life.

4.1.4 Interview

After recording, I conducted a 60 minute interview with participants about their experiences. This length of time was set to give participants a guideline for their commitment, and was based around the library room booking schedule. These interviews were unstructured, but followed a rough outline. This was adequate for most interviews, with almost all reaching a natural conclusion in 40-60 minutes. Two ran over to around 75 minutes, but in both cases the participant was happy to continue.

The sound diary method was developed based on the Zimmerman and Wieder (1977) *Diary-Diary Interview* method. As discussed, this is a way to allow people to start thinking about sounds and soundscape, and stop turns towards sonic nostalgia (or indeed, simple forgetfulness) and desire to “perform” in interview, giving the interviewer what the participant thinks they want to hear. The interview allowed me to explore and solidify the participant’s experience, giving them the time and agency to describe it in their own words.

1. Participants were asked how they felt about the process – was it interesting or boring, did they learn anything new, did their perception change as a result of doing the exercise? They were also asked if they enjoyed it, and if they would change anything about it. They were then asked if there were any obvious absences from the recordings.
2. Each sound diary entry was played in order, reading out the logbook entry and listening to the recording together. General questions were asked: ‘tell me about this’, ‘do you like this space?’. Anything of interest to the participant was explored.
3. Anything that sparked my interest I returned to – I ran any potential theories past participants to check if they thought they were accurate. I asked for any additional feedback or insight, and discussed anything which may not have been on the recording.

Interviews were then transcribed.

4.2 Waves of data analysis – the GT process in practice

While GT is an iterative process, there were several distinct stages in progression of the research. Interviewing was a gradual, constant process over a number of years. Data

analysis was done in broader chunks, with deadlines for various university evaluations and conference papers providing prompts to reach conclusions. The rest of this chapter describes the stages in unfolding data analysis.

4.3 Pilot

My initial pilot study was with three people (Andrew, Brian and Claire). Initially I was planning on going through each interview and generating some questions on recordings of interest, comparing the recorded data to the log book, and generally beginning with a prepared set of questions. I tried this with Andrew however, and in practice this was an exhaustive and unproductive process. Exploring the recorded data with the participant was a valuable part of the process, building a bond with between researcher and participant. Additionally, in the first interview, the annotated logbook I exhaustively typed up was of no practical use. This also cut down the number of required meetings with each participant, requiring just an initial screening and handover, and then a meet up for the interview.

The next two interviews were also productive in testing the method and producing useful data, although the percentage dedicated to talking about soundscape was fairly low. With hindsight however, this said a lot more than I initially thought, with the silences around soundscapes being sometimes as illuminating as direct discussion of them. I didn't want to force people onto the topic of soundscapes, however both participants felt slightly lost at the lack of explicit focus, so I elected to be more upfront about my sound focus with new participants, in the hope of getting more usable interview data. The second participant, an undergraduate (Brian) had less choice about his environments and was less descriptive in his responses than the postgraduates, so I elected to shift the study to only focus on postgraduate students. On reflection, Brian's lack of detailed response said quite a lot however, as will be detailed later. As a result however, the rest of the posters specifically called for postgraduates.

After my pilot I had refined the interview process and logbooks, and slightly changed my research group. These interviews were then transcribed and analysed.

4.4 Wave 1: NVivo – environment – listening

Open coding was used initially: going through each interview in a huge amount of detail, attempting to pull out as much insight as possible. This is a tedious process, but one that gives a large variety of perspectives on the data. For this I used NVivo¹, a Qualitative Data Analysis (QDA) program. NVivo is a tool specifically designed for analysing unstructured, qualitative data. The interface allows for importing documents (or *nodes*), highlighting sections and assigning them *codes*, which can then be sorted into *categories*, as per the Grounded Theory process. Coding a single interview is shown in Figure 4.3 on the next page, and an example of how codes can be moved and categorised in Figure 4.4. This allows for codifying the same interview a theoretically unlimited amount of ways, abstractly renaming and comparing codes directly. For example, descriptions of ‘traffic’ can be highlighted in separate interviews, then compared together in one view for further analysis.

I initially attempted coding and categorisation by *source category*, following Dubois and Guastavino (2006), attempting to extract linguistic data. This consisted of categorising sound descriptions, to see if people described the source, environment, used onomatopoeic figures of speech, or other elements. This yielded little fruit. Eventually, *work* and *home* emerged as useful categories, retitled as *location* and *purpose* in the final analysis.

After the next seven interviews (Daniel – Jake) were completed and entered into NVivo, I started the process of *selective coding*: reading the interviews solely from the perspective of *activity*. This process gave further depth to the category, but then became an almost unwieldy amount of data to deal with at once when doing new open coding. As a result, I started attempting to create *listener archetypes*, suggesting new models of ‘expert’

¹http://www.qsrinternational.com/products_nvivo.aspx

A: Erm, a sketch book.

INT: Is this part of your?

A: Yeah, research work stuff. I think I was probably waiting for something. There you go you can start hearing the voices now. So it's normally the admin side that's blamed for making all the noise.

INT: Really?

A: Yeah, there's like a real separation between this idea that the admin people, I suppose their jobs involve communicating with each other, whereas all the academics and all the students always moan about how our sides really quiet and their side's kind of like, noisy and that makes it very distracting for them to work.

INT: So the admin and the research staff are on different sides of the building?

A: Yesss. But it's all open. It's all open plan. So, you get the noise travelling around.

INT: So is it actually possible to tell where sounds are coming from?

A: Yeah, definitely. And, there's some distinctive noises, like there's a guy who laughs re

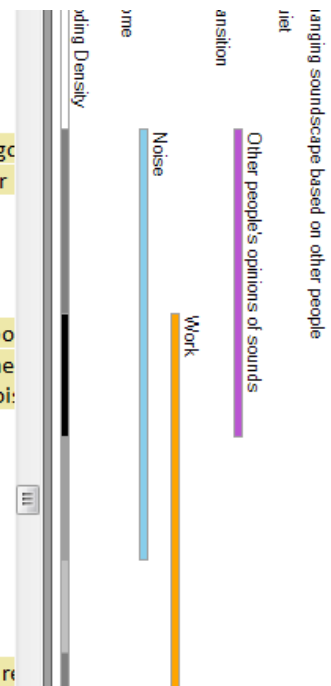


Figure 4.3 – NVivo: coding example for one interview

Beeping	1	1
Birds	1	1
Changing attitude to sound	1	2
Changing soundscape based on other people	2	4
City comparison	1	2
Construction	1	1
Control	2	3
Coping	1	1
Creation	4	4
Discussion	1	1
Dust + dirt	1	1
Emotion	0	0
Environment	0	0
Experiences growing up	1	1
Expert listening	3	3
Fieldwork changed opinion	1	1
Flat above banging around	1	1
Gender	1	2
Headache inducing	1	1
High Importance	0	0

Control - Feedback	10
Being in touch with noises made him feel productive	1
Big stone house makes him feel isolated	1
Bothered less by sound when more relaxed	1
Can tell what's going on in the building from aural cues	1
Can't hear other people in the house	1
Doesn't have coping strategies	1
Doesn't mind telling people to be quiet if they're performing	1
Doesn't use music to drown out other sounds	1
Ends up in charge of music in communal rooms	1
Gets frequent visitors due to location in house	1
Hates housemate's too loud music	1
Hearing people moving around in smaller houses has been	1
Home loud noises don't bother her as she's in control	1
Housemate has no idea how loud they are	1
Housemate playing loud music is annoying	1
Housemate playing loud music is inconsiderate and annoying	1
Housemates ask each other to turn music off if going to	1
House rule - no music before 9	1
Laughed at for making noise complaint	1

Figure 4.4 – NVivo: examples of coding. Right screenshot shows nested codes within a category.

listening, doing thick descriptions of each participant’s listening habits. These are now titled *listener profiles*, as I am not confident enough that these descriptions provide enough depth or repeatability to be described as archetypes.

NVivo however also proved to be very slow with large data sets consisting of large numbers of codes and nodes, was relatively inflexible with editing data, and tied up with license and platform issues that became more of a hindrance than a help. At some time around the first ten interviews, I stopped using it for these reasons.

4.5 Wave 2: Qualitative look at sources from sound diaries

While the sound diary log books themselves were really designed as a prompt to aid participants to think about sounds in general, and a record to keep people honest, they were still worthy of some analysis of their own. For this I transcribed all of the sound diary logs into a spreadsheet, and then imported them into Google Refine² (now called *Open Refine*). Google Refine’s website describes it as “a powerful tool for working with messy data”. It appears much like a spreadsheet (Figure 4.5 on the following page), but treats each row as a discreet entity that can be processed *en masse*.

Google Refine uses various clustering algorithms to group similar cells together, so ‘traffic’, ‘Traffic’ and ‘trffic’ [sic] get standardised and merged (see Figure 4.6 on the next page). Example ‘before’ and ‘after’ states are shown for ‘sounds’ (Figure 4.7 on page 122) and ‘location’ (Figure 4.8 on page 123). It also allows processes such as splitting a comma-separated list of sounds into separate rows, to allow further processing. Generally speaking, it allows huge batch actions to give me a quantitative overview of all the data. The biggest named sources in the log books were ‘traffic’ and ‘people’, by a very long way. However, very few people had strong opinions about traffic either way: as a result of this indifference despite it being so heavily recorded, this was converted into a case study in

²<http://openrefine.org/>

463 records

Show as: rows records Show: 5 10 25 50 records

All	Code name	#	Time	Date	Location	Purpose	Conditions	Sounds	Impression
☆	51. Claire	012	1899-12-31T15:15:00Z	2010-07-18T00:00:00Z	Garden	Gardening-re-potting a plant	Starting to rain	Birds	Apprehensive about the weather, accomplished
☆								the wind	
☆								distant traffic	
☆	52. Claire	013	1899-12-31T19:15:00Z	2010-07-19T00:00:00Z	In the living room	Reading	Warm	running water	Relaxing
☆								movement of dishes	
☆								quiet buzz of TV	
☆	53. Claire	014	1899-12-31T11:50:00Z	2010-07-20T00:00:00Z	Walking down oxford road	Going to get coffee	Wet	traffic	Unpleasant in the rain, exposed
☆								footsteps on the pavement	
☆								bits of conversation as I walked past bus stop	
☆								rain	
☆								zipping bag	
☆	54. Claire	015	1899-12-31T18:00:00Z	2010-07-21T00:00:00Z	Train to Manchester	going into town	Bright, the train is really old + rickety	Engine	Warm, slightly uncomfortable
☆								conversations	edit
☆								conductor	
☆	55. Claire	016	1899-12-31T19:00:00Z	2010-07-21T00:00:00Z	Specsavers, the Arndale	Eyefests for both of us – is getting new glasses	Fine – quite busy considering how late it is	music	A bit annoying – v. long winded and trying to sell add-ons
☆								conversations	
☆								the sales person talking about new specs!	
☆	56. Claire	017	1899-12-31T08:20:00Z	2010-07-22T00:00:00Z	John Ryland Library, Orange 1	Picking up some journal articles	V. empty, quiet	Clicking of a light switch	Interested – there's lots here I've not seen before.
☆								rattling paper	
☆								banging of pulling out volumes	
☆								flicking through pages	
☆	57. Claire	018	1899-12-31T10:30:00Z	2010-07-22T00:00:00Z	Computer cluster in library, blue 3	Working	Warm	Whirring of air conditioning	V. quiet, efficient
☆								tapping of keys	

Figure 4.5 – Google Refine: view showing raw data in record rows

Cluster & Edit column "Sounds"

This feature helps you find groups of different cell values that might be alternative representations of the same thing. For example, the two strings "New York" and "new york" are very likely to refer to the same concept and just have capitalization differences, and "Gödel" and "Godel" probably refer to the same person. [Find out more ...](#)

Method: Keying Function: 55 clusters found

Cluster Size	Row Count	Values in Cluster	Merge?	New Cell Value
3	43	<ul style="list-style-type: none"> traffic (30 rows) Traffic (12 rows) Traffic! (1 rows) 	<input type="checkbox"/>	<input type="text" value="traffic"/>
3	5	<ul style="list-style-type: none"> Clock ticking (3 rows) clock ticking (1 rows) ticking clock (1 rows) 	<input checked="" type="checkbox"/>	<input type="text" value="Clock ticking"/>
3	6	<ul style="list-style-type: none"> water running (3 rows) running water (2 rows) Water running (1 rows) 	<input checked="" type="checkbox"/>	<input type="text" value="water running"/>
3	5	<ul style="list-style-type: none"> People chatting (3 rows) Chatting people (1 rows) people chatting (1 rows) 	<input checked="" type="checkbox"/>	<input type="text" value="People chatting"/>
3	3	<ul style="list-style-type: none"> Singing (1 rows) singing (1 rows) singing(?) (1 rows) 	<input checked="" type="checkbox"/>	<input type="text" value="Singing"/>
2	5	<ul style="list-style-type: none"> (4 rows) ?? (1 rows) 	<input checked="" type="checkbox"/>	<input type="text"/>

Choices in Cluster:

Rows in Cluster:

Average Length of Choices:

Length Variance of Choices:

Select All Deselect All

Merge Selected & Re-Cluster Merge Selected & Close Close

Figure 4.6 – Google Refine: example of clustering algorithm

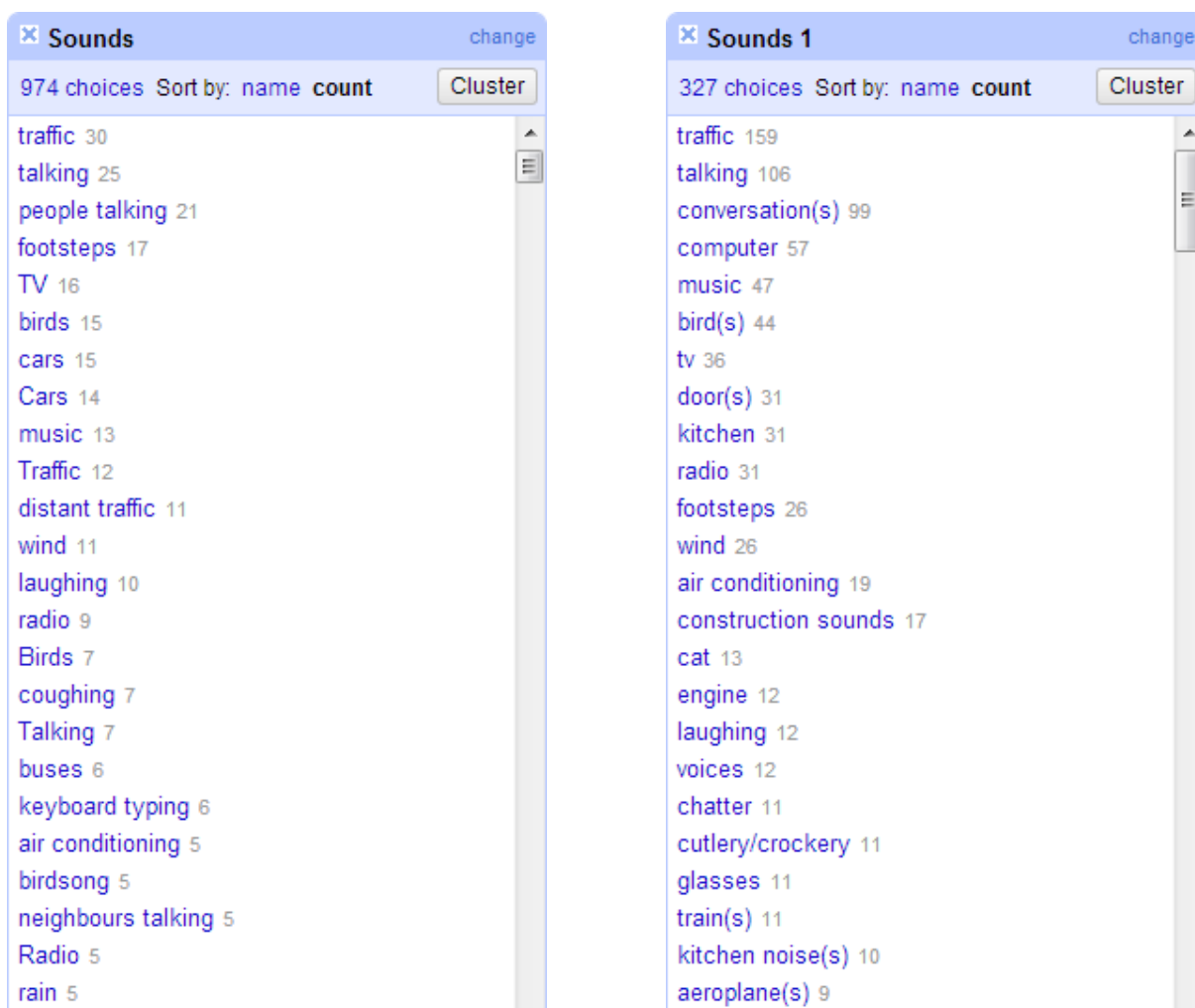


Figure 4.7 – Google Refine: ‘sounds’ field responses, before (left) and after (right).

the final analysis. ‘People’ however were spoken about at length, although not generally with reference to the soundscape.

There was a remarkable diversity of sounds reported in this exercise, with nearly 1,000 unique responses in total. While it would doubtlessly be possible to exhaustively categorise all responses, this was not the point of the exercise; as with many aspects of qualitative research, the aim was to give an impressionistic overview of responses and reach theoretical saturation. Log entry sources sorted by location are shown in Appendix C on page 298.

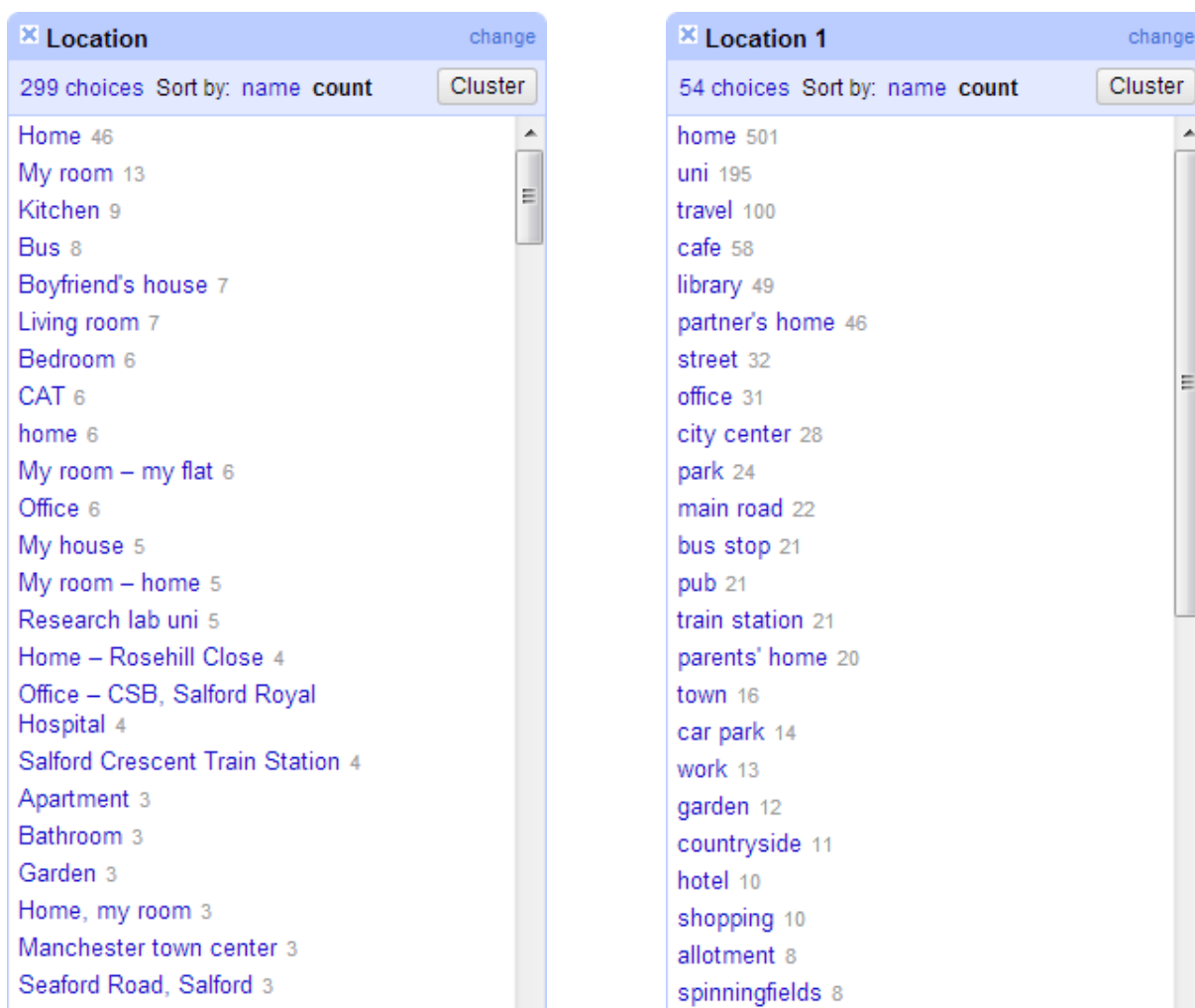


Figure 4.8 – Google Refine: 'location' field responses, before (left) and after (right).

4.6 Wave 3: Summaries and annotations of all interviews

After completing all the interview transcripts, there was far too much data to analyse in single passes, with open coding being all but impossible. To manage this, I summarised the interviews into paragraphs, extracting just the information about sounds and soundscapes into the activity-based categories established in Wave 1. This first-degree level of integration gave me a much more manageable document to work with when, for instance, trying to find out all the times people discussed a single topic or concept.

Coding-wise, I needed a new tool given NVivo's issues. As I am an experienced web developer, I elected to move to a custom, HTML-based system, migrating my interview summaries and the twenty interview transcripts to two HTML documents. I recreated the core feature of NVivo – coding – in a simple, stripped back way, that allowed faster access using more familiar tools, without platform or licensing restrictions. I plan to release this code at a later date for others to use. I will refer to the tool as 'SQDA' – 'Simple Qualitative Data Analysis'.

Figure 4.9 on the next page shows the working environment. Sub-figure 'a' demonstrates an interview summary in which some elements have been colour-coded to show their position on an arbitrary *dislike strongly – like strongly* scale that is not in the final analysis. The 'People' button in the top left corner is a shortcut to the appropriate interview – all twenty are listed in order for easy scanning. The 'vol', 'opinion', 'place' and 'tags' dropdowns in the top navigation are the filtering functions for data traversal. These are shown unpacked in Sub-figure 'b', with the data currently filtered to only show things tagged 'control' (visible in the background).

Technical Description

HTML5 contains 'data attributes' which can then be manipulated using various JavaScript (jQuery³ specifically) plugins. Using Sublime Text 2⁴ (an advanced text editor) for data entry, Google Chrome with its very fast V8 JavaScript engine, and a browser auto-reload plugin⁵ to update the document on save, I made a flexible system with a very fast response time. Also, using Sublime Text 2 allowed me to use other 'tools of the trade' like regular expressions (highly advanced searching), advanced editing and highlighting, and the flexibility to write my own extra code as needed. Twitter Bootstrap⁶ was used for a basic theme, and jQuery Filterify⁷ for tag filtering. I used fire.app⁸ to provide basic Ruby

³<http://jquery.com/>

⁴<http://www.sublimetext.com/2>

⁵<http://livereload.com/>

⁶<http://getbootstrap.com/>

⁷<http://luis-almeida.github.io/filtrify/>

⁸<http://fireapp.kkbox.com/>

Person Profiles **People** ▼

vol ▼ opinion ▼ place ▼ tags ▼

- Doesn't use music for study.

13 Maggie

- Didn't take recorder on nights out
- Found the process "eye-opening"

13.1 Home

- Generally feels house is very noisy. Lives with mum, brother, sister, nephew. Makes it hard to work, always something going on (~150). Gets extra aggravated when she has a deadline coming up though (1505).
- Noticed the traffic noise in their house a lot more after doing fieldwork. Lives near a main road but doesn't normally notice it. Doesn't bother her though.
- Brother works nights, his bedroom is next door and he's so loud you can hear him snoring! Can't work in her room due to his noise (126). Everyone in the house complains about it (? not sure - check). Cat also snores — plagued by snorers! Family don't believe how bad the snoring is in her room though. "It can't be that bad!". Never tried recording it. Can't stand to listen to it for any period of time. Sister also snores.
- Works mostly from home, easier as doesn't have to go anywhere or get dressed.
- Feeling uncomfortable when nephew screaming, sister shouting, dog getting aggravated etc (140). Dog wearing cat collar and it wouldn't shut up — getting very annoyed. Took the bell off it was annoying her so much.
- Can hear neighbours talking all the time. Doesn't think the walls are necessarily thin, just that they are really loud (166). Doesn't really bother her, she just assumes she can hear them if the TV is off.
- Usually has TV on at home but turned it off when she had a good book (170). She is the only one that really watches it. Tends to have it on in the background. Watches tennis a lot. Doesn't play just loves following it. Hard to play on big courts, prefers playing badminton.
- Can hear footsteps at night when it's really quiet. When the TV is off you can hear everything.
- Really aware of own sound production at home. Doesn't feel like other people in the house are. "They don't get bothered by sounds like I do" (1278). Gets bothered by other people so tries to be as quiet as possible herself. Running joke because people can't hear her coming — they think she should wear a cat bell because she's so quiet. Scares people. Feels she has accidentally trained herself to do this.

(a) SQDA: view of an interview summary.

Person Profiles **People** ▼

vol ▼ opinion ▲ place ▼ tags ▲

- Has a lab pretty much for her own use, describes very closed off room, and restricted access. Nice and quiet at control of it (1172). "Nice to have your own little domain part of my PhD" (1176). Has flicked on the machines before hears certain things. Any slight change in background

8 Hugh

8.5 Music

- Likes listening to the world just as much as music, but would like it to sound a lot better know how much it changes over say, 10 years? Interested in how the sonic environment drains a lot out, and it's mostly cars that do it. Not that they should be phased out, but than they used to (1284). "You can hear people's anger in gestures and things like that moment, and that this is apparent in people's noise production.

9 Imogen

9.2 Work & Uni

- Used to work as a teacher in Dublin — not had an office job. School was across from a teacher. Doesn't feel she currently has control.

11 Kate

11.1 Home

- Gets more stressed at things she's not in control of — alarm etc (1355). Washing machine, dogs etc are fine. Neighbours dogs are annoying. Neighbours friends are annoying, stand in garden getting drunk and having loud conversations. "Just noise". No real coping strategy.
- Horrible noises at home are more oppressive as she feels entitled to the quiet enjoyment of home.

control +

Q Search

-1	0	ambivalence	0
-2	6	annoyance	3
0	0	appropriate	0
1	0	atmosphere	2
2	5	awareness	0
		bad-design	0
		cue	0
		design-bad	2
		design-good	2
		distraction	1
		distraction	0
		dj	0
		dog	0
		dog-walking	0
		earlids	1
		eavesdrop	0
		expectation	2
		expert	0
		headphones	0

(b) SQDA: showing various filter options. 'Control' is currently selected.

Figure 4.9 – SQDA: summary view


```

<p class="question used"><strong>INT:</strong> hm. So you like listening to an album as work of music rather than just ..music for the sake of it</p>
<p class="answer used"><strong>0:</strong> (talks over) yeah yeah I sort of, the older I get the more I appreciate that sort of thing really</p>
<p class="question used"><strong>INT:</strong> yeah yeah</p>
<p class="answer used"><strong>0:</strong> I'd like to sit down and listen to like a Doors album or something like that and listen to it in it's entirety but music is not like that naymore, it's not made, well it sells in that format but I don't think they put as much thought in to the process of putting the songs together in to an album, it's more like let's make ten tracks that's an album</p>
<p class="question"><strong>INT:</strong> hm</p>
<p class="answer"><strong>0:</strong> you know, whatever they are</p>
<p class="question"><strong>INT:</strong> yeah or like five Youtube videos</p>
<p class="answer"><strong>0:</strong> yeah exactly</p>

```

(a) SQDA: Interview markup denoting quotes which have been used with a *used* class assignment

```

233 <h3>
234 <a name="toc-Subsection-3.2">3.2</a> Work & Uni
235 </h3>
236 <ul>
237 <li data-place="library" data-tags="too-quiet" data-opinion="-2">
238 Gets to the library really early (see Transport). Staff will be cleaning, or doing book reorganization. It can be "eerily quiet" (¶158) in the older part of the library where she works, it's quite grand and feels odd to be there alone, only very occasional noise. Feels very odd there's nothing happening. Feels out of place. Notices all the tiny noises (¶438). Moving around big volumes makes a lot of noise.
239 </li>
240 <li data-tags="control, too-quiet, music, preference">
241 Works at home in a study room and needs a controlled environment (¶210). Never works in postgrad office, too many people now and no-one really likes talking. Postgrad office changed, used to be an office and now is a computer cluster. Used to be a relaxed place people would go to work and chat. Now it's kind of oddly quiet. Likes having own music on and a controlled environment.
242 </li>
243 <li data-place="library" data-tags="" data-opinion="0">
244 Works in the library sometimes when she needs easy access to books, seems to work harder in the library. Does more solid hours at uni.
245 </li>
246 <li data-tags="music">
247 Works outside sometimes, and won't have music as there's a lot going on. If they're having a BBQ they will always have music on by contrast (¶355).
248 </li>
249 <li data-tags="loneliness, preference">
250 When at uni, likes working with other people nearby on different things. Likes the reassurance someone else is there (¶459). Likes the change, and the potential for coffee break chats. Gets very conscious of the amount of time she spends alone. Has to be the right person though, who wants breaks as often as you (¶547) or else it's too distracting.
251 </li>
252 <li data-tags="">
253 Generally won't notice own sound production unless it's really quiet (¶499).
254 </li>
255

```

(b) Summary markup showing *data-** attributes

Figure 4.10 – SQDA: markup examples

templating and a local, portable webserver, allowing me to work on different computers, and synchronise the whole application with Dropbox.

In Practice

Figure 4.10 shows examples of the markup. In the top example, the interviews use simple `.question` and `.answer` classes to semantically markup the data. `.used` classes are added to keep track of interview sections that have already been copied into the thesis. The bottom example shows how the `data-*` attributes are used in practice. These can

```

li[data-opinion="2"]
  color: blue
li[data-opinion="1"]
  color: lightblue
li[data-opinion="-1"]
  color: orange
li[data-opinion="-2"]
  color: red
.used
  background-color: rgba(0,0,128,0.1)
.used2
  background-color: rgba(0,0,128,0.2)
.used3
  background-color: rgba(0,0,128,0.4)

p.question
  font-weight: bold

```

Figure 4.11 – SQDA: SASS markup showing ease of adaptation

be added or removed at will, and are comma-separated. The filter plugin then accesses these in order to hide things which do not have that attribute. Some jQuery helpers add line numbers and hide subheadings in which everything is hidden.

Various colour-coding was used on an *ad-hoc* basis. This was done using SASS⁹, a CSS pre-processor that allows for clean, semantic code, as seen in Figure 4.11. The top `li[data-*` elements denote colour coding for an arbitrary opinion axis. The bottom `.used` codes are increasingly opaque shades of blue (the last `rgba` value is opacity) to denote used interview sections – the output of this is shown in Figure 4.12 on the following page.

Both interview summaries and the overall transcripts were parsed using regular expressions (regex) when the need arose. Figure 4.13 on the next page shows an example of a regex search for the string `\s(bus(es)?|cars?|traffic|road)\s` for example. This will return any string that matches, in this order:

1. A space
2. Any of the following:

⁹<http://sass-lang.com/>

Person Profiles People ▾

12 I: Yeah it's just I didn't really I don't know, private conversations and things like that I suppose, and yeah, I just didn't want to I suppose, I just found it easier to record sounds, and I think I just um, I just became aware of how many different sounds out there that really annoyed me. So I don't know if this is going to descend into a rant! But no no, just just the difference...

13 INT: **Well if there's anything you want to rant about before you start that's fine.**

14 I: No it's fine. Yeah um there's just in, a lot of different sounds just in, I suppose because I came to Manchester and before that I lived in Dublin in a relatively quiet place I just became quite aware of how noisy Manchester is or where I am, I'm off Oxford road so it's quite a noisy place.

15 INT: **Do you prefer Dublin then, in that respect?**

16 I: Uh, yeah yeah, uh, I suppose yeah, uh it's it's a lot to do with the area I'm in in Manchester, I think that because I was in kind of a quieter suburban place in Dublin it was really really quiet, and a lot of people when they were coming to my house in Dublin would kind of notice how quiet it was so and then I'm from the countryside originally so then that's quieter again so then now I've kind of, I've kind of come to Manchester and Oxford road is I'm finding quite a noisy place, and my building as well is very noisy.

17 INT: **So you're in a flat or something literally on Oxford road ?**

18 I: Just off, yeah, just off Oxford Road.

19 INT: **Yeah**

20 I: And there's a bar on the ground floor. That gets pretty noisy and then like I'm near a hospital so there's like ambulances going a lot of the time and there's a construction site across the road too so yeah it's. Uh. It's a good location I suppose!

21 INT: **Yeah.**

22 I: You just become, because as well I've gone from a situation where I was working to becoming a student again, I think you're kind of working on your lap top a lot more and just kind of doing work on your own I suppose a lot more so you kind of become a lot more aware cos you're trying to concentrate all the time. Not all the time, some of the time, um and yeah, when you're trying to concentrate, these kind of noises tend to intrude.

23 INT: **Do you prefer working in an office as opposed to at home, or is it more that the noise annoys you?**

24 I: Um, I ...I never worked in an office, I was a teacher so I suppose.

25 INT: **Ok.**

26 I: I was a teacher right in the centre of Dublin but it was stull quieter. Cos our school was across from a park um but uh... I suppose, yeah I like more sounds that I can control I guess, so if it's music or that kind of thing., that's better it's just that I don't have a lot of control over a lot of the sounds now that are around me so..

27 INT: **Yeah yeah cool. So the main thing that's missing off this is kind of the conversation with friends and stuff like that.**

Figure 4.12 – SQDA: view of an interview transcript. Quotes which have been used are highlighted.

```

1224 <p class="question"><strong>INT:</strong> Yeah, so specifically at this time of the day
you don't like it as well.</p>
1225 <p class="answer"><strong>C:</strong> Um, yeah yeah, I kind of try to travel when it's
a bit quieter, um that's why I always come in for 8 o'clock, like set off at half 7 in
the morning, and then usually go home around 4 so you miss the school traffic but
you've not got the um you know the kind of work traffic, so...</p>
1226 <p class="question"><strong>INT:</strong> Yeah you put children on here, do you not
like children?</p>
1227 <p class="answer"><strong>C:</strong> Yeah there was actually quite, no it was just
quite a big school group was out, like a primary school group of about 20 you know
kids, and the teachers so it was you know kind of monopolising stuff that was happening
on the bus.</p>
1228 <p class="question"><strong>INT:</strong> Is it one of those ones where the bus stops,
and then an entire school group gets on?</p>
1229 <p class="answer"><strong>C:</strong> Yeah that's what happened yeah, it was...</p>
1230 <p class="question"><strong>INT:</strong> (laughs) </p>
1231 <p class="answer"><strong>C:</strong> ...really bizarre. </p>
1232 <p class="question"><strong>INT:</strong> Yeah ok, let's have a look at the next one.</p>

```

Find Find Prev Find All

15 of 334 matches Tab Size: 2 HTML

Figure 4.13 – SQDA: Use of regular expressions to do complex searches

- (a) 'bus' or 'buses'
- (b) 'car' or 'cars'
- (c) 'traffic'
- (d) 'road'

3. Another space

Bookending the search string with spaces like this prevents the search from returning unwanted, common hits like 'card' or 'busy' for example. This example could be improved: for instance replacing the last `\s` with `(\s\.)?` would also return hits ending with a fullstop, or closing paragraph tag. In Figure 4.13 on the preceding page, the white border around ' bus ' indicates the next 'find' keystroke will cycle to that word – making searching very quick.

While this solution wouldn't be suitable for everyone, the speed, simplicity (for me), and customisation paid dividends for fast and effective editing, coding, and theorising. As a platform, web browsers and tools are highly advanced. For example, I was able to add in extra features such as paragraph numbering and change the layout at will as my needs changed. Chrome and its JavaScript engine are extremely fast and could search the entirety of my interview transcripts instantly – a vast improvement on NVivo's sometimes five-second response time for every search or view change.

The ideal end-product for this would be if Chrome allowed local file saving. This would allow use of the browser as both limited editor and browser, whereas at the moment making substantive changes to the document requires the use of a separate program. This feature is not currently implemented, however.

Taking us back to the research at hand, this stage of data processing resulted in setting the stage for an analysis breakthrough. It resulted in creating access to code and category labelling via fast data traversal that was impossible or impractical using NVivo or Word. The process of creating data manipulation tools also resulted in the summary process, which in broad terms outlined listener profiles.

4.7 Wave 4: Code breakdown and identification of axes.

With the data in an easily usable format, I then started coding and attempting to identify key categories and axes. Various iterations of tagging interview summaries were attempted, some examples of this are shown in Figure 4.14 on the next page. This stage started to raise an enormous amount of questions, with existing soundscape models failing to help me make sense of the data. The third iteration is the starting point of the *analysis* chapter. There were ample descriptions of ‘too loud’ and ‘too quiet’ environments, which I placed on an arbitrary ‘perceived loudness’ axis. However, this didn’t hold up as an axis at all, but more of a binary state. This insight then resulted in a reevaluation of *what it even takes to notice* a sound environment, as will be shown in the next chapter.

At this point I also started to map out interesting concepts and key categories (Figure 4.15 on page 132), with enough success to start seeing the bigger research picture. For example, the interesting and varied data around ‘libraries’ proved to be a perfect case study of reactions to ‘work’ environments. ‘Roads’ proved to be largely ignored, and therefore a good way of investigating *indifference*. An early concept of a ‘tolerance threshold’ emerged, with different categories for ‘good’ and ‘bad’ soundscapes. ‘Volume’, when reported, always seemed to be *too loud* or *too quiet*, with intermediates never mentioned. In short: things were taking shape. The overload of concepts from fieldwork finally seemed to be fitting into some kind of order. With a strong framework to develop, progress came much more quickly.

<i>First Iteration</i>		<i>Second Iteration</i>	
loneliness	combating loneliness	expectation	expectation of soundscape not met
sanctuary	feeling of sanctuary	design-bad	places with bad acoustic design
control	feelings of control over a space	design-good	places with good acoustic design
atmosphere	“atmosphere” of spaces – melange	other-people	comparisons to what other people make of space
music	different music for different tasks	eavesdrop	listening to other people
routine	aural routine or routine changes around noise	noise	definitions of noise
earlids	when people can “switch off” or dishearken	quiet	definitions of quiet
politics	aural politics and conflict resolution	too-quiet	spaces that are too quiet
annoyance	sound annoyance	too-loud	spaces that are too noisy
transition	moving between places	intrusion	annoyances intruding on space
library	libraries and expectations thereof	<i>Axes?</i>	
worship	religious buildings and experiences therein	arousal	
		saliance	
		volume/loudness	
		comfort	
		appropriateness/expectation	
		control/conflict resolution	
		dishearkening competency	
		effect of childhood/family situation	
<i>Third Iteration</i>			
heightened	heightened awareness from doing fieldwork		
own-production	sounds they produce		
appropriate	appropriate space for the task		
dog-walking	–		
preference	places they actively like for sound reasons		
distaction	sounds that distract them from what they’re doing		
cue	aural cues		
memory	sonic memory or nostalgia		
struggle	sound environments they struggle to cope in		
expert	examples of expert listening		
music-performance	with a person playing some kind of music		

Figure 4.14 – Sample of Wave 4 coding process iterations

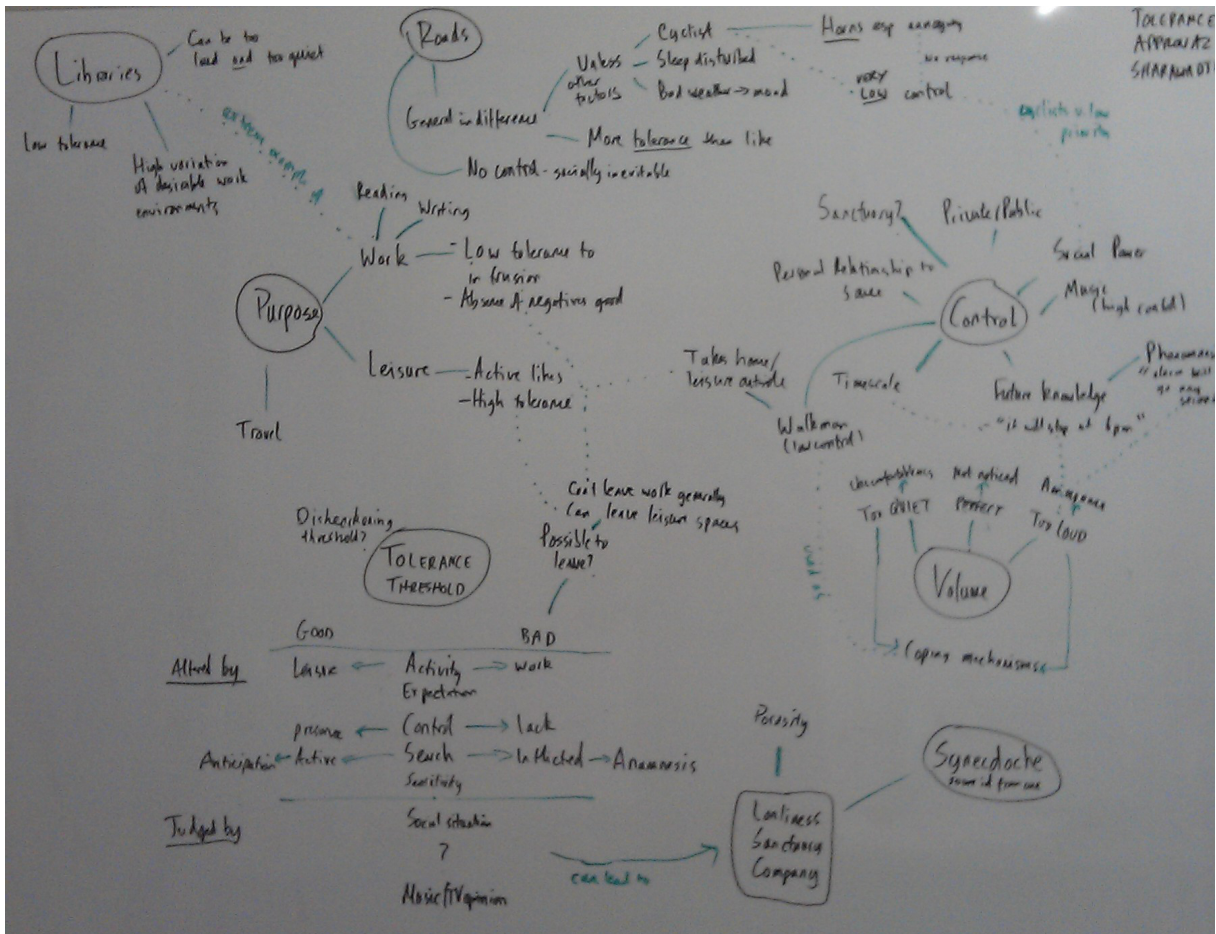


Figure 4.15 – Early mindmapping

4.8 Wave 5: Re-evaluation of data within emergent theories

This mindmap was, again, iterated and compared with responses from the data, shown in 4.16 on the next page. This process was done using a graph editor called yEd, which allowed quick rearrangement, redrawing of connective arrows, and colour coding of various blocks. ‘Tolerance threshold’ became ‘noticing threshold’, to avoid the pejorative connotations of the word ‘tolerance’. This is very close to the final findings in the next chapter. At this stage, I went back to the interview data directly, using regex searches and cross-references from the interview summaries to test each claim and the usefulness of each category.

With this framework in place, the next iterations formed the *Analysis* chapter, which follows. Hopefully this chapter has given the reader an insight into the GT process in the context of my research, and demonstrated the usefulness of the approach in general. I have shown the alternating phases of creativity and methodical search, and hope that the process can be further iterated, tested, and developed as a soundscape methodology.

Chapter 5

Analysis

Explaining the findings of the study from this point forward is non-linear – they are not presented in chronological order, but “story” order. I will walk through the steps I took, and explain some of the pitfalls along the way.

My research path almost begins at the end. One of the constant oversights in my research was ironically one of my biggest critiques of other research, but it took nearly until the end of the process to notice. The idea that *people care about the soundscape*, or even *notice it unbidden*, is a large presumption. Research discussed in my literature review as a rule did not test for this, and equally did not check (or even mention) if listeners were using walkmen.

In my own research design, I encouraged people to record environments they were in a lot, but there was still a high degree of confusion about *why I would even care* about these locations, with most participants initially struggling with the seemingly (in my view) mundane brief. Also, only after the first three interviews did it occur to me that *people were using their walkmen* in many of the spaces they faithfully recorded. It took until the end of the process to realise that I wasn't taking people's *lack of opinion* seriously enough, and while it's a fine balance between pushing someone to elucidate and accepting an absence of opinion, I am concerned that avoiding the latter is nigh on impossible, but

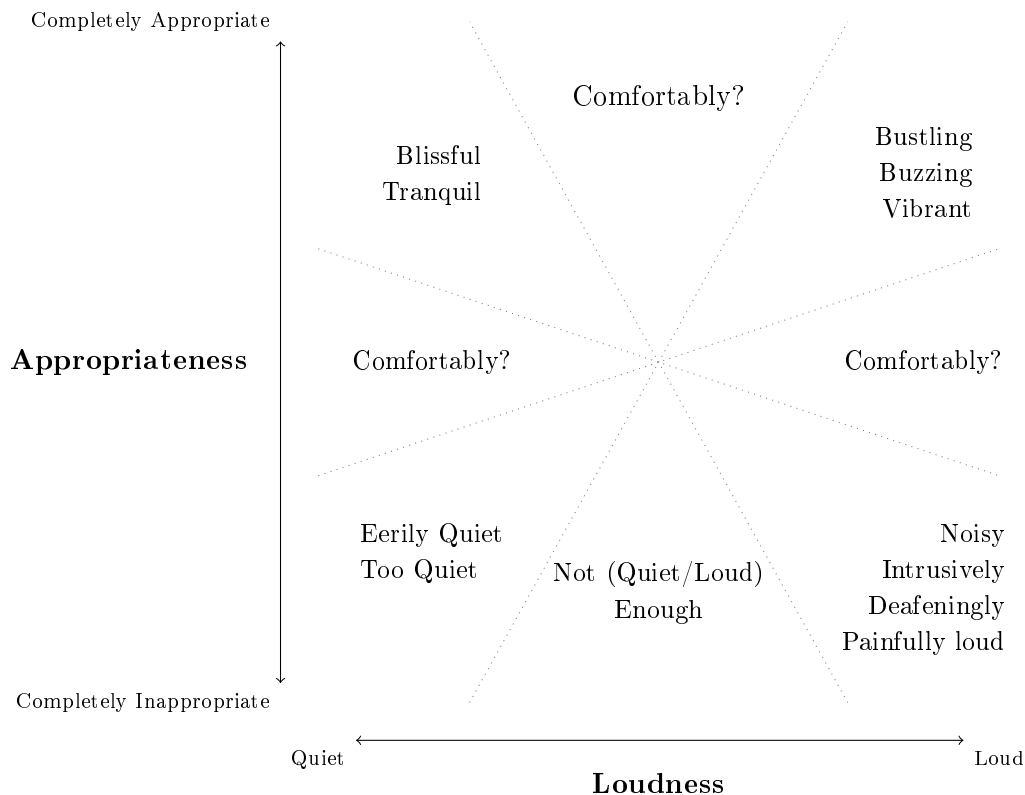


Figure 5.1 – *Loudness vs. Appropriateness* Quandary

nevertheless an essential part of getting to grips with soundscape response.

As might be expected, it took longer than I would have liked to come to this realisation. My first insight into this was when conducting a mapping exercise, to see if there is a relationship between annoyance and loudness. The result was a sketch that produced more questions than it answered: see Figure 5.1. I attempted to fill in the words used to describe the intersections on the following chart, and imagine what kinds of sounds fit into the categories.

Loudness and *Appropriateness* are fairly reasonable axes for attempting to map out the dimensions of unwanted or wanted noises, these could just as easily be *Arousal* and *Valance* to use a more technical language: something I am trying to avoid in this thesis. But a lot doesn't really add up here.

1. There is a significant lack of vocabulary. The middle points on both axes don't really have associated collocations. There seem to be no words to describe environments

which are simply *unremarkably loud* or *semantically neutral*. Even stranger, there are very few words people use to refer to things being *loud but good* or *quiet but good*. Indeed, most of the language is highly pejorative, and we have to look to technical or acoustics language to find ways to describe these sounds.

2. What *is* the middle point of the *Loudness* axis? Is there such a thing as a sound being neither “too” loud or “too” quiet, but merely “appropriate”, or are positive sounds always simply the “correct” loudness, with “too...” applied if it is incorrect for the circumstances?
3. Is “appropriateness” an axis, or simply a binary state, with regard to the soundscape? Can something be “slightly” appropriate: or is it simply appropriate, or not?

From this flawed graph then, comes a number of observations.

1. It seems probable loudness is only perceived if soundscapes are too loud or too quiet. Otherwise, it’s just unnoticed, appropriate, neutral. What constitutes too loud or too quiet then?
2. It’s worth querying the use of axes in mapping out sound response. Are concepts such as *loudness*, *appropriateness*, *arousal* and other common scales true *scales*, binary states, or something else? This has the potential to be an excellent interdisciplinary research question.
3. How can something be analysed by accessing verbal data where there is a severe lack of vocabulary to explain the concept? Indeed, collocations of “loud” and “quiet” are significantly lacking, with almost all pejorative collocations in the former case, and ones relating to peacefulness in the latter case.

Returning to our initial question: “*what is noticed unbidden?*” then, there was a large amount of sound spaces in my fieldwork that elicited a response when prompted, but when I asked “would you notice this without the fieldwork process”, the answer was often,

“no”, or a variation thereof. As Hyams (2004) points out, “researchers as facilitators of [...] discussions unwittingly valorize speech over silence, and consequently, overlook or underhear the silences themselves”. Responses like these were common:

INT: Did [doing the fieldwork] change how you think about [the soundscape] or is there anything particularly noteworthy that you were like “I never noticed this”?

Brian: Uh, tapping of shoes was like a major one, but not like going into specifics really. There was um, there was little things that you sort of just miss, you’re not really [...] sort of programmed to hear it.

—

Andrew: Sometimes I feel like I’m walking through water, sometimes I don’t, sometimes I feel a bit oblivious to everything that’s going on. [When I] walk outside and I’m like “whoosh!”, I notice the transition, but I’m just a bit like overwhelmed by it all [...] so I think in that situation, like I’m a bit kind of lost and don’t notice much.

—

INT: You’re really aware of the wind and the trees and stuff like that, yeah? Is it something you notice a lot generally?

Tahir: Uh I guess, but I was more aware of because I had to record this stuff, yeah.

The participants who reflected on the log book entries often noticed things they hadn’t considered before, although this could be seen as true for any process of routine note taking:

INT: What kind of things did you notice when you went back through [the log book]?

Tahir: Um, I don’t know. Basically sounds around me would affect my mood quite strongly which I, I didn’t consider before.

Some participants found that reporting on negative sounds was easier than positive ones, and that the spaces which were judged to be positive were often not judged such for their sound, but for social factors:

INT: [You didn't] really [notice] things you *did* like?

Daniel: (laughs) It'll maybe take something more to, take something more to, to register on my level of you know, that's actually quite an interesting question that one... may-maybe there's just, maybe the things that are annoying are easy to pick out and put into a document? Obviously, you know, the company of friends and the interactions with people are always good, always brighten up the day, you know?

Aside from this, the second biggest oversight of my initial pilot was checking for walkman use. Participants would faithfully and accurately fill out the information about their sound environment, but fail to note that they would always be wearing a walkman in that location. Indeed, it seems clear from my fieldwork interviews that *people do not often consciously notice the soundscape*, and while, of course, it can demonstrably have subconscious effects, it seems dishonest to suggest that people *do* care about these spaces without further evidence.

Claire was the first case of this, my third participant. An avid music-listener, she reported faithfully her acoustic surroundings; only at the end of the interview did we discuss walkman use, which was unsurprisingly in the spaces she didn't like. Francesca faithfully reported the sounds in a public park, but would not have noticed the geese and other factors if not for the fieldwork, as she uses a walkman in the space. As mentioned, I have never seen a soundscape research paper that reports a public space which has factored this in.

To summarise: it's important to analyse what makes a soundscape *noticed* in the first place, what factors affect noticing, and how the listener's individual soundscape preferences and demographic factors feature into this. As I will demonstrate, when the soundscape *is* noticed, the response breaks down into one of four categories, based on *like or dislike* and *loud or quiet* – I argue that *noticed* soundscapes are (almost) always in one of these four quadrants. Negatively appraised soundscapes can then be modified by certain *coping mechanisms*, to raise the noticing threshold, circumventing the disliked

soundscape. An outline of this chapter, and my overall listening model, is presented in Figure 5.2 on the next page.

5.1 Noticing threshold ('bottom-up')

Davies et al. (2013, p227) suggest that three key questions for soundscape research are: “1) How is a soundscape evaluated as positive or negative? 2) How does a soundscape affect behaviour and psychological response? 3) What is a positive soundscape?”. I am adding a fourth: *when is the soundscape even noticed?* My primary category then, before analysing soundscapes directly, is *noticing*. How and when do people notice the soundscape? After a soundscape is noticed, is it actively perceived? How do these and other factors affect active soundscape perception?

Referring back to my quandary in Figure 5.1 on page 136, and after a critical re-reading of my interview data, the most dominant emergent theme in my categories could be described as a *noticing threshold*, below which the soundscape is not a conscious element in listeners’ cognitive processing of their environments. Each of these factors’ primary concepts revolved around if sounds were even noticed, before other factors came into account. The primary categories affecting noticing threshold theory are *activity*, *expectation*, *control*, *search*, *comfort* and *sensitivity*.

Activity refers to the function of the place in question. This falls into one of three broad categories: work, leisure, and travel. This is an increasingly acknowledged semantic factor in soundscapes research; for example, Cain et al. (2013) suggest “it is also necessary to consider the context of the soundscape, rather than simply evaluating its different acoustical qualities”.

Expectation refers to the listener’s previous experiences in this space: in other words, the baseline of normality. A steam blast wouldn’t seem out of place in a café, but it

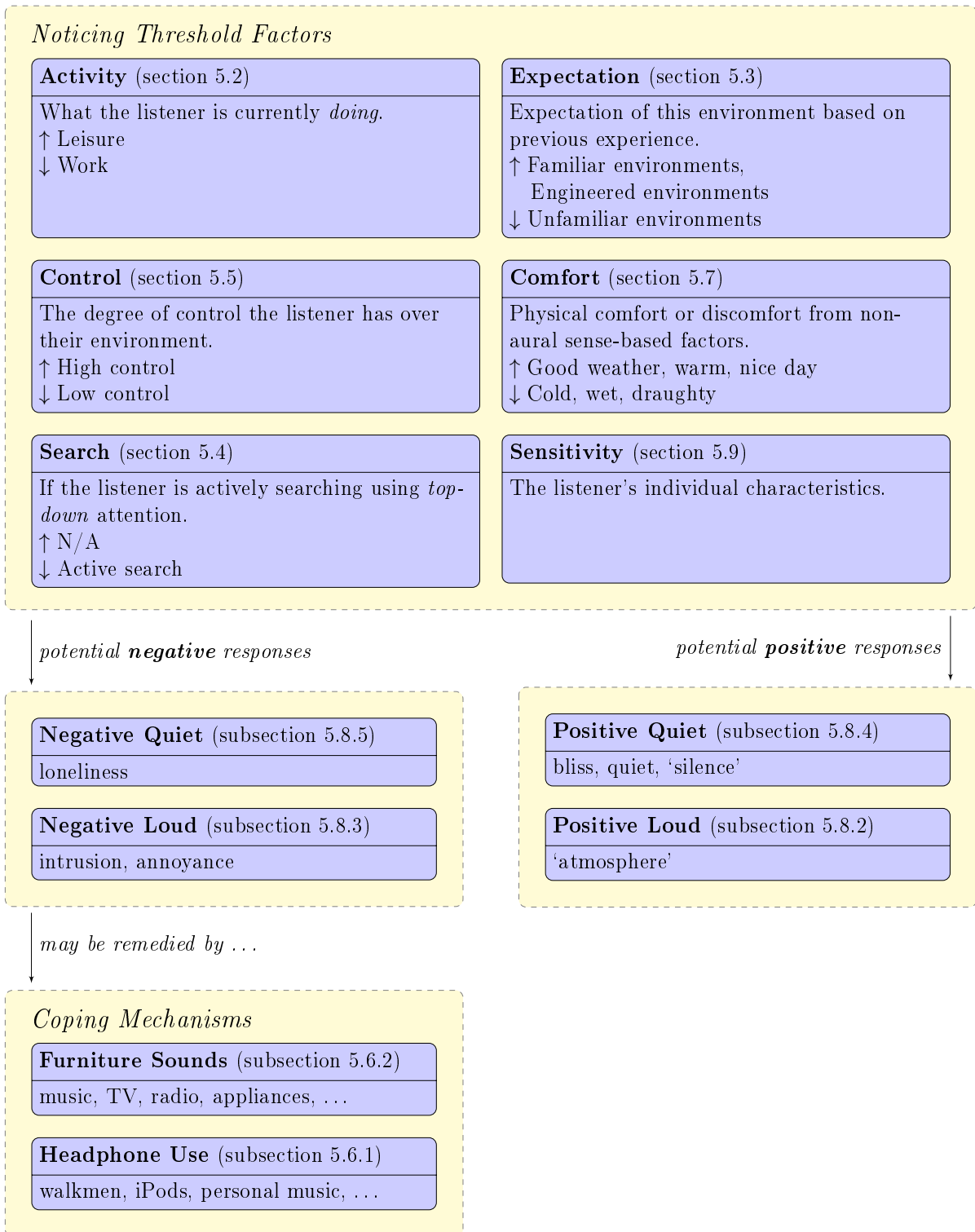


Figure 5.2 – Noticing threshold listening model and chapter outline

would in a library. Again this has precedent: Bruce et al. (2009a) state “when [an unexpected factor] conflicts with a perceived place expectation, then the soundscape is rated less favourably.”

Control refers to the listener’s degree of social, financial, physical, or cultural control over the space in question. This is heavily explored in sociological and anthropological literature. Chuengsatiansup (1999) points out that “the sounds of a blasting motorcycle, drunkards, quarrelling neighbours, and machines eating up the forest, all are embodied symbols of human relations [...] saturated with the sense of defencelessness and vulnerability”.

Comfort is closely related to control, but refers to a person’s feeling of well-being and ease in a place and other factors such as weather and temperature. The interplay of the senses is in little doubt, especially given “there is little evidence that the recognition of senses as a category, in particular of a group of five senses, is a widespread conceptualisation outside Europe and Asia” (Goody, 2002). This category acts as a catch-all for non-sound stimuli.

Search is the active process of anticipating a specific sound (a flight announcement, a concert). The opposite effect is a listener feeling as if sounds have been inflicted on them (ambulance siren, baby crying); at most stages listeners are somewhere between these poles for specific sounds. This is the area most suited to a source based analysis: well documented in acoustics literature as ‘top-down’ attention (Spence and Santangelo, 2010).

Sensitivity refers to the listener’s personal preferences and social conditioning – do they prefer to be around people, or alone? Are they easily annoyed, do they play an instrument, or work as a music producer or architect? Are they a tourist, ‘expert’ listener, and what was their listening context as a child? This is perhaps the category least studied by location-based research, which seeks to find the response of the ‘average’ listener, and is uninterested in inter-listener difference.

Retrospectively, my findings have been a good fit with the *top-down* versus *bottom-up* model of auditory attention.

The top-down mechanism focuses processing resources on the auditory information that is most relevant for the current goal-directed behaviour of the listener. [...] The bottom-up mechanism selectively gates incoming auditory information, enhancing responses to stimuli that are conspicuous. (De Coensel and Botteldooren, 2010)

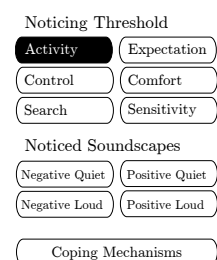
Five of these six categories are primarily related to *bottom-up* hearing, the exception being *search*. The majority of this chapter then is focussed on the ways and means people alter and ‘gate’ their bottom-up experience, and will argue that this is far from a simple process.

These areas are inter-related. As well as noticing threshold factors, they are also factors in evaluating soundscapes that *are* noticed. Broadly speaking, once a soundscape *is* noticed, it is judged positively or negatively, and as loud or quiet. This is discussed in detail in Section 5.8 on page 224. I’ll go through each of these initial categories, and describe how they have an effect as both *threshold adjusters* and *opinion modifiers* in their own right.

5.2 Activity

A primary category of noticing is based on the *activity* the listener is engaged in. *What* a person is doing in a space is a crucial factor in unpacking their soundscape response. For instance, if someone is at home they may be working or watching TV, if they are in a library they may be a member of staff, a student, or a cleaner. All these drastically change expectations of a space, and noticing thresholds of

the people within. Activity is strongly tied to *location* however, and it is difficult to pick apart a person’s response to a place, and response to the activity. Some places are limited primarily to one activity – an office or a lab for example. However, less clearly defined places have more complex associations and meanings. For example, if a person works at



home a lot, they may become aware of noise annoyances or develop higher intolerance of noisy neighbours that persist when they are not working. If a person becomes comfortable in a café or bar, that may become somewhere they then enjoy working.

To reiterate, there are very strong links between environments, and the activities that take place within. That said, *activity* seems to be a key factor from which other responses stem. There is a significant lack of soundscape papers specifically examining the activity of the listener. Cain et al. (2008) suggest that one way to approach positive soundscapes is “to identify which demographic groups use a particular space; to identify what activities occur there and consequently the listening states of the users”. Therefore a direct correlation is suggested between *activity* and *listening state*, although this is not empirically verified in the paper.

However, this paper, as with the vast majority of soundscape research seems unwilling or unable to take the final step to following the listener, rather than evaluating a space. Cain et al. go on to focus entirely on locations, suggesting measuring the times and activities different demographics spend in a space will give more in-depth clues to the preferences of listeners within. I argue that this is a fundamentally back-to-front approach, and that the most efficient and straightforward way to analyse listener preferences is simply to ask the listeners where they care about. Without abandoning the analysis of space over people, I argue it’s impossible, or very difficult, to discover which environments people really care about in the first place.

This category was the first to emerge from the fieldwork data, after attempts to code by source description failed. It was initially noticed because people generally seemed to have much fewer complaints about their home environments than work, and would talk about home being a sanctuary, where sounds which others found annoying they barely noticed. This category was initially called *location*, but was changed to *activity* as it became apparent that the task at hand was the key concept, not the location itself – people work at home, for example, and tend to then judge the space along work criteria. This does lead to some confusion though, as home is still generally judged positively –

this is the main crossover with *expectation* and *control*, which follow.

Given the inter-relatedness of all these factors, this section will touch upon a lot of themes which will be analysed in more detail later on in the chapter.

5.2.1 Work

With a postgraduate participant group, the ‘work’ category can be somewhat hard to define, with regard to the locations used for work. While this complicates the results somewhat, the freedom postgraduates have to choose their work environment gives rise to a large diversity of work spaces and places, with most participants being highly articulate as to their choices of environment.

The most numerous themes for work environments revolved around ideas of *concentration* and *distraction*. The majority of these concerned sound events breaking concentration, hindering work, or otherwise causing annoyance. Generally this led to a lack of focus, and in some cases resulted in low-level workplace feuds.

Individuals had very specific work environments they liked to work in, and were intolerant of perceived aural intrusions into these spaces. Generalising all the interview responses in this category, in work environments, people rarely mentioned sounds and soundscapes they actually liked, and preferred work environments seemed to stem from the absence of a negative, rather than the presence of a positive. Good work environments were therefore not necessarily quiet, but just free of specific annoyances the listener didn’t like. Most people had a secondary, more comfortable, louder place of work like a café that they preferred to work in. Finally, a small number of people had the option to use music at work, which invariably made it a more pleasant experience.

Broadly speaking there were three categories of work soundscape preferences, although these varied based on the activity taking place.

Desire for quiet — lack of distraction — removal of annoyances

Most participants' ideal work soundscape was achieved through the removal of perceived negatives, rather than the presence of positives. These negatives could be anything from single sources to general feelings about people or populations in the workplace. There was a large variance in the amount participants discussed annoyance, but every participant at least mentioned it. Generally speaking, people who talked less about annoyance seemed to have a variety of coping mechanisms (more on this in Figure 5.6 on page 199), and those who talked more about either thought about sound as part of their course (two visual anthropologists who work heavily with sound), or used careful listening to diagnose equipment failure (a lab-based biologist).

Elizabeth: I think the [florescent lighting] tube needs changing, uh that is actually really irritating, very distracting so, I'm actually going to have to ask somebody to come and have a look at that cos I'm not going to get any work done.

—

Gloria: I tend to not listen to things when I'm working on the PhD cos [if] it's Radio 4 I get pulled in to listening rather than working, concentrating on what I'm doing.

—

Imogen: There's a bar on the ground floor. That gets pretty noisy and then like I'm near a hospital so there's like ambulances going a lot of the time and there's a construction site across the road too so yeah [...] Some of the time [...] when you're trying to concentrate, these kind of noises tend to intrude.

Most participants would specifically attempt to pick work spaces that met their soundscape needs, to avoid the kinds of sounds mentioned above. This could mean they found home too noisy, and worked in a library as that was perceived to be quiet (Brian), or that they couldn't work in a library as the small intrusions in an otherwise quiet environment were too distracting (Claire), or that they'd end up constantly complaining about their sound environment in lieu of being able to change it (Elizabeth). Being distracted by a

single sound source was a common occurrence – “when there’s one specific voice or one specific soundtrack going on, I can’t write” (Andrew).

This is an area where participants became more aware of noise annoyance after doing the sound diary fieldwork. Francesca for example got intensely frustrated by an escalator she hadn’t previously noticed. Other participants (most notably Brian) had similar reactions to recording previously perceived “quiet” or “silent” environments, retrospectively realising the number of sounds actually present. There was no particular consistency here either, with various people seeing mechanical hum as either intensely off-putting (Francesca) or completely irrelevant (Elizabeth), and human talking as background babble (Andrew), welcome and necessary (Claire), or intense distraction (Brian).

Both ideal environments and coping mechanisms were discussed, however. Most important was a feeling of control over the sound environment, or some kind of personal space they could retreat, to escape the unwanted noises of work. This supports Lam and Chan (2008) who show that a closable window, or a quieter part of the house has a similar effect on perceptions of noise annoyance – a degree of control results in a disproportionate removal of annoyance. Several participants either had access to quiet environments at home, or work. For some people there was a noisy home environment (Brian, Elizabeth) and work was a welcome retreat. For some, work was a noisy environment (Claire, Gloria) and they did most of their work from home as it was perceived as a quiet, calm environment, but most of all one they were in control of.

Therefore: participants expect silence, find it not to exist, and then get frustrated as a result. Francesca found that quiet environments could in fact be *more* annoying than loud ones, as small sounds intrude much much quickly.

Francesca: So if someone drops a pencil, then you’re like, “a pencil’s been dropped!”, whereas on Blue 1 in the library, there’s a constant hive of activity you know, and I work best with that because then if someone drops a pencil you’re not going to notice it, cos it’s kind of in the background. [...] I can’t really work at home just cos there’s too many distractions.

The few positive experiences of quiet work sound environments correlate with a degree of control, feeling of ownership, or having another workplace to retreat to. Elizabeth had a noisy office she disliked, a communal lab that she generally found distracting but OK, but best of all – her own personal sanctuary, a lab almost entirely for her own use.

Elizabeth: It's generally a nice quiet room which is good because the set up for when we're actually like dissecting the tissue [...] it's delicate work and you kind of need to be able to concentrate, if somebody comes in I do generally say to them "can you please, can you come back in about half an hour because I can't talk to you now?". I need, I need to be able to concentrate because you put scissors through the tissue and that's it basically [...] it's nice to have my own little room to set things up and not be bothered by anybody else going "Ooh what you doing?"

INT: Is it somewhere you feel kind of in control of?

Elizabeth: Yup, definitely. Cos it's, it's, nobody else needs to go in there so it's nice to have your own little domain uh, where I know I can go and not be sort of, bothered by other people.

These stories are repeated in different ways – an expectation of silence in a work context makes it frustrating and distracting if it's noisy – and as we know, there's no such thing as silence. A quiet environment, or an environment the listener feels in control of, is where the main perceptions of approval lie. Very few people had sounds in their primary workplace they actually *liked* – and often the sounds they disliked were repetitive and ongoing, but not necessarily acoustically loud. Sensitivity was often linked heavily to the exact task at hand, with preferences for different environmental conditions for *writing* and *reading* being the most common.

INT: Do you work in a lot of different places then?

Quentin: I think it depends on the kind of work I'm doing, generally if I'm writing I'd prefer it to be quiet, I'd need it to be a little more concentrated so I'll tend to work just at home. We've got a spare room at home with my PC set up in, I tend to just work there um if I'm doing coding, I can work anywhere cos it's the same as with the telly, I can just dip in and dip out of it. I don't need to pay too much attention and sometimes it's nice to, to take

little breaks from it instead of just focusing on it all the time cos it's... as you're trying to work out with the coding that I do you're trying to work out like little, there's lots of little steps so you just work on a step, you get that done, then you can take a little break or you can have a look around.

In this extract, Quentin describes how he picks his workplace to fit the activity. In the case of (computer) coding, this activity is lots of small chunks of high concentration, between which he likes getting distracted and having breaks. For writing, he prefers a quiet environment, which he feels facilitates higher concentration over a longer period of time. While he could code at university, for him writing requires the perceived quiet of home. As mentioned at the start of this chapter, this is one of the areas where the *activity* and *location* start to get confused – is his home actually quieter than university, or is his perception of the comfort and control he has at home the main factor here?

The major analytical problem here is use of walkmen and music in work environments. Some listeners simply used a walkman or music where their work environment wasn't conducive to concentration. While others would change environments for different tasks (such as home or university in Quentin's example), using music was often just as effective in creating the kind of desired insulation the listener wants from the outside world.

Pablo: I need sounds to concentrate on some reading, you know reading things sometimes requires this. But most of the time I can do my activities, you know, writing or reading on Excel or some medical thing, with music. I prefer to [feel] like I'm [insulated] from the environment, like I'm doing what I'm doing and there is this noise here which is music that I like.

—

Oliver: Really depends on the task I've got. If I've got some computer models to make and I'm just at the stage where I've built them all, I've done all the hard stuff and I need to print them and do some graphs then you know, and export some graphs to a folder yeah, I'm well happy to listen to music. If I've got to read a paper which is very technical and I couldn't you know, I have to read it paragraph by paragraph and really think about it, then I'd like to have complete silence.

There are several themes in this section which will have further analyses in later sections; this analysis is a series of interlocking pieces, so it is difficult to have a single starting point. For example, using music as a work tool is covered in depth in *Coping Mechanisms* in Section 5.6 on page 199. Selecting and establishing comfortable work places is discussed in *Establishing Normality* in Subsection 5.3.1 on page 172. Modifying environments to make them more sonically desirable is covered in *Engineering Normality* in Subsection 5.3.2 on page 176.

Alternate, loud, secondary places for work

Several participants used a noisy, busy environment for certain types of work such as a bar, pub or café. Andrew was lucid here, and in a very similar way to Francesca, he does specific types of work in different places. These places were generally either busy public places, or busy workplaces where people could work with or around others.

Andrew: Yeah, drawing I don't find noise distracting at all. Writing I find it very distracting. But it's funny, when music's, when it's kind of at a level, and when there's a lot of different noises going on, [...] I don't find noise distracting at all. When I've got one like, thing going on like, I couldn't work with music on in here. But, I can work with, and I can draw with anything on. But if there's like a hubbub, I can do anything, I can write, I can draw, you know, it doesn't bother me at all. It's just when there's one specific voice or one specific soundtrack going on, I can't write.

Others preferred to work around other people, or in a communal workspace.

INT: What, your ideal work situation, what would it be like, would it be completely quiet, would there be people around?

Daniel: Um, people around, but sort of everybody's working towards something. So you know if you need to zone in focus you can be quiet then, then it's possible and doable and acceptable, but I do like to have people around me, I'm quite gregarious.

—

Claire: I think it's something you get really conscious of as a PhD student, the amount of time you spend alone, so uh, it's always good to try and rope in a friend to meet you in the library and you know work with.

—

INT: So... the main thing that bores you is doing menial work without other people around to chat to?

Tahir: Yeah. Because of the culture I came from in Jordan, people keep living with their parents until they get married, so we don't get the chance to live by ourselves if you know what I mean. So we don't experience what I'm in right now until you get married and even when you get married you are with a wife so I think yeah this is the reason I'm I'm used to be with people surrounded by people, people talking, people chatting, my parents, my brothers my sisters, my niece nephews so there is always people talking, there is always people around me when I'm, when I'm, whereas back home, this is why I feel really bored in here.

In contrast to quiet work environments where there is a desire to remove a negative, noisy or busy work environments are judged more positively and based on the quality of company, of ability to perform a task, or of comfort and familiarity. Often, they are seen as welcome retreats or diversions from more traditional work based places, and judged based on the presence of positives rather than the absence of negatives.

Also contained in these quotes is the idea of *collaboration* and *teamwork*. People enjoy working around other people, being able to chat and create some noise, but still focused on the main activity at hand. In all three of these quotes, while people like working around other people, it's not necessarily just to make the work more efficient, but to have the right "feeling" of a studios environment, one where collaboration and feedback are almost immediately available.

In some cases, communication with colleagues is impossible due to the job at hand. There is also the nature of the interactions that are taking place, whether friendly or unfriendly. Sabina works in a call centre, and hates her job, largely because of getting shouted at all day (more on this later in Subsection 5.5.2 on page 194), but there is no potential here for any kind of auditory space – she is constantly on the phone. In contrast, Roger works

in a very high-stress bank, but is allowed to play his own music while chatting to clients, and as a result finds his days much more pleasurable – still stressful, but easier to cope with (more on this in Section 5.6.2 on page 207).

5.2.2 Home

Unlike the work category, participants in leisure or home environments had a much wider range of responses. Generally speaking, the interaction is more complex, and depends on many more aspects than simply a lack of annoyances, as seen for work spaces. Most of this section will cover experiences at home, as this is the place people spend the most time, at the end I will look at other, chosen leisure environments.

Baseline of expectation

There seems to be a “baseline” level of expected noise that is different for every participant. This baseline depends on noise levels from previous places of residence, or during childhood. Many participants expressed soundscape as either a major factor in moving house, or directly compared their current living situation to their previous one.

Imogen: The area I’m in in Manchester, I think that because I was in kind of a quieter suburban place in Dublin [...] a lot of people when they were coming to my house [...] would notice how quiet it was, and I’m from the countryside originally so then that’s quieter again, so then now I’ve kind of, I’ve kind of come to Manchester and Oxford road I’m finding quite a noisy place, and my building as well is very noisy.

The degree of childhood adaptation can make startling differences to the perception of common noise annoyances:

Francesca: I didn’t really understand the concept of flight paths when I was younger cos I’ve always lived under flight paths, so actually the sound of planes is kind of equated with passing clouds, and I didn’t realise that flying planes even emanated that kind of sound.

This quote was a huge shock to me in this interview. If something as fundamental as aeroplanes, so anathema to the acoustic ecologists, is for some listeners simply *the sounds of clouds passing*, then what can we be sure of?

This connotative power works on more subtle levels too. Soundscape connotations can be a big factor in the participants' sense of place. Intrusion of elements such as car alarms, shouting, bangs and crashes could often be a reminder that they were living somewhere they didn't like.

Kate: It was a bit of a scumbag place to be honest. It was in a block of flats. But it wasn't horrible to start off with, it just became horrible 'cause loads of drug dealers moved in and err, so there was all police raids and shouting and fights and junkies and errr teenagers and fights and junkies and police raids and it was really noisy constantly. So the first thing that my children as well thought when we errr, moved into this house was we really, really appreciated the quiet.

—

Daniel: Yeah, the houses can be not very well looked after, you see people like rowing in the street for like you know full on blazing *Jeremy Kyle* style rows in the street so yeah it's not the, not the best location, but as I said, not the worst.

This concept is discussed in more depth in *Expectation*, Section 5.3 on page 168. For now though, note simply that each participant has an established loudness and auditory context they expect of a home location that heavily influences both positive and negative judgements. In contrast to work environments, the tolerance for unwanted or overly loud sounds in leisure and home environments is much higher. It's not that work environments don't have a baseline of acceptable noise annoyance: but baseline seems a less important factor in people's responses.

Feedback and Control

Using personal baseline as a starting point, participants' main factors in evaluating soundscapes revolved around issues of *feedback* and *control*. It didn't generally seem

to matter if the participants were directly controlling a sound (choosing the music, hoovering) or not, but more if they felt they could literally ‘feed back’ and have a positive effect (asking a housemate to keep the noise down). When this feedback loop (feeling of annoyance — request for change — noise stops or is altered) was broken, the vast majority of complaints arose. When people felt this feedback loop was always to their satisfaction, it led to the strongest feelings of comfort and contentedness. Negatives were most extreme where people had very few or no coping strategies, or were incredibly sensitive to noise. In a positive sense, this feeling of feedback could come from something as simple as being able to hear their own drawing.

Andrew: Just the fact that because I was doing something else as well, because the noises that I was making were directly correlating to something I was doing for me, both aurally and visually and that sort of stuff, like I was right here with the noises as I was smudging stuff, and like taking footsteps on the ground around what I’m doing, yeah [...] it just felt really really peaceful and nice.

Generally though, this concept was more related to ability to interact with other people. Lack of feedback could lead to feelings of loneliness or isolation for example.

Hugh: The house is quite well built really so it’s kind of, you know, stone — sounds don’t really carry particularly well between um, between rooms and stuff. Although that’s nice it’s also a bit annoying, I think it’s nice to have a kind of privacy but at the same time you don’t want to be too cut off, you want to be knowing what’s going on to a degree, otherwise it sort of feels a bit lonely, doesn’t it?

The design of the building Hugh was in therefore directly contributed to a feeling of isolation. This worked the other way as well. Disagreements over noise were especially prevalent and even the participant most comfortable with loud noise struggled when this basic feedback loop was disrupted or ignored.

Francesca: It just is very, even if it’s not played at a high volume, it’s very loud music, and very kind of aggressive, I don’t know, he really loves it and he loves singing along to all the words and that’s fine, I’m not going to knock

that, especially as he doesn't really like my music. [...] Most of the time I don't say anything, just because I don't really feel like it's my place to criticise his taste in music [...] I generally don't say anything but then other people will, um, not even necessarily people that live in the house, and that's always quite funny, I think that's because he had a while different group of friends before he moved in with us.

Francesca and her housemates then, while strongly disliking the music someone plays, didn't feel able to talk about it. As a result, this person was very unpopular. Similar feelings of lack of control came from everything, from interactions with noisy neighbours, to loud cooker fans that their landlord wouldn't repair. In both these cases, it was the lack of interest in fixing the issue that became the source of annoyance, connoted on a regular basis by the sound intrusion. Positive feedback happened when participants felt they had control over the people and sounds around them.

While this touches on issues of social power and control, many of these issues came from simple fallings out, or dislikes of other people. These then manifested themselves symbolically through the sounds produced, be it direct (housemate) or indirect (landlord not fixing something). Even without other people, isolation and quiet could either be good (feedback from drawing) or bad (isolation in a large house), again depending on the listeners' desires at the time of asking.

5.2.3 Other leisure locations

Soundscape is a broader, more noticed, and more subtle factor in people's other leisure environment choices. While conscious or not, many of these spaces were selected specifically for a desirable auditory context.

Cafés

Cafés and restaurants, while noisy, seemed to be something almost everyone enjoyed. Often the reason for going was to eavesdrop, or be in the presence of other people. The

Vegetarian Café on the Manchester Uni campus was mentioned by four people, who had similar experiences of the same space. While there is obviously no statistical validity to this, it is curious that this specific place had more recordings than any other indoor space in the fieldwork.

INT: [Reading from logbook] “Veggie café, 2nd room having coffee and cake?”

Andrew: Oh, yeah, OK. Yeah, I go in, it’s funny, I specifically go in the second room because it’s quieter. And normally, that’s “sound quieter” but also quieter as in “there’s just less people in there”. I feel more relaxed in there.

INT: I have to say whenever I’ve been there in the main room it’s really clattery.

Andrew: When I’m by myself, I’ll sit in the main room. But when I’m with somebody else, I’ll go in the other room. And I think it’s probably to do with that fact I get really easily distracted. So it’s nice to, if I’m chatting to somebody I can, you know, focus on chatting to them, whereas if I’m by myself I can just let myself be distracted by everything around me. I quite like being in the main room, when I’m by myself I’ll sit in the main room up the corner so I can see everything in front of me.

INT: You mentioned before you like eavesdropping, do you think . . . ?

Andrew: [whispers] I love eavesdropping! I’m very nosy!

The café has two rooms, one with a serving area (it’s a canteen set up) and another across a corridor that’s usually very empty. Andrew likes this choice – alone, he can sit and eavesdrop in the main room, taking in the ambience; for a little more privacy to talk to a friend he can go to the second room, where being an ‘aural voyeur’ is more noticeable. Andrew likes eavesdropping a lot, so this is a desirable auditory context for him.

Andrew: You know I also like it in here when there aren’t any noises, or the noises there are are not as varied, but no, I like eavesdropping, I like having lots of different things going on – I get bored easily.

Francesca likes this place too – it’s interesting to note that Andrew and Francesca are both Visual Anthropologists, and have a keen interest in overhearing others’ conversations.

Francesca: Why [do I like it in here]? Um, I dunno, cos it's just like really friendly, I know a couple of the girls who work behind the counter and they're always really chatty and like, you can go and have a cup of tea and sit there for three hours and no one's gonna tell you off. Um I prefer sitting in the back room actually, cos it's a bit quieter, but then that can go one of two ways because if there's no one else talking that can be quite a strong experience if you're having a conversation with someone and there's maybe 6 people in the room but they're all sitting by themselves, and there's not really any noise to mask your conversation.

And even though they're all reading a paper, or doing whatever it is they're doing or just eating their lunch, um, you become really aware of everything you're saying and you try and talk in quite a hushed voice, but obviously if you're having a conversation with someone then you just forget about that and it's um, yeah quite a funny feeling when you realise that no one else is speaking but there's quite a lot of people really close by to you, and are probably listening in on everything you say, or at least I would be, cos I quite enjoy eavesdropping.

What's notable from this extract is the *range* of possible activities in the space. There's two rooms, both offering multiple contexts depending on who she is with, what activity she wants to do, and if she wants to chat with the staff. There are clearly times when this space is undesirable too though – namely when it's too quiet, and she becomes uncomfortably aware of her own sound production.

This is one of the areas participants were most aware of their sound preferences, even if their friends weren't.

Imogen: And it's calm. I sound like such an old person but yeah, I just prefer that, I just prefer calm quiet. Coffee, coffee shops and things like that for the same reason. Actually my friend noticed here that whenever I wanted to meet them I was just like, "oh shall we just go to the café or something", and he said "I actually quite like this", and I said "it's pleasant and calm", and he was like "yeah I get what you mean", so yeah. . .

In summary then, café spaces were generally selected for their perceived quiet (although in practice they can be anything but), diversity of potential sound contexts and potential

for eavesdropping. It may be that the background sounds of cafés in general provide a comfortable loudness in order to overcome responses like Francesca's to being made aware of her own sound performance. In contrast to other public places though, cafés seemed to be universally liked. Brown (2012) suggests that "preference (on some human outcome dimensions such as enjoyment, relaxation, excitement, comfort etc.) is likely to depend on whether wanted sounds are heard and unwanted sounds not heard". These findings verify this hypothesis.

Bars and pubs

In contrast to cafés, not everyone in the group liked bars and pubs. This could be for financial, religious, or soundscape reasons, or simply just that it wasn't a social context they enjoyed.

Of the group that did like bars and pubs, almost everyone's sound preference could be characterised as 'a busy environment, but not one so loud you couldn't hear the person next to you'. Choice of music was a lower priority than music volume, generally speaking. This could say as much about the postgraduate demographic as anything else – several participants expressed a preference for debate, in-depth conversation and political discussion over dancing or drinking, for instance. Jake's response was typical:

Jake: I quite like the Northern Quarter, and I prefer quieter pubs these days.

Yeah, you know where you don't have to shout to hear people

[...]

INT: So do you specifically seek out quieter pubs then?

Jake: Um, yeah I think I prefer them, yeah.

INT: Why's that, do you just prefer to go and just talk to your friends and have those kind of nights out?

Jake: Yeah and it's just frustrating when you know, you have to put your ear up to someone's mouth to hear them, and then you end up with an ear aches coz they've been shouting down your ear.

This was an especially big criterion for people with high individual sensitivity:

INT: How did you like the pub? Do you go there often?

Kate: No not often. I met my daughter after work and took her to the pub for her tea no it was really nice. I couldn't do it, y'know, too much. All the people and busyness and movement and... [gestures in frustration]

For some listeners, a very high loudness was fine in some circumstances though, and was part of the attraction of going. Gloria, who liked live music a lot, enjoyed the sounds of her friends.

Gloria: But I'll tell you what is good to listen to. How everyone's laughing, and everyone's having a nice time, the environment's quite loud, and we're all quite drunk. At this point we'd been drinking whiskey and Guinness and wine, and we'd been drinking 7 hours.

Gloria: So it's a bit embarrassing that one.

INT: So you don't mind the loudness in the pub as well?

Gloria: I think it's more about the shopping [chatting], and I don't mind a pub being busy, as long as I can get a seat. And I love the way [my boyfriend] talks, and I should have got more of him talking, I love the sound of his voice, because it's very very distinct and broad accent he has.

Bars and pubs then have a similar response to cafés, but with a higher expected loudness. While when choosing a specific pub or bar preference, there is a relative scale (the relative loudness of all bars and pubs the person has been in), there is a very clear auditory criteria: it should be possible to talk over the music without having to shout. In cafés this is rarely an issue, with pubs and bars seem to be reaching the top limit of what people find a comfortable background level.

Imogen sums up this section, and characterises why most people in the study weren't big club fans:

Imogen: I don't go to clubs, I go to pubs and I go to my friends' houses and I meet people for coffee as well, and cinema, yeah that's the main things I do. The clubs again, that's because mainly you can't talk to anyone, and when I go out I like to talk to people, and I know people like to dance and things, but yeah, [it's] not really [for me].

Again, this could be an effect of a postgraduate research group. It is curious though given the main reason people go out is to socialise, that there is a limited number of spaces where people can find a desirable auditory context, however.

Clubs and live music

A few people didn't mind loud environments however, and enjoyed live music and DJ nights however loud it was. Clubs were the least desirable of these environments in general, however. The people in the research group who did like clubs were self-identified music fans. Clubs and live music were the environments most reported as being not recorded in the logbooks, as people didn't want to risk losing or damaging the recorders. My sound diary data for these locations is therefore limited, and without the recordings as a cue in the interviews it's hard to know how much of the responses to this were remembered, nostalgic or retrospective.

That said, clubbers and live music fans were generally very specific about what kind of clubs and live music they enjoyed. Often, the skill of the DJ wasn't the issue as much as the genre, environment, or experience.

Gloria: Even if the music's crap, you can talk to the person with you're with about the music being crap [. . .] I go to a lot of gigs and they're very intimate, people right next to you, they stink of sweat and the place stinks of beer, and I'd rather be nowhere else

—

Pablo: Yeah I like live music. Like improvisation you know. I like to see these things happening, different from the CD. Sometimes the sound of a live music, it's more interesting.

In both cases though even though they had a general open-minded approach to listening to new music and bands, the choice was generally genre-based. Gloria's social environments were generally around rock and folk and pub bands, and Pablo preferred jazz clubs. For some people though, only one very specific place would do.

Claire: I don't know, I'm quite I'm really particular about music, like I don't, I won't go to clubs or anything that I know are going to play really shit music, you know, I can't really deal with bad music, and I like to kind of control my environment so, like to you know carefully select what I'm going to listen to.

—

Maggie: We tend to only go to one club. Cos all the rest we don't like.

Clubs and live music then were liked by the smallest percentage of this section, and people who did go were very specific where they went. There was a sense of “home” however for clubbers, who would enjoy the loud environments as a way to unwind or socialise. It would take a more detailed examination to get some direct data from these places however.

Places of worship

Two participants regularly went to a Christian church, and one did her five-daily acts of Islamic worship during the day (Salat).

For the Christians, this was a welcome, needed, comfortable and quiet space.

Laura goes to church on Saturdays, and even though she has moved house she goes a significant distance to her previous church, mostly due to social ties. She sings in the choir, and this forms a significant part of her social life.

Laura: Its very enjoyable. I find it very relaxing. I like singing in general, and then [the church] were forming a choir so I thought I would join. Most of the young people at my church have joined, so I just joined with everyone. I did do a bit of singing at college and tried to get lessons. But I always thought then I can't actually sing, I just enjoy singing so, [it's] just for enjoyment really, yeah.

For Roger, the church serves a similar function.

Roger: Going to church, it's spiritual, that's all. I mean it's supposed that by my doctrine as a Catholic that I'm supposed to attend mass once a week so it's, apart from being obligatory, it's a spiritual exercise, I like that.

INT: Yeah I mean, it's really interesting because in a lot of what you've described, the environment you seem to like is these calm, serene environments?

Roger: Yeah church is serene. It's not serene as if it's quiet, it's like a ritual, like a tradition, if it's music, it's R'n'B too, you know, like "the Lord be with you" [...] it's a quiet place and when you come to church, keys are ticking away [...] so it gives the place the proper decorum it should have. [...] If you compare it to music, it's like an R'n'B [song], it's low, it's rhythmic, it's quiet, makes me be at peace with myself.

From a soundscape perspective, this kind of soundscape is somewhat unique. Even though, as Roger points out, the places are not necessarily quiet, they have a certain serenity and peace that is missing from other aspects of their lives, a semantic feeling of peace. This could perhaps be to do with the culture, familiarity and expectation of the place, but for regular worshippers this is clearly a desirable, peaceful, routine, relaxing part of the week, piety aside. Neither of these participants enjoyed being in bars and clubs, and while this was for religious reasons, it seems reasonable to suggest the soundscape is a factor here – the relative quiet and peace of the church environment is almost the polar opposite of the potential raucous nature of the average bar.

Nadia, the only participant to report performing Salat in the group, had a different experience of regular religious worship. Abstractly, as a five-times daily exercise, this operates like an enforced, regular break in which to reflect on the bigger picture, although this was often impractical, and her children didn't enjoy it – there wasn't time to go into this in more detail in the interview. However, it's worth acknowledging the rhythm here of Christian worship versus Islamic worship, to use the pedagogy of Lefebvre (1992) – regular and quick versus weekly and for a long time – in both cases however, worship is a figurative "rest" or "tacet" in the respective soundscapes.

Holidays

Two participants went on holiday in their research period, Claire and Jake. Perhaps surprisingly, these visits were both unremarkable from a soundscape perspective, with neither showing any real difference in soundscape perception to their usual modes for leisure time.

5.2.4 Case Study – Libraries

Libraries are an illuminating case study of a *work* environment, as users have a very large number of ideas about how they should operate and sound like, and what constitutes acceptable behaviour. Also, with a postgraduate participant group, almost everyone reported something about their library, or their choice not to use it. Libraries are one of the few public environments whose managers and staff seem to take auditory settings seriously, and city libraries invariably have different areas for different levels of noise. For instance, the Salford University library has areas for: quiet group work; general socialising; no noise at all; taking mobile phone calls; computer work; and bookable rooms for group work.

Despite this, libraries are a barely researched area of soundscape research. Dökmeci and Kang (2012) evaluated various sources within three libraries in Sheffield mostly used by students. They found:

Mobile phones, personal music players, and construction noise were rated highest for annoyance. On the other hand, walking/footsteps and page turning were rated at least annoying and even for some participants preferable in a library environment.

Following this, they determined some gender-based and academic-level-based soundscape preferences – undergraduates broadly found libraries more “acoustically comfortable” than postgraduates and staff, and women found the level of reverberation more of a problem than men, for example. However, none of this begins to tell us *why* this is the case, returning to one of my key critiques of existing soundscape research. In this section then, I explore categories of possible soundscape response from the *listener’s* perspective.

Most participants didn’t like working in libraries. This was for a variety of reasons, but remarkably there were responses on all four of my basic ‘noticed’ categories: negative quiet, negative loud, positive quiet and positive loud (explained in Section 5.8 on page 224) – remarkable for a single environment. Unlike most environments though, everyone had

an opinion on libraries. They were either avoided entirely due to being too noisy (in one case too quiet), or someone's favoured place of work due to it being perfectly quiet, or comfortably loud.

People who liked working in the library invariably preferred one specific context over others, and had made a conscious choice about their desired context.

“A lot of nothingness” vs. “Eerily quiet”

Brian considers the library to have “a lot of nothingness and occasionally something”. He works solely in the library, and never at home. He works there because it's quiet, too noisy to work at home, and goes other places to relax. The only sound he perceived in the library was people tapping their laptop keyboards. Brian therefore is an anomaly in this study – he simply considers the library an essentially silent, quiet place of sanctuary. This is a place of maximum productivity and comfort. It is interesting therefore that no-one seems to agree with him that it is silent.

Claire gets to the library very early in the morning, due to a quicker and more pleasant commute at this time of day. Staff will be cleaning, or doing book reorganization. It can be “eerily quiet” in the older part of the library where she works, with only very occasional noises.

Claire: It's got really high ceilings and it's, it just feels, it's like an older part of the library, it feels quite grand, and it feels quite odd to be in there on your own.

It feels very odd to her that there's nothing happening, and Claire does generally have feelings of loneliness when not around friends or family. She feels out of place, and notices all the tiny noises. Moving around big journal volumes makes a lot of noise. She can work fine there without music until people start shuffling around, then it gets too distracting, and she puts headphones on (more on *coping mechanisms* in Section 5.6 on page 199).

Claire therefore perceives the same, ‘quiet’ (at least acoustically) space very differently to Brian. Instead of being a place of sanctuary, it's a place of loneliness and noise intrusions.

In her case, she prefers to use a walkman to provide a much louder, but more consistent auditory context.

“Hive of activity” vs. “Showing my age”

Francesca likes working in a library computer cluster. It’s the only place she says she “works efficiently, and a lot”.

Francesca: Uh, I do really like [this computer cluster] actually, I’ve found that over the past few years it’s really the only place where I work really efficiently, and a lot. It’s a computer cluster that’s kind of on the first floor of the library so a lot of people don’t like working there because it’s too loud, [compared to] other sections of the library where there’s kind of a perceived silence, but I find that in those kind of environments um if anyone makes any noise then you become really aware of it. So if someone drops a pencil, then you’re like “a pencil’s been dropped!”, whereas on Blue 1 in the library, there’s a constant hive of activity you know, and I work best with that because then if someone drops a pencil, you’re not going to notice it, cos it’s kind of in the background. Um, so now I can’t really work at home just cos there’s too many distractions, and certainly on campus this is the place I’ll always work academically.

Lots of people don’t like working here because it’s too loud. Francesca though thinks other sections of the library have a perceived silence, but finds in those areas any small noise is a huge distraction. There’s a constant ‘hive of activity’ in her preferred cluster, which makes a lot of background noise so she doesn’t get distracted as easily. She finds home too distracting to work, and this is her favourite place on campus to work.

Like Claire, Francesca sometimes uses a walkman in this space. However, if she’s been in the library for the whole day with headphones on, she starts getting a headache and can’t listen to music, and sound becomes a bit much to handle. Either way though, she doesn’t mind asking people to be quiet if they’re talking too loudly, and generally seems confident asking people to keep the noise down.

Gloria however finds the library not a great place to work, which she thinks is “showing my age”. It irritates her how students think they can talk while they’re in the computer area,

having a loud talk, laugh or gossip. She thinks the rest of library is OK, although notably doesn't work there, but the computer area is too much to handle. Gloria therefore neither enjoys using a walkman, feels comfortable asking someone else to keep quiet, or likes workspaces with chatter in in general, even though she greatly appreciates conversation in the rest of her life. Perhaps this is a self-perceived generation gap, but it's the exact opposite of Francesca's attitude to the same space.

Imogen was initially surprised how much of John Rylands University Library didn't contain books, how modern it was, and how strange it was that there was nothing made of wood. She found people chatting and talking in what she perceives as a work space a very strange experience.

Imogen: People were chatting and talking and it was just strange for me because the last library I loved, in my last university I actually loved the library! The nerd that I am, I loved it because it was so peaceful, whereas this is not a peaceful library.

The library Imogen is used to in Dublin was by contrast very quiet and peaceful, and she much prefers it. John Rylands has dedicated spaces for different activities, and bookable rooms, and she really likes that aspect however. She had a defining experience complaining when some "lads" in the room next door were being too loud, talking about inappropriate things for a public space, thinking they couldn't be heard. The library staff kicked them out and were very apologetic, to her great surprise: "I was surprised that they cared". It's interesting then that despite libraries' obvious, clearly signposted and delineated attempts to create a plethora of auditory contexts, and her own acute awareness of how the different spaces make her feel, she still feels unable to complain about the noise from other people. Generally though she likes the fact it's a social, working space, but feels like it's "less of a library" as a result, as if there is a "true" library experience.

A perfect balance?

For some, some areas of the library represented a perfect balance, always as a contrast to other areas which they disliked.

Laura prefers working in the library, or outside. In the library she prefers a specific quiet corner area, with a volume such that you can chat a bit quietly but it's not too noisy. This is in contrast to the second floor "silent zone" she never goes to – she feels she can't work if it's perfectly silent, preferring a bit of 'background noise'.

Laura: It's quiet enough because I think they, upstairs, [on the] first floor, they still allow you to talk. You can talk, but it's still a bit quiet and then the next floor is too quiet for me, it's a silent zone I never sit in there.

INT: Why is that?

Laura: I don't know, I feel like I can't study when it's perfectly silent so for some reason. I prefer some, a bit of background noise even if it's the slightest.

Another contrast is her local public library where she goes to collect leisure reading. It's loud and fairly busy so she never reads there, feeling like there is too much crammed into too small a space: children, adults and computers. This space is much too noisy to study. Oliver really likes quiet spaces, and will work in department labs as they are very quiet and he has a chance of a room to himself. He also really likes the library, feels it is very quiet, and gets lots of work done as there are no distractions. He tends to work in the second floor "silent zone" during term time, because it's too noisy in the rest of the library. Out of term time, he's started working on the first floor as it's quiet then: paradoxically "quiet" in this context means that there's the potential to chat with other postgraduates when he wants. In term time the same space is really "loud and annoying", though. As long as it's quiet however, this is his preferred work space.

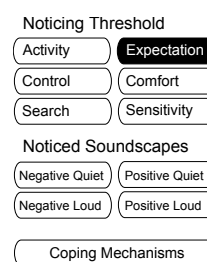
Oliver therefore likes two categories of workspace – 'silent', or with a small group of other people doing similar work. Laura, like Claire prefers the latter; they both desire a certain amount of activity but with a fairly clearly defined threshold, including rules about times, floors and population density.

Overall, this case study demonstrates how specific people are about their work environments; the variety of desirable environments between listeners; the height of expectation placed upon people’s work environments; the range of opinion about what constitutes “loud” and “quiet”; and completely contradictory experiences of working in the same spaces. Clearly this is an area where soundscape analysis that does not consider the listeners as holistic people outside of the immediate environment could end up very conflicted. Understanding how different listeners construct their preferences should be a large part of understanding how to create desirable library sound contexts.

It is remarkable how much effort already clearly goes into this on the part of the library staff and library designers, and how little people feel able to talk about it. Perhaps this is symbolic of how uncomfortable people feel asking others to be quiet. This hints at a need for libraries to actively solicit noise complaints even more, perhaps making explicit the range of things that people can do or ask about. Needless to say, libraries are a highly fruitful research location for a soundscape researcher.

5.3 Expectation

What the listener *expects* a sound environment to sound like is the key factor in *noticing* a soundscape using bottom-up attention, and acts as a starting point for the judgement of the *noticed* soundscape. Going to a café and hearing a foghorn would be a very strange experience for instance, but hearing one at a harbour may go unnoticed. Equally, cafés have many acoustically loud sounds like coffee grinders and steamers which in any other context would be both unpleasantly loud and highly out of place. Indeed, coffee grinders and steamers may trigger the synecdoche effect, allowing the listener to “aurally arrive” in a café. Equally, the sounds of a café trigger anamnesis¹,



¹“An effect of reminiscence in which a past situation or atmosphere is brought back to the listener’s consciousness, provoked by a particular signal or sonic context. Anamnesis, a semiotic effect, is the often involuntary revival of memory caused by listening and the evocative power of sounds. [...] a sonic context revives a situation or an atmosphere of the past” (Augoyard and Torgue, 2005, p21).

allowing the listener to evoke past experiences of being in similar spaces.

Expectation as a category emerged most strongly in interviews with migrants or people from rural areas. People noticed difference much more keenly when there was a significantly different past experience to compare it with, and were able to give much more vivid A/B comparisons. The second main concept leading to this category was the large variety of descriptions where expectations were not met, usually in a negative context – such as libraries, which I have already explored in detail. Other concepts leading to this category are memory and sonic nostalgia; the idea of a place ‘atmosphere’; and the idea of an ‘aural routine’, a familiar daily soundwalk.

Bruce et al. (2009a) summarise their research on expectations of space as follows:

Most spaces sounded as the subject expected and the level was as expected for the given space/context. There was also an understanding of how the space impacted on what was being heard. This suggests a learnt competence for spaces, as well as behavioural expectation for those spaces. Crucially, [...] expectation extends beyond the soundscape competence to how subjects can interact with the environment as well as expected ‘rules’ which govern the space.

[...]

It can be suggested that the soundscape is generally not something that is given much attention by most subjects, and the fact of being on a soundwalk seemed to change attitudes to listening to environmental sound. Crucially, this ‘non-attention’ becomes ‘attention’, when sound activity starts to go against a learnt expectation of a space. Explicitly, the soundscape becomes an issue when it does not conform to a subjects ‘perceived’ sense of normality or interferes with information (semantic listening) transfer. (p6)

This paper’s summary of soundscape expectation is in Figure 5.3 on the next page.

It’s apparent from discussing libraries that people seek out and select places to work based on their own sonic criteria. Preferred spaces are judged positively (or neutrally) because of a certain level of acceptable sound production which is judged conducive to the listener’s work preferences. Listeners therefore generally select places based on the

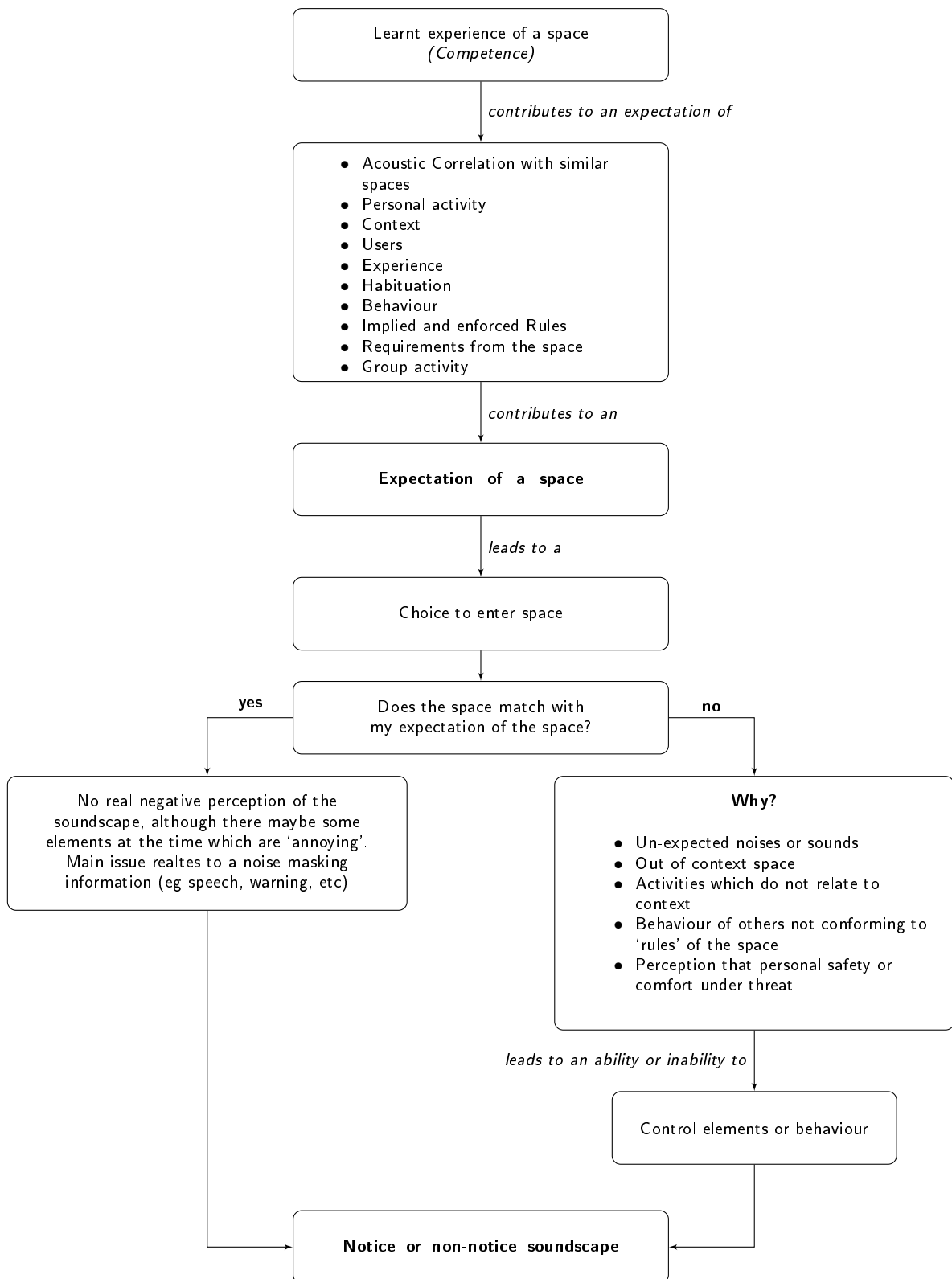


Figure 5.3 – Soundscape expectation response, adapted from Bruce et al. (2009a), text and capitalisation reproduced verbatim

active search of a tourist, and then return to them as a “normal”, comfortable space in which to work.

If the expectation of a place is thwarted, then it’s very likely that the person feels as if their environment has been intruded upon. Positive responses to unexpected sounds are very rare, and usually come as an intervention during some kind of procrastination period. This category raises a philosophical problem – if someone goes somewhere because they like the soundscape, and then ceases to notice the soundscape, is the soundscape still an active factor in their appreciation of the space? I won’t be answering that particular question here, but it is an interesting one to return to.

After a context of normality is established, certain things will be expected, and some unexpected. Some will be *actively searched* for, and some will be unusual, unpleasant or unwanted intrusions that become conscious sounds regardless of the listener’s desire. *Search* on the surface seems like a separate, unrelated category to *expectation*; however what is being searched for, or not, depends on the expectations placed on the environment. In terms of noticing threshold, the opposite effect to *active search* has a number of names: ‘dishearkening’ (Tagg, 1994), ‘asyndeton’ (Augoyard and Torgue, 2005), and ‘earlids’ (McLuhan and Fiore, 1967), as discussed. However, while these seem like opposite effects, they are not. Search is generally a conscious, active focus on a single soundscape element or elements. Dishearkening is passively ignoring a soundscape as a whole, or a single source. Thinking about them as opposites is misleading – one can dishearken any superfluous sounds when searching for something active, for instance, as anyone waiting for an important phonecall may attest to.

While the connection between these two concepts (expectation and search) is a little tenuous, in practice it has been very difficult to talk about them separately. It’s not possible to talk about, say, the annoyance of a police siren, without also mentioning context: in this case that it’s in a house, where the listener associates the siren with living in a rough area. It’s not possible to talk about what is desirable or undesirable in a pub or bar without talking about what undesirable signals the listener is trying to avoid.

In short – expectation sets the context within which search and dishearkening happens.

5.3.1 Establishing normality

Listeners have default expectations in known places, and base expectations of new places on similar ones they've been to in the past: “expectations were dependent upon people's prior experiences of specific areas visited, past experiences of similar places, or activities undertaken in those areas” (Henshaw and Bruce, 2012). Similar spaces (all pubs or all libraries, for instance) define a context within which the range of expectation of sound environments are situated. Within this context, an environment may be judged by any number of adjectives: quiet, loud, noisy, comfortable, unpleasant, echoy, etc. However, this is *relative to other environments in the same conceptual group*.

To use ‘quiet’ as an example, some soundscapes are simply judged noticeably quiet in comparison to other sound contexts in the same category. As mentioned (Subsection 5.2.3 on page 155), research participants who used pubs and bars to socialise in invariably preferred quieter ones. Daniel, for instance, preferred Wetherspoons pubs when given a choice, due to their company policy of having no music, aiding better conversation.

Daniel: Obviously it depends on what you're going out for, going with my friends to talk politics we usually like a place where we can have a proper discussion, rather than get drowned out by a load of noise.

Indeed, as one *Telegraph* reporter summarises in an otherwise fairly negative piece:

But we left [the Wetherspoons] feeling strangely content. Everyone in there – and it was packed – seemed blissfully happy. There's no music in Wetherspoon's pubs, and no televisions blasting breaking news. In fact, you are almost hermetically sealed from the outside world. In that way, it is a parallel universe, where the beer is cheap and you don't have to acknowledge the dreadful state of the streets outside. I'll drink to that. (Gordon, 2010)

Again – this environment is far from quiet, but in *comparison* to other sound contexts in the same category (going to the pub), it is *perceived* as an actively quiet choice, and the relative loudness level is a reason for being there.

This effect also happens when people move house from an undesirably loud area to a quieter one, or get quieter housemates.

Elizabeth: It's this thing with sharing a house, it's a great house because it's a big three story terrace, I'm on the top floor, and [the landlord] put in this like soundproofing underneath the floors and things and I've lived in houses before now where I can hear next door having a massive row when you're trying to sleep or you're trying to work and stuff. And the other house that I lived in before I moved in to this one, I could hear him on, like talking to his girlfriend on the internet and stuff, and you know yourself, as a PhD student, generally you know, you're tired and you're stressed out and you come home and you just want to chill. Or you want to sleep, and you've got work to do, and I do prefer to either, if I can put my headphones in and I'm working then that's not a problem, but if I'm trying to sleep I need quiet, cos I do have problems sleeping. Um, and I'm very grumpy, and everyone knows when I have problems sleeping cos I'm not a very happy bunny (laughs)!

Even though this home environment is judged mostly on the absence of a fairly comprehensive list of negatives, Elizabeth speaks positively about this change of pace, and appreciates the *relative* quiet even though there are other issues in this place. Kate had a similar experience:

Kate: It wasn't horrible to start off with, it just became horrible 'cause loads of drug dealers moved in and err, so there was all police raids and shouting and fights and junkies and errr teenagers and fights, and it was really noisy, constantly. So the first thing that my children as well thought when we moved into this house was [that] we really appreciated the quiet.

Pub, club, home or work then, this category is summarised by a *comparison to other environments in the same category*. A listener preference is then selected, and becomes the desirable context. This becomes the background level of soundscape expectation against which other experiences are judged.

Migrant Experiences

International students' reactions to the soundscapes of Manchester and Salford were fairly different to natives', and as auditory tourists, migrants generally noticed a lot more than natives of the urban North West, and UK natives in general. Migrant participants had a strong sense of *contrast* to their native country, with the soundscape becoming more obvious due to its difference from home. This was both in a general sense of the background rhythms and textures of day-to-day sound environments being both different, and with specific, unusual soundmarks.

The tourist's experience then is one of vastly lowered expectation, with people actively noticing differences and generally being much more aware of their surroundings. In total there were five international students, Nadia from Malaysia, Pablo from Brazil, Roger from Nigeria and Tahir from Jordan. All were living here solely for the purpose of their postgraduate qualifications.

Nadia thinks it's very important to experience everything you can in life, and has been the length and breadth of the UK during her visit, much to the disdain of her children. She is very keen on getting the most out of the tourist experience.

Nadia: I will drive the kids like it or not, they say "oh no not another castle, oh no not another mansion". I said "no we're going to see this, whether you like it or not, experience this until we finish and we go home"

As a result, she had a heightened awareness of everything around her. Her home context is very different. Malay culture is very musical, with both pop and traditional music around a lot, and there is generally an oral tradition perhaps stemming from a high Muslim population who are used to singing Quranic verses.

Nadia: Malay music is an everyday part of our life. Um, of course it's traditional kind of thing and I do listen to the pop side of the Malay. [...] The language our national language which is Bahasa Melayu. Bahasa means language, Melayu means to the people, it's very much it's quite an easy language. I mean I've been told I've got a lot of foreign friends who pick

it up within three months. Because it does not have past, past tense and you know it's melodious. For example, the word "thank you", is "terima kasih". "Terima" means "I accept" and "Kasih" is "love", so if you do something and say "I accept your love". You do it out of love. Very melodious, very poetic kind of language. So because of that it translates in to the music too.

The other keynote of Malay living is that of running water, and water in general.

Nadia: Malaysia is a peninsula. Everything is water, so you want to go to the beaches. Even though I stay in Kuala Lumpur which is two hours away from the beach, water parks are around, we are you know, it's a tropical country. In my home, in my actual home in in, now I have a little pond.

In Malaysia it's a fusion between Malay, Chinese and Indian so that's why we say "if you want to visit Asia, it's truly Asia"², because we have all the different components of [Asia]. And water is a feature in the in the society. [...] Water flowing shows money, kind of thing. Like the feng shui kind of thing is the Chinese element, which the Malays being to. Muslims do not believe, but we do it anyway because everybody is doing it. You have little ponds around, so water reminds me of home.

Needless to say, Nadia really likes showering as a reminder of home, as well as her house water feature. Salford and Manchester by contrast, she doesn't really like, especially when there are periods of poor weather – this interview happened in July so she was positive at this point about the weather. Other factors of the soundscape in Manchester were strongly disliked too – barking dogs for example, really set her on edge as for Muslims, dog lick is unclean and requires ritual washing – a big inconvenience. As a result, people don't keep domestic dogs in Malaysia, so the large amount of dogs in Salford she found really unpleasant, and would cross the street to avoid potential issues. In contrast, I doubt people born in the UK would notice dogs barking nearly as often, and certainly not with the same kind of high arousal, given how commonly people keep them as domestic pets.

Another key difference between countries is the rhythm of life, and the schedule of the working week. Pablo and Roger both are used to significantly different working weeks,

²It's worth noting the Malaysia Tourist Board's official slogan is "Truly Asia", so this may simply be effective marketing.

with Pablo starting and finishing work much later but with a long, two hour lunchbreak in Brazil, and Roger being used to very long days at the bank. Both have adjusted to the British 9-5 pace of life, but state a preference for their home work rhythm. Nevertheless, compared to the UK residents they generally seem to have much more routine in their lives, with highly regimented times for work and play, and preferring to work in the office or library rather than at home, except for jobs which require very high concentration. This highlights a hidden rhythm then: the subtle expectation of the ebb and flow of daily life.

While there is no direct soundscape correlation here with daily rhythms, it's worth noting that a Lefebvrian analysis would go into more depth here, examining the "score" of people's daily lives and how they differ in different social contexts. It would be interesting to compare soundscape responses in migrant's native countries to those in the UK, comparing which aspects go unnoticed – however, like a lot of interesting questions, this is a question for another research project. Nevertheless it's important to note here that not only do migrants likely have radically different associations with certain noise sources (running water and dogs for example), but the time spent in different environments and the pace of life varies radically in different places.

5.3.2 Engineering normality

Expectation complicates threshold judgements somewhat. There is evidence that people simply avoid sound contexts they dislike, without consciously processing this as a soundscape rationale. This is most extreme with actively religious participants. Laura identifies as "quite religious", goes to church at least once a week, participates in a church choir, and dislikes pubs and clubs partly for reasons of faith. She prefers quieter, socially balanced soundscapes, and spends a lot of time alone. Are these factors linked? It seems credible the relative quiet of a church environment as a primary social context engenders a preference for these kind of public, quiet, large and open spaces, and links strongly with the experience of listeners from quieter environments moving to Manchester.

While Laura seems on first inspection to be a *high*-threshold listener, another interpretation is that she simply avoids any environments that she dislikes, and is capable of doing this as her social group doesn't tend to habituate noisier environments, and her home is relatively quiet. Therefore *expectation* is a key threshold factor. If she is expecting no undesirable noises, and structures her life so as to avoid them, then is this due to unconscious soundscape effects or merely the result of other socialisation?

There are many strategies to “engineer normality”, deliberately modifying participants' experiences of soundscapes. Here are some mentioned by participants in my study – there may well be a lot more.

Selecting environments based on the task at hand

As mentioned in *Work* (Subsection 5.2.1 on page 145), people select different environments for different tasks, with *reading* and *writing* seen as distinct tasks with their own sonic requirements and desired environments.

Moving places in an environment

Sometimes people find comfort in specific areas within places, for example a favourite seat on the bus or in a lecture hall. This is sometimes actively noticed as an acoustic effect.

INT: Lectures are too echo-y?

Hugh: There's the new lecture theatre [...], after being there and sitting in various locations, you do understand where to sit almost, but I think you get standing rays if you kind of in the middle, it's very loud. If you sit in certain places the noise sort of cancels itself out. Um, and I don't think it's actually helped by sitting at the front or anything like that, you sort of just find your little areas that you like to listen. And and I mean, I know there's a limit to where people can go sit but if you find it particularly difficult hearing in a certain place, then are people aware enough to go somewhere else and try somewhere else, or do people think it's going to sound the same everywhere?

One person at least then was aware of lecture acoustics, and specifically moved around to find good places to hear. This in turn changes their overall impression of listening in that environment, even if 95% of the locations have undesirable acoustic properties.

Going places at certain times of the day

Many people strongly disliked crowds while shopping, especially supermarkets or shopping in the city centre. Laura prefers a quieter area of town to shop, Gloria goes out of her way to avoid places like Ikea at the weekend. Quentin is very vocal in his dislike of busyness.

Quentin: But any time you go in Primark it's busy and it's horrible. I don't enjoy it at all, I'm not a big fan of shopping, and it's the same sort of thing it's that enclosed environments with loud sounds and everyone's in a rush and everyone wants to get stuff done quickly, and if you slow down you're in people's way. And if you speed up you kind of you feel more rushed and you feel more pressure to get things done quickly and it's just not, I don't find it a nice environment, and um particularly shops like that where it is very kind of focused and lots of trying to get as many people through as possible so trying to make it as busy as possible, whereas you go to a more expensive shop you can maybe take a bit more time and do things but you've got to be able to afford to do that.

As a result, Quentin aims to go to shops at the least-busy times possible. It's interesting to note here that he associates quiet and a more relaxing experience with *expensive* shops – and directly associates cost with busyness, seeing it as an almost inevitable connection.

Furniture sounds and walkmen

The final method of manipulating normality is the use of *furniture music* and *walkmen*: overlaying environments with recorded sounds. These are covered in detail in Section 5.6 on page 199.

5.3.3 Dishearkening

Once a context of normality is established, certain soundscape elements cease to be actively noticed elements, and become part of the ‘normal’ fabric of the location. This subsection is an analysis of when aspects of the soundscape overcome the *threshold of normality* of a sound environment, and to what extent dishearkening happens in different auditory contexts.

Semantically, there is a simple process at work here – the listener simply discards information which is not useful. How does the listener decide what is not important, or discard unwanted information though? In common with other aspects of this thesis, finding elements that are not normally noticed is somewhat problematic. This is one area the sound diary fieldwork actively helped though – experiences like this one became much more noticeable to participants.

Gloria: And, this is where [a workmate] is waffling for a bit in the background, I realised how much I fade out [my workmate]. He’s a piercer, he works at the piercing studio. I do like him but he does talk a lot of crap. He drinks a lot of coffee, so he’s quite intense! [laughs]

INT: So he talks really loudly?

Gloria: Really loud, really fast, and a lot of crap. I don’t have any problem with [workmate], you know but, you have to be able to filter [him] out.

INT: Do you notice that happening or do you notice eventually you don’t hear him any more?

Gloria: I think recording this helped me realise I do it actually.

Without the sound diary as a threshold-lowering factor, Gloria wouldn’t have noticed her workmate. However, because of it, she did – and it’s clear that even though the workmate is very loud, and talks non-stop, it’s perfectly possible to filter him out completely. As mentioned in the introduction to this chapter, it would seem that people are capable of filtering an endless variety of sounds. Some of these can be extremely loud and annoying but with enough repetition, blend into the fabric of a location. The range of competency in dishearkening was very large however.

A common example of this effect that people are more consciously aware of is where there is a noise annoyance that they used to notice, and now don't. Andrew for instance has two sounds in his flat that visitors find annoying.

Andrew: The radiator now would not distract me from work, yet it was once really irritating and now it's just completely fine.

—

INT: This is your morning. [reading from logbook] 'Automatic air freshener squirt'?

Andrew: It goes 'tsss' though it's not working properly at the moment. It does it every 38 minutes, it just happened I think when we were recording. Yeah it's really funny cos when it works properly it's really fucking loud, it's like whenever people are in here and they don't know what it, is a big ring, it's like [shouts] 'What's that?!'

In both cases, Andrew no longer notices these sounds, even though he did when he moved in, but guests commonly find them highly annoying until they get used to them as well. Listeners can therefore actively notice their dishearing, then.

5.3.4 When things break the noticing threshold

This phenomenon is a messy fit. In simple terms, breaking the noticing threshold is when *bottom-up*, *negative-loud* or *positive-loud* sounds or soundscapes become suitably arousing for the listener to notice. This combines several elements in the thesis, and is a highly complex point to pin down, if it is a single point at all.

It is certainly a weakness of the sound diary methodology that this point is almost impossible to record. While the method has been good at helping people notice sounds that they have disheared (as in Gloria's example on the previous page), it is highly vague at pinning down the point where noises begin to be noticed where they were not before. In a more general sense, capturing bottom-up attention 'authentically' is always going to be difficult using *any* methodology – the method of the asking will invariably alter the answer. That said, *traffic* was a factor in the vast majority of sound diary

recordings, and therefore seems most appropriate as a case study for mapping the point the noticing threshold is broken.

5.3.5 Case study: traffic – “dipping in and out”

Traffic seems to be the most dishearned soundscape element. In the logbook data it was the second most common sound source, but in the interview process it was difficult to get any kind of strong opinion out of most participants about it. The main exceptions were the cyclists and more active listeners. Due to the nature of the fieldwork, it's very hard to report absences in this category as not talking about it may not mean the participant didn't have an opinion on it, unless directly asked, which was not the case in all interviews. Traffic is a valuable case study when examining dishearning and expectation, as it is an almost constant element that can be processed in many different ways. Indifference is very high here, the idea of “coping with it” seems like a learned skill of a city-dweller. Some people did not mention it at all as a factor, but given it's always there it seems unlikely that people do not have strategies for ignoring it.

Most of the noticing of traffic fits into two categories – one activity- and place-based, and the other aspect-based. Nobody in the study noticed traffic all the time.

Notices while doing specific activities or specific places

People in this category noticed traffic most strongly when doing a specific activity, or occupying a specific place. Activity-wise, getting distracted at work was most common. Both sound and vision was distracting for Daniel.

INT: Do you notice the traffic much normally, or were you just paying attention?

Daniel: Yup, yup. Always do, always do, that's why you know I make a point of sitting here [laughs], cos if I'm sat over there or on one of these it does draw your attention, all that going on out there, [...] you can see there's the Mancunian Way behind with all the cars going along, like in a funeral just

going along. And police and things like that, so it's easy to get distracted with that, with the big windows.

INT: So you find it less distracting to not look at it?

Daniel: Yeah, make sure I face, take a seat facing away from the window.

This feeling of the slow march of a 'funeral procession' is shared by Hugh, who describes the effect it has on him in more detail.

INT: What is it about the road that you don't like?

Hugh: Frequency of cars, and it's the memory of it as well, when I was younger it was obviously a lot less busy, and gradually as I've got older and older it's got more and more busy. The traffic's also got slower, you know, I think traffic calming measures [result in a lack of] diversity in sound, everyone kind of drives at this monotonous [pace], it's not even 30 miles an hour, it's 28 miles an hour, this sort of low buzz that sort of rolls past the window, it's about 20 metres away, but it kind of rolls past [in]efficiently, it's like people could have a slight bit more sense of urgency, just a little bit, I'm not saying a lot, but just a bit, it's just this kind of plod which kind of seems so lazy, and it makes me feel a bit lazy sometimes.

Hugh therefore feels a conscious, ongoing, lazy, plodding effect on him from the crawl of the traffic. He remembers roads when he was younger being less busy, but also faster; he finds traffic calming measures have a negative effect on the soundscape. The lack of *urgency* is tangibly perceived. However – Hugh only really spoke about the road in the context of working at his parents' house, where this diary entry was made. Like Daniel, Hugh finds the road an easy way to get distracted when working, with the pace of it in both cases being the arousing factor. It would be interesting to find out if faster roads provoke the same response.

Some members of this group who are cyclists seemed to have a higher awareness of road sounds. For Hugh, this persisted while not cycling. Jake found it easier to switch on and off, even though on paper, he strongly dislikes it.

Jake: This is another example of noises that [...] annoy me: cars. I'm a cyclist so I'm bound to hate cars.

INT: So does it bother you when you're not on your bike, or mostly when you're cycling?

Jake: It only bothers me when I'm walking if I'm walking next to an incredibly busy road, like a motorway or dual carriageway. Um, in a city centre it's not that annoying, I guess, because cars can't travel that fast and make that much noise but buses are annoying when they let off that steam or whatever it is that they do, that blast of air.

Two other people though – Oliver and Quentin – mentioned that they cycled a lot but did not pass further comment apart from why they cycled (convenience and relative cheapness). Again – without a more focussed interview it's hard to know why this is, but at least I can say that they did not get annoyed by the roads enough to comment on them unbidden. It may also be that traffic noise while cycling wasn't the worst intrusion of traffic noise into their lives, and it's relatively easy to dishearken when other factors are bigger annoyances. Oliver is sleep-disturbed at night, during which traffic sounds can be much more intrusive, for instance.

Overall, this is a complex area. The same sound category (roads/traffic) can be different depending on the listener's relationship with it, the time of day and activity, and other factors based purely on the acoustic qualities. Listeners doing the same thing at the same time of day (cycling down Oxford Road at 2pm, for instance), may have completely different reactions to the source. To further complicate this, Jake reports using a walkman at a quiet volume while cycling to overcome the traffic noise.

Notices specific aspects, e.g. screeching, horns

This category is simpler on the surface – it's easy to attribute high-SPL sounds like horns and sirens to breaking the noticing threshold. However, there is a more subtle semantic layer going on underneath. What the horn or siren represents, or what the listener perceives them to represent, is a large factor in dishearkening these louder sounds. This is where traffic sounds tip the threshold and fall into the *negative-loud* category of noticed

soundscape, and this is itself a subcategory of *undesirable intrusions*, which is covered as a more general subcategory later.

Elizabeth works in a hospital, and Imogen lives very near one. Both have ambulance sirens as a keynote sound of where they work. Both of them found that they noticed the ambulance sirens, but had a very neutral view of them – one of the only examples of *noticed-neutral* sound response in my study, where a bottom-up sound response elicited no real reaction. This is perhaps one of the few instances of something being noticeable *entirely* because of its acoustic properties, and is doubtless good sound design.

Both Elizabeth and Imogen mostly dislike car horns. This was for an unexpected reason in the former case.

Elizabeth: A car horn, the one thing you do tend to notice is if somebody beeps a car horn, I do tend to think “ooh is that me?”, even though I won’t necessarily have done anything, [I’m] paranoid [in case] they beeping [me] because I’ve done something [wrong]. But traffic, I wouldn’t say I’m very sensitive to that at all.

Elizabeth therefore does not dislike car horns because of the loudness directly (although this is clearly a factor), but because she isn’t comfortable using the road, and is afraid of being in someone’s way or doing something wrong. While a car horn is clearly (successfully) designed to affect high arousal, Elizabeth’s reaction is related to a semantic function – being in somebody’s way. Aside from that however, she does not notice traffic much at all. Elizabeth was one of the most sensitive listeners in the study: it is curious then how little she notices of it, aside from her fear of getting in somebody’s way.

Imogen has a different perspective, and dislikes beeping, feeling its a keynote sound of Manchester that doesn’t exist in Dublin.

Imogen: Beeping is something I’ve really noticed here, people beep an awful lot. I’m probably putting everything on Manchester, it’s all Manchester’s fault. [...] I think it’s usually signalling, “come on move yourself”, you know it’s that kind of annoyance that’s attached to it, and then if one [person] starts beeping, two or three people feel the need to beep along. And uh [...] it’s

not it's not anything positive really is it? It's not the kind of "beep, oh I'll see you, goodbye" beep. It's the the "traffic light's gone green now" beep.

Like Elizabeth, Imogen resents the message the beep sends more than the sound itself, seeing it as a sign of hostility and haste that doesn't exist in Dublin, her home city. Again like Elizabeth, Imogen doesn't really mind the traffic much: in general she prefers the quiet of Dublin over the noise of Oxford Road. The traffic constitutes part of the overall loudness of Manchester; rather than being a source of noise annoyance by itself, it is an inevitable part of where she chose to live, with the bar underneath her house being a much bigger source of derision.

Rarely ever notices

For some listeners, traffic sounds were barely an issue. In some cases this was presumed, given a consistent change of subject whenever response to traffic noise was raised in an interview: in other cases this was explicit and mentioned as an inevitable, value-neutral part of living in the city.

Francesca was the most extreme in this case. As someone who grew up in a busy area in London, underneath a flight path, the sound of transport was never an issue for her, and in fact she finds the relative quiet of Chorlton where she lives now to be *more* uncomfortable than living in the city. To reiterate her quote from earlier:

Francesca: I didn't really understand the concept of flight paths when I was younger cos I've always lived under flight paths, so actually the sound of planes is kind of equated with passing clouds, and I didn't realise that flying planes even emanated that kind of sound.

She is used to a very high baseline of traffic noise, and cares very little about it as a noise source.

Other listeners in this group simply responded with indifference to the question of traffic noise. Laura simply commented that anything near a road was unremarkable. Maggie only really noticed road noise at all after doing the fieldwork, and even though she lives

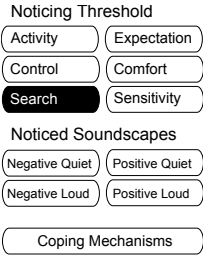
near a garage, the sounds were never really something that occurred to her; given the nature of her living situation though, it may simply be that there are much more pressing noise annoyances a lot closer to home. Roger “tunes out” by playing music in his head most of the time when he’s out in public, so again, doesn’t really notice the road.

Nobody in the study was consciously aware of road noise at all times. There has to be another trigger, be it activity- or place-based. Alternatively, it can be while cycling or walking, which is simply good safety. Some people barely noticed the road at all, only mentioning it when specifically prompted. It seems likely then that the sound of roads is such a common, ubiquitous sound that, like air conditioning, in most places for most purposes, it is simply the sound of the city. For such a loud, constant sound source to be so consistently dishearkened shows the competence people have at adjusting their noticing thresholds to filter out information which is simply not useful.

5.4 Search (‘top-down’)

Dishearkening and *search* are not directly opposite effects, but they are somewhat related. *Search* relates to a listener actively seeking or anticipating something, such as waiting for a phonecall or text message, a bus, a piece of music, or anything else actively expected. This can be a positive or negative effect – a listener plagued by a noisy alarm, a dripping tap, or an inconsiderate neighbour, may find that waiting for and anticipating the sound is as bad as the sound itself.

This is arguably not a soundscape effect, but a source effect – the soundscape is irrelevant to a listener waiting for a single source. In addition, we likely only have one attention centre, and the role of each individual sense in accessing the source of annoyance is perhaps arbitrary. However, the *state of listening* that the person enters arguably *is* a soundscape effect. This can be imagined two ways: either as a sort of aiming of an auditory ‘spotlight’ (the top-down approach), or using the



vocabulary in this thesis, a deliberate lowering of a listener's noticing threshold (bottom-up); perhaps both happen at once. Either way, there is a different phenomenon here – the state of paying deliberate attention.

This was a fairly distinct category in the interview coding. People were generally able to describe at least a few sounds, especially sound annoyances, although this was often done using collocation like “screeching brakes”, which makes a detailed analysis difficult – is this a genuine word association or a parroted one? These descriptions could be from how the sound made them feel (irritated, claustrophobic), or description of the sounds themselves. On the other hand, it was very difficult to locate instances in the sound diaries where people were actively searching for sounds for reasons other than completing the fieldwork, as at this point they would probably not be doing sound diary recordings. Based on the rough proportion of interview time that centred on *noticed* sounds, *top-down* search seems to form a minority of a listener's auditory life. In the introduction to this chapter, I noted how the presumption that *people even care about the soundscape* (presuming a few basic prerequisites are met) may well be something overlooked by soundscapes research. Equally, source-based search is arguably *not* the subject of soundscapes research, which on paper at least, seeks to examine entire sound environments as opposed to simply analysing a space as the sum of all sounds within it. This is not the case in practice, with the majority of papers focussing on a breakdown of sources, with little emphasis put on the function of the space itself, the activity taking place, or the overall desires of the listeners within.

For this reason, top-down attention takes up a much smaller space in my analysis than bottom-up effects, which seem much more numerous and varied. This is not a reflection on the relative roles of top-down and bottom-up response in determining soundscape response. While it does seem likely that bottom-up is a larger factor than top down, this study does not have the data to support this rigorously. This category forms the key exception to the *judgement of noticed soundscapes* (Section 5.8 on page 224), which is itself mostly based on *bottom-up* noticing. Again however, I argue that most of the top-

down search in this section is based on specific sound *sources*, rather than *soundscapes* as whole entities.

Top-down search lends itself to *anticipating* sounds. Augoyard and Torgue (2005, p25) tell us “someone waiting for a sound to appear will ‘pre-hear’ – that is, he or she will *actually* hear – the expected signal, even if no sound has been emitted [...] if anamnesis is most often an involuntary phenomenon, anticipation, on the other hand, may appear when one expect too much” (emphasis mine). Therefore it is worth considering that highly anticipated sounds may either not exist at all or be so small as to be unnoticeable in other analyses. This has been well documented in listening research for a very long time:

The data indicates that listener anticipation of the purpose of a message is an important factor in his comprehension. We may assume that the role of anticipation is considerably more important than our data suggests, for the testing design does not measure the difference between listening with purpose and listening without purpose. **It is not possible to stop people from anticipating.** The test with remarks reinforces anticipation and, therefore, measures that impact. (Brown, 1959, emphasis added)

Anticipation is perhaps a smaller problem using a listener-based approach than otherwise: what the listener hears, regardless of *how* they hear it, is of prime importance. A bigger issue is the difficulty in making a clear definition between *soundscape* search and *sound source* search. This section is perhaps the area where it is most difficult to differentiate between these two concepts: however I am not sure what practical effect this would have on the findings.

5.4.1 Road safety

Road users, especially cyclists, need to be aware of their surroundings, and will make a conscious choice to lower their thresholds and really pay attention when cycling on the roads. Responses to traffic noise was covered, but it’s worth dwelling on this with regard to top-down search. Aural feedback here is an essential survival skill, but not one

particularly associated with either like or dislike. This is the closest example in the study to a top-down search that arguably focusses on a soundscape rather than a sound source.

Hugh: A car horn like that does scare the shit out of me. But aside from the peaks of noise if you combine lots of things together it um it gets a little bit, not stressful, but it's just not pleasant if you know what I mean. It's just that everything seems to be so dusty around the place, [...] and it becomes a little bit dangerous because you know you've got to kind of, you can't really quite see, and then you're trying to concentrate on noises as well, and and the noise is the critical thing really when a car's coming past you you're not really fussed about can you see quite properly.

I think on a bike my kind of primary kind of sense is this right here [points to ears], [when] cars [are] coming past you, you do hear it slightly [stronger] in this ear [points to right ear], than in this ear [points to left ear], and and when that happens you know you're safe, cos you don't want to be looking round all the time, the sense of the right ear, and the car noise being stronger is your safety mechanism, and that's really important, and I think having to concentrate on dirt or potholes in the road as well, is another thing. I got a puncture the other day, I went over a pothole, and it blew the tyre up you know, and it's just everything about it is just stacked up to make things dangerous.

[...]

INT: So you really find you strongly navigate by hearing then when there's cars around?

[...]

Hugh: Yeah definitely, the that right ear is all important, yeah.

This quote paints a picture of a kind of active listening rarely described in such detail in this study; the key here however is that it is not merely active listening but a *survival mechanism*. Hugh uses his hearing as primary navigation sense, allowing him to spend his visual attention on avoiding potholes – although not always with success, as this highlights. Cycling in the city therefore is a multisensory task, which requires very high attention to do safely. Interestingly, Manchester residents (Hugh was primarily based in Leeds at the time) report lower levels of cycling attention – from personal experience and

Hugh's testimony, his response to Leeds roads may well be a symptom of the terrible road conditions. Active listening therefore becomes an even more important competency when there are several overlapping barriers to conducting a task.

5.4.2 Active listening to music, movies, etc.

Positive examples are more varied. While TV and radio use is often a background activity, sometimes it is an *active* process, with the listener putting on a piece of music they really want to pay attention to, and appreciate as an activity in itself. For almost all these cases there is also a *judgement*, which will be covered in more detail later; this section is dedicated to highlighting cases where top-down listening is explicitly employed. Apart from one fieldwork participant who went on a soundwalk, there was no other evidence of active attention being paid to the soundscape as an activity in itself.

Music

Only a few listeners actively listened to music as a foreground activity, setting time aside to listen to an album while doing nothing else. Francesca listens to albums based on recommendations, but still while doing other jobs.

Francesca: Yeah. If I'm listening to something for the first time the I'll listen to it much more actively so for example as I was cycling in this morning I was listening to an album my friend recommended to me at the weekend, and I'd never heard it before, so it was really exciting and new cos I really liked it and I really enjoy when people make good recommendations towards me. Um, whereas if it's something I've listened to, it feels like a hundred times, then it's not as active, it's kind of just there because I enjoy the familiarity of it I suppose.

Once music is familiar, it becomes a form of background music again. Oliver was the only participant who talked about how he enjoyed listening to albums as an activity, but rarely had time to do so, and was coincidentally the only audio technician in the study.

Oliver: And when do you sit down and listen to an album these days? Never.
[...]

INT: So will you actually sit there and listen to an album and not do anything else or is that more a background activity when you do that?

Oliver: I rarely do it. But when I do, it's quite nice to just sit there and do it actually properly.

Use of music as “sonic furniture” will be discussed in Subsection 5.6.2 on page 207. In my study at least, actively listening to music was a very rare activity. Even avid music fans like Claire didn't speak of active listening in this way, and while she had a very high knowledge of music, it was always as a background activity: whether this was while doing another activity, or going clubbing, for example.

Cinema

For others, the cinema was the only time they engaged in active, focussed listening (and watching). This was much more popular than active music listening (Quentin, Sabina, Tahir, Francesca and Imogen reporting going at some point), with the whole experience being deemed desirable.

INT: So you like the film or you like the whole experience?

Quentin: I think there's things that you get from some films in the cinema that you won't get from them in your own room in your own living room cos just because the sound is a lot more kind of, you become a lot more engrossed in it. There's gonna be because the screens bigger it's all you can see so there's not anything else distracting you or anything else kind of worrying you, everything's dark so you feel more immersed in it so it's a good, if it's a, if it's a good story it can be very good, if it's a bad story it can be very, it can be the most boring thing in the world cos you've got to be enclosed in this thing.

—

INT: So you're feeling excited? What do you like about going to the cinema?

Tahir: Uh, the atmosphere, the big screen, the sounds, the really I don't know, the massive speakers they use, um yeah, that's it, and being being out with people basically.

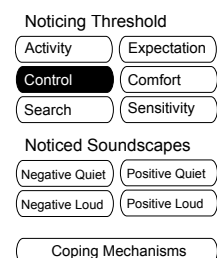
From a soundscape perspective, the cinema is perhaps the *only* place where people completely give themselves over to watching and listening. The feeling of enclosure or “immersion” can be a good or bad thing depending on the quality of the film (as in Quentin's case). Overall, participants who liked the cinema seemed to so for the *experience* as much as, if not more than, the film itself. Perhaps this is a reason for the continued popularity of cinema – the comfortable chair, and focussed viewing and listening experience is perhaps quite meditative for people living busy, urban lives.

5.4.3 Waiting for a bus, phonecall, text, friend. . .

Waiting for a phonecall or text message is a common example given when highlighting top-down listening – the anticipation of waiting for a friend to arrive at a café, or an important phonecall is a common one. Unfortunately, there were no examples of this given in my fieldwork – likely the highly temporal and high-attention nature of these kinds of moments did not lend itself to being recorded and logged. Needless to say, it is likely not the soundscape that is the key factor in understanding this but other social and psychological contexts.

5.5 Control

Social, financial, physical and cultural control over the space in question all have a strong effect on listening thresholds and perception. A higher degree of control generally leads to both an increased threshold and a higher opinion of noticed, generally positive, soundscapes. Feelings of control can be linked to many things including a given space, a given



space at a certain time, control over music, knowledge of when a sound will end, social control over people creating noise, and many other factors.

Control emerged from a close reading of codes around places perceived as ‘sanctuaries’, whether at work or home. These spaces were overwhelmingly perceived positively. Another key concept this category is based on is explicit discussions of sound politics – spaces where there was either a lot of negation around sound production, such as in shared houses. At the highly undesirable end of the scale, public places such as shopping centres were generally hated by everyone. Overall these formed a complete axis: from complete control, to a semblance of control via negotiation, to a complete lack of control.

5.5.1 No control at home

Maggie has almost zero control over her home environment. She lives with a large family, who all work at different times, and who all seem to have a snoring problem (including the cat!). Descriptions of her home environment like this were typical:

Maggie: My nephew was screaming, my sister was shouting at him and the dog was getting aggravated so his, they bought him a cat collar so it had a bell on it and it wouldn’t shut up, so I was really annoyed.

Snoring is a continuous problem – noone seems to take seriously how loud it is, and she has come close to recording it to prove to them what an issue it is. This pushes her to snapping point sometimes – “there was someone snoring on the bus this morning so [...] I wanted to jump out the window”. Her boyfriend’s house is equally bad. Her boyfriend plays music she doesn’t really like, plays his bass guitar badly, and has a brother who listens to “terrible... painful” dubstep music at a very high volume, is very loud and clumsy in general, for instance he “boils kettles at two in the morning”.

To make this worse, she feels she is the only one who feels sounds like she does – “they don’t get bothered by sounds like I do”. However, she doesn’t think this is in any way deliberate, and that “noise can’t be helped”. Unsurprisingly, her ideal situation is to be

alone at home. She would prefer to live alone if she could afford it. She shares a car with her mum, and would always drive given the option. For Maggie, using a walkman on the bus and listening to music in her car are the only times she gets to listen to her own music.

The privatized aural space of the car becomes a space whereby drivers reclaim time, away from the restrictions of the day. The mundane activity of the day is transformed into a personally possessed time. Listening to music/radio enhances the drivers' sense of time control/occupancy. [...] The sound of the radio, voice or music fills up or overlays the contingency of driving, transforming the potential frustration associated with powerlessness into pleasurable, possessed time. (Bull, 2003, p365)

Bull highlights the potentially highly therapeutic nature of in-car listening, but for Maggie this is the *only* time she experiences this, and so I would argue the journey is more than mundane for her – it's a treat, a welcome escape from the cacophony of her life.

To summarise: listeners with no control over any of their environments struggle to concentrate, and the stress of living in this situation was reason enough to move out and get her own place. Even though Maggie thought she was the only one in the house so sensitive though, she still realised from doing the fieldwork she didn't notice major noise sources like the main road outside her house, and the garage nearby was not a factor at all in her soundscape perception. Maybe this was due to there being higher priority noise annoyances; however there was clearly more potential things that *could* have been on the annoyance list and were not.

5.5.2 No control at work

Sabina's job seems to largely consist of getting shouted at on the phone from an auditory perspective.

INT: So how do you, who's in your job then, are you like receiving calls from?

Sabina: Receiving calls and like trying to sort people's insurances, and insurance companies so they do bike insurance so obviously you have people calling

in every day to either adjust their policies, add a bike, remove a bike, or cancel, just things that people are obviously calling and complaining about something we've done wrong [...] so most of the time they're not exactly friendly people we have on the phone, we have to like calm them down to an extent and sort things out, but most of the time cos I'm new at it [...] I always have to find a way to like wriggle myself out of situations and help them sort things out so it's a bit stressful but I'm still learning so it's alright.

[...]

Sabina: I'm on the phone all the time, with a headset, I'm on the phone for 4 hours during the week and about 12 hours during the weekend so that so all the stress is... [dramatic pause and gesturing]

Sabina has no control over her work soundscape. Unlike most listeners, she doesn't have the option of using a walkman – her job consists of endless listening and talking. The stress from this caused her to miss a significant portion of her logbook entries, and in the interview she seemed completely exhausted and wanting to finish as fast as possible as she'd just come from work.

Unsurprisingly she spends a lot of time alone at home in a large house, with parents who are usually away. She uses music and TV to counteract the loneliness, and has noisy neighbours but doesn't mind them at all now she knows them. She Skypes daily with her best friend, but strongly dislikes having people at her house, preferring to meet in public. It's unclear if this is a symptom of her work or not, but it is interesting that she doesn't like people in her space even though she feels lonely at home – however, it's clear that the mental exhaustion from having no auditory control at work severely stresses her out the rest of the time as well.

Both work and home politics are strongly affected by the listeners' ability to leave: “if the ability to leave [an] area [is] not possible, then this affected annoyance with an area or its component parts” (Henshaw and Bruce, 2012). A large part of the dislike of these environments may be linked to this. It seems reasonable that a listener would get increasingly adept at homing in on disliked sounds in disliked environments, in order to re-confirm how much they dislike it. Being able to leave, knowing that it's possible

to get out of somewhere, can therefore be as vital in soundscape response as the sounds in the space themselves. People ‘trapped’ in work by contrast begin to notice a litany of dislikes. This is supported by work on noise annoyance: Moorhouse et al. (2009) tell us that “‘sensitization’ to low frequency sound may occur over time, leaving the sufferer more aware of the sound and unable to shut it out or get used to it”. Sometimes, there does not even need to be a low frequency noise source at all: “a striking feature about many LFN sufferers’ homes [...] was the almost complete absence of any intrusive environmental noise” (ibid.). Lack of control is then perhaps one way that this sensitization occurs.

5.5.3 Shared musical spaces

Music in shared spaces is often a large factor, with good communication over music resulting in social harmony, and poor or non-existent communication in disharmony. Gloria perhaps summarises the positive side of this best. She lives with her daughter and feels they get on very well, and one of the key reasons for this is that they give each other space when they need it, spend time out the house to give the other time to themselves, and most of all:

Gloria: This is probably the secret of why we get on [...] to be in control *when* you need it (emphasis added)

When they spend too much time in the house together they ‘get at each other’s throats’, and need time apart. The key to note here though is that the space, people, time and volume levels are all the same, but the *feeling of control* that comes from being able to ask the other to leave significantly improves their interpretation of their shared auditory environment. Both like loud music and have differing tastes, but the ability to get some quiet when needed, or time alone, and the communication skills to talk about it, is the key to their relationship success.

If this control is taken away, breakdowns in both tolerance and inter-personal relationships begin. People playing music at an inconsiderate volume and then not responding to

requests to turn it down, or negotiate these factors, is often the cause of many house feuds. By contrast then, we return to Francesca's story from the start of this chapter, by far the participant with the highest threshold, who has almost a single source of annoyance: a noisy housemate. Both the genre ("grunge-y metal-y indie stuff") and volume ("really loud because it's that head banging kind of music") are too much for the other house residents, and seems indicative to them as a sign of his lack of consideration as a person.

INT: So do you think he's aware of how loud he is?

Francesca: No. He's quite a loud character in general, quite shout-y.

INT: What else does he do that's loud?

Francesca: Um, talk at a really high volume, a lot.

Despite being in a house of seven who all seem to dislike his music, she still doesn't feel it's her place to criticise.

Francesca: No, most of the time I don't say anything, just because I don't really feel like it's my place to criticise his taste in music, and obviously everyone thinks their taste is right, cos obviously it's their taste, but ... I generally don't say anything but then other people will, um, not even necessarily people that live in the house, and that's always quite funny, I think that's because he had a while different group of friends before he moved in with us. And they all enjoy that kind of music, whereas none of us really do.

This is an extreme case, with most instances of lost control over music being dealt with more amicably as in Gloria's case. In both examples also, it's interesting how the general tendencies of a person are seen to be borne out in their music choices – Gloria's daughter is considerate, Francesca's housemate is noisy, poorly tolerated and "agg-y". Adams et al. (2006) corroborate this from the reverse perspective, giving an example of a neighbour who has loud parties, but gives his neighbour plenty of warning beforehand. Simply put, "these neighbours have reached an agreement that does not involve discussing the level of noise" (p2393).

5.5.4 Place ‘ownership’ and personal transport

Places and spaces which are either literally or figuratively controlled by a listener have a high degree of satisfaction and generally high threshold. This can be of a domestic space like a house, or a dedicated, quiet work space for that person. Maggie’s experiences as a car user were given above, and are a clear example of this phenomenon. As a stronger example, Kate is a very keen motorbike rider. While she strongly dislikes loud sounds generally, her motorbike is a source of comfort and control.

Kate: [dictating on recording] [motorbike hums] Right, this is me, this is my motorbike. It’s in the morning, I’m getting ready to go to uni. [I’m] getting the bike out and I can hear my motorbike, and the disapproval of my neighbours. Sounds like she’s [the motorbike] ticking over quite slow there but she’s very loud actually, she doesn’t have a baffle in the exhaust, but I don’t mind the motorbike being loud because I’m controlling it. [...] I like that aspect of the noise.

A lot is going on in this statement. Even though the bike is very loud, her neighbours disapprove, and generally loud sounds she finds very difficult to deal with: this is an experience she likes a lot, and is a large part of her social life. While a motorbike is clearly a long way from Bull’s (2003) “hermetically sealed” experience of the car driver, there is a lot in common here. Despite the loudness of the motorbike, perhaps this is the one time that Kate is completely in control of her personal soundscape, the motorbike masking everything else, and being under her control. She specifically even modified her motorbike to be even louder.

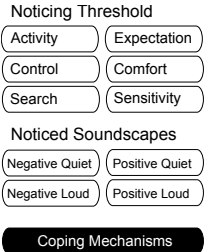
Kate: She’s got a racing exhaust, usually they’d have a baffle in. You’re not gonna pass this on, but the baffle goes in once you go to get the MOT. [Afterwards the] baffle comes out and it makes the engine [and] the exhaust louder and it just makes it a lot safer when I’m on the motorway ‘cause it makes her louder [...]. I feel safer without [the baffle in].

In this case, loudness is a signifier of safety – she feels that the louder the bike is the more likely it is drivers will hear her, even though she knows this is most likely not the case.

This example is the strongest in my interview data about the power of *control* to overcome other soundscape preferences, therefore. Even though on paper, the sound of the motorbike is anathema, because it is *her* sound, one she is solely and completely in control of, she not only strongly likes it but seeks to make it *even louder*, despite possible legal repercussions.

5.6 Coping mechanisms

When encountering or experiencing unpleasant or unwanted sound environments, all participants used some kind of *coping mechanism*. These took several forms, but mostly were based around the use of TV, radio or music, either on headphones or speakers. Other coping mechanisms were more subtle, and could involve moving to another part of a room, having company, or generally changing the context.



Section 5.3 on page 168 covers the factors that go into creating peoples baselines of normality. “Coping mechanisms” in this thesis however, refers specifically to the use of recorded (or live) sounds added to an environment by the listener, whether on loudspeaker (furniture sounds) or headphones.

This term is a slightly uneasy fit given the range of strategies used by listeners to improve their soundscape perception, but adequately explains the underlying process. “Use of recorded sounds” would have to include public address systems and music chosen by other people. “Walkmen and furniture music” is a mouthful, and also does not convey the semantic reason for using it. While closing a window or moving to a quieter part of the house is also a coping mechanism then, in my schema this fits into the *engineering normality* category. This is perhaps then best thought of as the strategy of last resort: if the listener is unable to change their soundscape in other ways, recorded sounds become the only option. In other words, these are strategies where everything else remains in place, apart from an artificially added sound source.

Coping mechanisms cut across almost all categories. Ability to put on music, or not, forms a large part of control, and then expectation of the space it is being played in, while doing a variety of activities. This category emerged after analysing the degree to which people often didn't notice if they had music, TV or radio on at all: with TV being the most common actively chosen, but barely noticed, sound source. As mentioned, an oversight in my initial pilot was asking people if they were using a walkman in any given environment, after realising that several sound diary entries were made in places where the listener was using a walkman. As a result of this, I started discussing use of recorded sounds explicitly in interviews, and discovered everybody used them to some degree. This pattern kept up: many people did not mention their use of music, but could give very precise and reasoned rationales when asked directly.

From an acoustics perspective, this could be thought of as listeners deliberately and actively using *masking* to obscure unwanted sounds. This literature generally presents masking as something for urban designers and architects to use, for example Brown (2004) suggests that "an acoustician could calculate the extent of masking in practical soundscape design situations provided that the frequency spectra of both the wanted and unwanted sounds are available". This section contends that individuals are also engaged in the process of creating 'acoustic masks'.

Using a coping mechanism is generally done to raise the noticing threshold of the listener, but also is done to create more positive *noticed* environments. The most common examples of this is people putting the TV or radio on at home, but with no intention of listening to it, or using a walkman in a public place. Headphone use is by and large a signifier of no control over the environment, and speakers a sign of having control. Active music listening on speakers will be covered in another section – this one is specifically about using amplified sound as a tool to improve the listener's environment, rather than listening to music for the express purpose of listening.

5.6.1 Walkmen (headphones)

Walkmen are the simplest, cheapest and most effective way for most listeners to change unwanted sound contexts. The sophistication, subtlety and clever balancing of levels reported by Bull (2001) is clearly evident here, although this represents a much more top-down, general overview than Bull's in-depth anthropology.

Walkman use becomes 'second nature' to many users in their negotiation of everyday urban life. The auditory and technological nature of Walkman experience transforms our understanding of a range of everyday urban experiences (p191).

There was a large range of walkman use in the study, from constant use to use in specific circumstances, to never.

Common

People in this category generally used their walkman as a kind of acoustic blanket, an almost constant background 'soundtrack' to their daily lives. They often used a walkman as a matter of habit, and had music use embedded into their routines. Generally, people in this category didn't use the walkman to drown out the world, but as effectively an additional soundscape element on top of or in unison with existing factors.

Claire uses a walkman a lot of the time, especially in the library when there is too much shuffling around for her taste. Music is very important to Claire, and she goes out of her way to craft playlists and music to suit her need. As with others who routinely use music for work, she is very specific about the types of music that can be used for certain activities.

Claire: I'm really particular about what I listen to when I'm working. Like, I only listen to really, I usually listen to really quiet like kind of indie-pop, or if I'm you know, really finding it hard to concentrate then Mogwai or Electrolane or near instrumental stuff. I don't really do classical or anything (laughs).

INT: Why do you prefer instrumental stuff then?

Claire: I just find it hard to concentrate when I hear words if that makes sense. I can't listen to the radio when I'm working like a lot of people can.

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INT: [Are] there any other occasions you use a Walkman?

Francesca: All the time, usually if I'm not cycling with anyone, I'll listen to music when I'm cycling, and when I'm working I'll usually listen to music. Um, if I'm just going about doing something, or if I'm at home, I'll have music on. See I'd say in most situations I'd be listening to music.

People in this group could feel like the music they listen to was a kind of soundtrack to their lives, a constant, background process. People were highly adept at setting a volume level that allowed important soundscape cues to get through, even when doing more dangerous activities such as cycling.

Jake: Yeah I quite like a soundtrack when I'm cycling, but again low volume so that I can still hear for traffic and things.

INT: Soundtrack as in a film soundtrack or...?

Jake: No, just like to... listen to music when I'm cycling.

Walkmen were no barrier to picking up on even relatively subtle soundscape elements. Francesca's love of eavesdropping is the main time she will take her headphones out.

Francesca: So people [on the bus] are like really frank and open because they're talking to a good friends, not [realising they're on] the top deck of a bus, whereas if you're listening to it, sometimes I'll even like take out my headphones if I can hear that there's a conversation going on, just to basically spy on these people that I don't even see their faces or care who they are.

Pablo noticed sounds that he didn't notice before while doing the fieldwork, but because he always uses a walkman at work, this wasn't an issue. Like Claire, different types of music are used for different tasks.

Pablo: Yes, there are a lot of sounds outside of this building that I've never heard, and now that I was paying attention, there are a lot of sounds of the people walking around the building and the construction that are done around this building and so on [...].

INT: How do you feel about those sounds that you've now noticed?

Pablo: Erm, in fact they don't affect me so much because I [...] work with the headphones on almost all the time here, so I can concentrate more when I'm writing if I'm listening to any different thing. Erm, for example, when I was in college or [doing my] Masters, when I was working with equations and so on, I used to do those things with loud music, for the mathematical things. When I have to read, I enjoy the silence, but when I doing something practical, when I'm writing or solving problems, listening to music is more efficient for me so, I'm not affected here by these sounds in the office because all the time I'm with the headphones.

Common users of walkmen therefore have a high aptitude at picking music that doesn't get in the way of what they are doing. Using music in this way acts as a comfort blanket, highly raising the listening threshold for unwanted sounds, but not blocking out the world completely. In all cases, music choice was very specific, and often activity-based.

Sometimes / Specific uses

Listeners in this category used a walkman in some situations, but it was much more a choice than a default activity. Triggers for walkman use in this category were either environment or noise annoyance related.

Activity-based listening could be as habitual as listeners in the 'common' group. This was usually for a specific place deemed undesirable, or boring, like commutes and workplaces where the soundscape was disliked.

INT: Yeah, yeah cos I mean you didn't, I know you said you sometimes when you're at home, but do you tend to use a walkman at all?

Daniel: Um yeah I do like if I'm walking, if I'm going to walk from uni but I've lost my headphones so I haven't been using it at the minute, but if I'm walking somewhere I'll usually uh flick my headphones on just as an aid to sort of go along but I rarely, um much I find is more of a solitary thing that I very rarely, unless I'm going out clubbing or something, then I rarely have music in a social sense, it's sort of a personal thing for me.

INT: Cool, yeah so you mostly use it just when you're on your own and walking between places?

Daniel: Yeah yeah, doing certain things around the house as well

Similarly, Roger would prefer use a walkman between lectures, even though he currently didn't have a working one.

Roger: So in a class[room] when [people are] making that noise, you just plug it in, if you are waiting for another lecturer I just plug it in.

Some people carried a walkman but wouldn't put it on by default, and mostly used it as a coping mechanism when unwanted sounds started intruding. This could backfire though:

INT: Is that [annoying sound of someone with a horrible cough] enough to make you go home?

Elizabeth: No it's not, I'd put my earphones in or something to drown it out but, then my supervisor thinks it's quite funny to sneak up on me cos I can't hear the door open then so he'll he'll sneak up on me, thinks it's quite amusing and I'm sitting here clutching my chest because he's nearly given me a heart attack!

Kate used it as a more general way of 'zoning out' when her noisy lab gets too much to handle.

INT: When do you use your Walkman then?

Kate: Sometimes on the train, and err, at my desk. I like, I like listening to music, but it's more of a way of zoning out and y'know, getting away from people and noises.

INT: So it sort of cuts you off from most of the environment?

Kate: Yeah yeah yeah.

Quentin has two routes home, one is more direct but unpleasant, the other a longer route that he prefers, but sometimes he has to take the short route. A walkman is a key coping mechanism here to using the shorter path.

Quentin: I just have to put up with the sound, and the busyness of it all.

INT: Does it really bother you even with headphones on?

Quentin: Um well I tend to wear headphones to drown it out cos I know that I don't like it and I know that it's – I don't like being in busy environments anyway, whether it's crowded buildings or whether it's busy streets and things. Um, so if I can put on something that shuts that out, then it's a little bit nicer. [...] It depends on the weather as well, if I'm in a rush or if it's raining and things I'd probably just stick my headphones in and get on with it and go quickly.

People in this group then used a walkman either as a mask for a specific, generally disliked activity or place, or as a selective tool to cover up disliked instances. Using a walkman in this way was done almost entirely as a cover for other sounds, rather than a listening activity in itself, just like the common usage group.

Never / Rarely

People who strongly disliked using a walkman (as opposed to simply not owning one) tended to find that using a walkman was distracting or just unpleasant. Tahir finds walkman listening unpleasant in quite a holistic way, simply not liking sounds that close to his ears.

Tahir: I used to listen to radio using my phone, but no I don't like hearing sounds in my ear if you know what I mean, it's very close to my ear, so [I don't] like it.

Oliver, who is more of an expert listener and a big music fan, has a more specific rationale.

INT: Why do you not use a walkman?

Oliver: I'm either with my friends at home, where I can just listen to music on speakers, cos I prefer that to be honest or, I'm on a bike [...] then it's probably a bit dangerous. [...] Music's taken more of a back seat this year cos of my studies and I probably should make more of an effort to do it, but there's something about iPods that isn't quite, there's something about them I don't like I guess really. I like sitting down and listening to an album, you know what I mean. I really sort of cherish that if I get like an hour and sit there and put a whole album on, it's only me by myself but I'd really enjoy it.

I rarely get to do it. But listening to an iPod when it's on shuffle or whatever, and listening to tracks isn't as appealing really I guess.

INT: So you like listening to an album as work of music rather than just... music for the sake of it?

Oliver: Yeah, the older I get the more I appreciate that sort of thing really. I'd like to sit down and listen to like a [*The*] *Doors* album or something like that and listen to it in its entirety, but music is not like that anymore, well it sells in that format but I don't think they put as much thought in to the process of putting the songs together in to an album, it's more like let's make ten tracks that's an album.

Oliver therefore cherishes listening as an activity unto itself, and doesn't like just having music on for the sake of it: resenting the current singles-oriented market for producing what he deems to be less interesting, shortform works. In general he has a background in audio technology as well, and seemed in the interview to strongly dislike poor quality sound.

Hugh sits on the boundary between this group and the previous one. He has a walkman, but only uses it for long distance journeys. He dislikes a lot of soundscape elements, but as someone who seems to care about the soundscape as a function of ecology, feels it's important to listen to it anyway.

INT: would you say you just like listening to the world more than, or as much as music then?

Hugh: Yeah, I'd say so, but just as much, um and... I would like it to sound a lot better. And so but you've got to listen to it even if it sounds horrible. Don't you? [...] If you're not aware of the sounds that are going on then you'll just, you'll be unaware as to whether it sounds nice or whether it's getting better, [10 years from now], you'll have no idea of you know, how the shape of, not only just buildings and stuff, but the sonic environment, how that has changed over that span of time.

Hugh then brings this section full circle – his dislike of walkmen is specifically because he *doesn't want* to use a coping mechanism to navigate unwanted or disliked soundscapes, and feels it's important to be aware of the soundscape as whole to know how it changes.

On the other hand, regular users seek to alter or block out unwanted soundscapes. Users in the middle group tended to use walkmen to cover up unwanted soundscapes rather than *not* using them in places they actively wanted to listen to, however.

5.6.2 ‘Furniture Sounds’ – background music, television, radio and Skype

Habitually using TV, radio or music as a background in a home or work environment was generally done to *combat loneliness* and create a feeling of ‘homeliness’ or ‘sanctuary’. I will use the term ‘furniture sounds’ to refer to this, a reference to ‘furniture music’, a term coined by Erik Satie (Wilkins and Satie, 1980) to refer to a kind of music performed live, specifically as a background element and not one to be listened to directly, in his view akin to a piece of furniture. Therefore, this category is specifically about sounds put on to *not* directly listen to, but to improve the soundscape of people’s homes or work in different ways. It is not that these sounds are not actively listened to in a top-down manner at times – but that they are aspects introduced into an environment as a comfortable background sound. Jake describes this as ‘tuning in and out’.

While everyone sought human company at some point, the number of people, location, purpose and loudness were all highly variable. Given ‘people sounds’ was the most noticed sound in the diary data, this seems intuitive. There is a fundamental contradiction of city living here: people universally like being around other people and having human contact, but just as quickly get annoyed by *unwanted* human contact. Some people are highly aware of this, with a strong desire to turn people off and on at will. Tahir for example, got bored being alone, but then quickly irritable being around too many people for too long, and would like to be able to turn off and on social contact at will. Therefore, it is not that people are necessarily *lonely*, but participants do seem to prefer being around the sounds of other humans wherever possible.

‘People sounds’ is a category that tends to get uncritically bundled up and analysed as a

group in soundscape research. However, ‘people sounds’ have possibly the biggest range of variability of any other single source in my research, as these ‘sounds’ comprise the entirety of people’s interaction with other humans! ‘Voices’ alone have a huge amount of possible contexts which all fundamentally change both the social and sound context – see the tree diagram in 1.1 on page 10, for example.

As suggested by the title, there are four main sources here. Music, played over speakers; television; radio; and Skype or other video calling software³. All four feature ‘people sounds’ to some degree. A common reason for listening to a radio show was for a presenter, or a certain type of programming.

Loneliness

One of the main ways people cope with environments that are too quiet, or ones in which they are alone or seek company, is to use music, television or radio to ‘fill’ the space. What creates the feeling of emptiness or loneliness though? Using my *noticing threshold* theory, the threshold is being lowered due to an undesirable social situation, which in home contexts is possibly the quietest environment people experience on a day-to-day basis at least. This creates a sense of quiet which the listener finds uncomfortable. Environments which at other times would not be noticed, or judged positively for their quiet, suddenly become *uncomfortably quiet* due to their lack of sounds. The most common solution is to use furniture sounds as a coping mechanism.

Claire and Francesca were by far the two who desired almost constant company. Claire attributed this to a busy family house when she was growing up, living with a twin sister she spent almost all her time with. Francesca grew up in London, again in a busy area, and was used to having company all the time.

Claire: I’m a twin, I’m not great when I’m on my own, you know? I’ve always kind of grown up with someone, so I think a lot of it is just [...] a bit of

³Skype was the only service of this kind mentioned in my fieldwork, although many other services such as Google Hangouts and Facebook Video exist.

background noise was always there when I was growing up, so I'm not really used to silence.

People who lived alone felt this strongly.

Sabina: When there's no one around I always feel alone so I tend to put a lot of stuff on, so it feels like someone else is around.

Clearly the simplest way to counteract loneliness is to go to a public place, whether to meet up with someone or not. Indeed, some of the *alternate, secondary places for work* (Subsection 5.2.1 on page 150) were chosen for this reason. When this wasn't possible though, furniture sounds were highly suitable for giving a similar sense of company.

TV (and internet video)

The most common association with this kind of listening is putting the TV⁴ or radio on, which almost everyone in the study spoke about. TV and radio listening both have some of the same characteristics relating to routine and the ability to dip in and out. While several people tuned in purely for certain specific shows, this was more of an active attention; this section focusses on using a TV as a passive, background sound source.

Sabina: I always have stuff on in the background, if I'm on my laptop I'm always watching something, or I could be on my laptop and be watching something at the same time, just so I can hear something, and noise around me, so I don't basically feel alone.

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Quentin: I'll I tend to put [the TV] on, and just have it on in the background quite a lot, but my girlfriend tends to want to watch stuff if it's on, but I'm happy for her to just watch whatever she wants, so if she's got a particular programme that she wants to watch I'll just do something else instead of watching it but [we have a] digital recorder thing. So we'll record programmes that we both sit down purposely to watch together, so it's kind of it's a mix of the two really, but I tend to just have it on all the time [...] especially when I'm in the house on my own.

⁴Increasingly this refers to internet video, such as YouTube or iPlayer, I will simply collectively refer to these as 'TV' as they seem to fill the same semantic function.

To reiterate: TV as background listening was used as a replacement for company in both cases. TV use was often activity-based as well.

INT: Do you have [the TV] on even when you're working?

Daniel: No, it gets a bit distracting, but [when] I'm just pottering around doing things, we usually have it on. That, or music, it depends what I'm more in the mood for.

In rare cases, the TV provided a kind of acoustic blanket, akin to air conditioning, over a noisy house, and only when it was switched off did quieter sounds become noticeable.

Maggie: My nephew and everybody had gone to bed, it's very quiet when they've all gone to bed unless they start snoring. But when the TV is off as well, it's the only time it's quiet, so you can hear everything.

While Maggie was the only person to mention this explicitly, as a sidenote it's possible this is yet another coping strategy for listeners in busy environments. Often the choice to put the TV on wasn't really a conscious choice, or one of a partner that they don't really think about.

Claire: I don't know, yeah maybe. Um... [my husband] quite likes having the TV on when we're eating for some reason (laughs). I don't know, I don't know why. Unless we're doing something in the evening like playing chess or scrabble or something, or listening to music, [the TV is on]. It's a bit of background hub.

Overall, the people who used the TV as a background sound tended to use it selectively, most commonly when alone or as an antidote to an environment that is undesirably quiet. Nobody really mentioned what was actually on the TV, or which station they were viewing, except when watching a specific program – this kind of active watching is not what I am studying here, though. In some cases, it was not the participant who turned on the TV but their spouse or housemate; I suspect that without the logbook recordings, it is likely the TV would not have been noticed at all in many situations.

Radio

Radio use was slightly different from TV use in a number of ways, although it keeps the same basic properties of an antidote to loneliness. Radio users tended to be much more aware of the station they preferred, and have a set of criteria for which station they listened to at which time. Generally, people who used the radio as a background sound had it on more commonly than people who used the TV.

Laura: There's [...] presenters I like on the show. So there's a morning slot that I quite like, an evening slot that I quite like. Early evening around five, six, and then during the day I select, pick and choose, [and] every now and again be quiet, or put music on.

INT: Which presenters do you like, do you know what it is you like about them?

Laura: In the morning there's a group presenting and they're quite funny. It's two guys and a lady and they interact with each other and play games as well as music and competitions and that's, I like that one. Then after that there's, I think, one guy and one lady, who tell you what's going on in news as well as the music in between. So that's probably why I like it, it's a bit more informative and then enjoyable with the music. And then that's probably it for the morning. Then for the evening I think it's just to relax, they just play music all the way through. Sometimes they have like a non-stop section yeah or they just have a section where they play funny games.

In this description of a single radio station then is a huge range of contexts – news, chatting, music and competitions, and a tangible shift to be more music-oriented. For Laura, who lives alone and gets lonely, this radio station fulfils many of the aspects that having company would. The alternation between music and talk allows for varied modes of auditory attention, perhaps being a more desirable listening experience than simply listening to a news channel or a music channel. The changing context keeps her interested, but is very distinctly a *furniture sound*, only actively paid attention to when required. Every radio listener had a clear preference for one or more radio stations, for different reasons.

The two most popular stations in my fieldwork were Radio 4 and 6 Music. They both have fairly specific demographics.

Radio 4

The remit of Radio 4 is to be a mixed speech service, offering in-depth news and current affairs and a wide range of other speech output including drama, readings, comedy, factual and magazine programmes. The service should appeal to listeners seeking intelligent programmes in many genres which inform, educate and entertain.

6 Music

The remit of BBC 6 Music is to entertain lovers of popular music with a service that celebrates the alternative spirit in popular music from the 1960s to the present day. Its programmes juxtapose current releases outside the mainstream with earlier recordings, including music from the BBC Sound Archive. It should provide context for the music it plays, and support live music and new artists. (BBC, 2013*b*)

This is unsurprising for a postgraduate demographic group, with 6 Music being aimed at “25-44 year old music fans” (BBC, 2013*a*) and Radio 4 having its remit of “intelligent programmes in many genres” (BBC, 2013*b*) being intuitive matches. Several participants alternated between these stations, at different times of day or given different criteria. For some the sequence of radio shows become part of people’s daily routines (as in Laura’s case), others match the station or show to the activity at hand.

Oliver has a radio routine, but with different stations at different times.

INT: Will you always have the radio on in the morning?

Oliver: Quite often, unless it’s Radio 4 in the morning or Radio 6, if it’s Friday, sometimes.

INT: What’s on on Fridays that’s different?

Oliver: I like to listen to Shaun Keaveny’s [a 6 Music presenter] midnight shout-outs.

INT: So like is that your normal routine then? You’ll put radio four on unless it’s something specific on Radio 6?

Oliver: Yeah I wake up to Radio 4. I'm getting to that age where I'm listening to the *Today Programme*. I can't stand Radio 2 or Radio 1 in the morning, they drive me nuts. I really don't like the DJs, I find them really annoying. What's his name, Chris Moyles, he really gets on my nerves. And the guy on Radio 2, the ginger guy, Chris Evans. [...] I find the *Today Programme* is quite good to get a bit of news early in the morning, and it's quite a nice gentle way to start the day without any kind of really loud music in your face or anything. If I'm hanging round the kitchen a bit more I do tend to put 6 Music on.

Most listeners are a little more casual than this though, and tune in occasionally when they remember, or notice a show they like when it comes on in the background and then start to pay attention.

Jake: I do like to be accompanied by music a lot, I wear my headphones everywhere, and at home the first thing I'll do is turn my computer on and put some music on there as a background to whatever I'm doing, or if I'm in the kitchen I'll have either Radio 4 on for talk radio or Radio 6 for music. I'll not necessarily listen to it the whole time, I'll just tune in and out as I'm working in the kitchen, kind of thing.

People generally had a high awareness of which shows require a low level of attention, and which ones require a high level. As noted, some listeners have different music preferences for different kinds of work. This is replicated here.

Gloria: I find it very hard to read and listen at the same time. I've tried when doing even just boring tasks like updating my bibliography [...] I'm trying to listen to *In Our Time* which I love, and they've got an archive of all the *In Our Time* which is just ace, and I'm working my way through them. And I can't. Cos, *In Our Time* is when the academics are sat down talking about a topic, so you've got to actually follow what they're saying. But what I've found is I do listen to *Fags, Mags and Bags*, have you heard that? I love it, it's my favourite comedy on Radio 4, it's about a Scottish newspaper shop, hence the fags, mags and bags. It's just it's really beautifully, beautifully written comedy. I listen to a lot of comedy on the radio, and I tend to listen to comedy while I'm doing other things. Not reading, but doing other academic tasks, like tasks, as long as they don't require concentration. Cos comedy, you can lose your concentration on it for a second and it doesn't matter.

Even amongst mixed speech radio then, there are differences based on the content within. In order to be a good furniture sound for work, the content must be listener-concentration-agnostic – that is, missing a minute or two must not detract from being able to follow the plot. This may explain why the talk-and-music combination other listeners in this section prefer is so popular. Each chunk of speech or music is short, and disposable. ‘Tuning out’ is not only possible, but easy by design.

Some people liked specific voices, for different reasons.

INT: And what do you usually listen to on the radio usually? Radio 4?

Kate: Yeah, Radio 4. Sometimes the funny stuff, like their comedy shows and *Book of the Week* and the *Today Programme* in the morning, and when I can manage it, shipping forecasts [laughs], I just love that. Occasionally *The Archers* but I don’t really watch it, listen to it, enough to know who everybody is. They’ve just got funny accents and talk about cows.

INT: Do you think you like listening to the, to just voices then?

Kate: Yeah it’s weird ’cause when I’m with people, quite a lot, especially lots of people, I can’t understand what they’re saying. I had hearing problems when I was younger and operations and everything, and my hearing apparently is within normal range. But I have a problem interpreting what they’re saying. So it’s more of a brain thing, but I can listen to the radio and understand what they’re saying. But people, real life people, I have problems understanding.

While Kate has a different set of criteria, again there are distinct listening styles here. *Book of the Week* and the *Today Programme* may be listened to directly, but other shows like *The Archers* are potentially listened to in a variety of different ways, including as a background sound to dip in and out of. Even though Kate doesn’t always follow the dialogue or the plot, this isn’t the function of listening to it – it’s human voices, in a manageable format.

Routine was much more obvious with radio users compared to TV users.

Pablo: At 5pm here [...] every day, I listen a sports programme on the radio, it’s a kind of debate. There are old guys, about seventy to eighty years [old] that were involved in the whole history of football in Brazil and this guy

debates, and they shout. It's funny to listen. It's a radio programme that has lasted for forty years. It's a huge tradition. My wife hates this thing, she hates it. So I listen when I'm running on the treadmill. It's kind of a routine.

Laura: When I first moved in I was a bit lonely, but I'm getting used to it now. I'm liking having to do all my own stuff and doing whatever I want when I want in a way. Yeah, making my own structure.

All the listeners in this subsection have spoken about routine in their quotes – from Laura talking about how shows change throughout the day (and perhaps being part of her routine reinforcement), to Pablo knowing the exact time his favourite show comes on: with most people being somewhere in the middle, like Oliver's example of generally having the radio on but tuning in for certain shows when they remember. Compared to TV listening then, radio listening is more routine, easier to dip in and out of, and more likely to be on all the time when possible; it seems to more deeply reflect the listener's personality, and forms an intimate part of their life.

Skype

A few people mentioned using Skype as part of their routine, and one specifically spoke about using it as a furniture sound, having a friend at the other end as auditory company: but not necessarily actively talking.

INT: So you do a lot of Skyping?

Sabina: Yes. Obviously it makes me feel less lonely as well, so I tend to Skype with my best friend virtually every day, we discuss about our families or something to do with uni cos she's not in Manchester, she's in London, so we're always talking about something, or watching series at the same time, or she's telling me something about her dissertation and I'm telling her something about my coursework or stuff like that. I think I just told her to hold on a bit there [on the recording], I'm trying to make notes, so yeah I think that's my basic routine there always doing that. [...] If my mum's not calling me on my phone, I'm with my friend on Skype so it's always someone there sometime.

Sabina lives alone. She gets lonely, but doesn't really like people in her space in the week, preferring to socialise at the weekends with her friends. Her solution therefore is to have a constant Skype call with her best friend, who possibly also has the same preference. This call fills a lot of functions – it is company and furniture sound in one, dispelling her loneliness and making an auditory window into another space. As people increasingly live alone, with 30% of Western Europeans living in single households in 2006 (Hodgson, 2007), and broadband access increasing, perhaps this will become a more predominant auditory coping strategy over time.

Furniture sounds as a study aid

With a postgraduate group, everyone in the study was predominantly working alone. Claire used other coping mechanisms here as well not linked to the soundscape, choosing to study in the library with a friend wherever possible. At home though, it was notable how she simply would not work without some kind of furniture sound, usually music.

Claire: I like to have quite a controlled environment when I'm working. That's why I never work in the postgraduate office, well it's not an office now. It used to be a nice um, office-y space up to last year, and then they made it into a computer cluster, and a lot of the masters students use it as well as the PhD students now it's just, it's got this kind of weird [feeling], [there's] a lot of people, and no one really likes you to talk in there now. [...] If I'm working I find that my mind wanders if I don't have music on.

Claire therefore found an open office experience where it was possible to chat far preferable to a computer cluster, where it seems it is no longer socially acceptable to talk. In other words, there was a shift from a desirable level of background chatter, to a presumably louder space with no chatter. Therefore, she works elsewhere. In contrast, Roger used to work in a very busy bank, and also found music essential to his work. Working as a bank clerk requires an intense attention to detail and zero errors. The culture in Nigeria in banking is that nobody cares if you play music, as long as you don't make any errors.

Roger: It's a zero tolerance environment [...] nobody wants to know if you're passive or active [in a mistake], if something passes under your nose, you're involved.

Therefore the bank Roger worked in allowed workers to play their own music, anything so as to help the clerks concentrate on the exceptionally long (by British standards), 12 hour work days. Roger always plays music at work, and his regular customers both enjoy his music and bring him gifts.

Roger: Even as I've worked, I've seen customers buy me a CD, they just love to come into my queue because of the music I play. That's my antidote to the stress, that's why [...] I can work in a place that's a little bit noisy, but I have my way of being indifferent to the stress. And because it's inevitable having people come into the bank, I can't ask them to go out, [so] I play music. And in that happiness, that spirit and that joy I can attend to a thousand people without that feeling of a thousand people, because that would add to the pressure. [...] Even when I'm doing something tedious I won't feel the pressure of the work I'm doing.

The music he plays then, has two main functions. Firstly, and arguably most importantly, his music lets him concentrate on the task at hand, blocking out some of the unwanted noises from the rest of the bank. He feels this stops him making errors, and as it's music he really likes, he finds it has a strong effect on stress reduction. Secondly, bank customers actively seek his desk out when he's working, liking his choice in music and being appreciate of his service enough to bring him gifts. The overall effect is to create a "bubble" inside the environment, cutting off the immediate job from everything else that's going on in the world. In an environment where he otherwise has very little control, being able to use music turns this into a tolerable environment, reclaiming something of himself in the space.

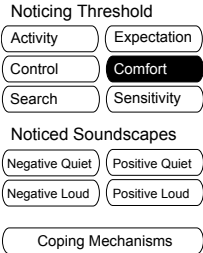
Whereas walkmen were generally used in public spaces or ones with *low control*, use of furniture sounds was done in places where the listener has *high control*, by necessity – being able to put music on is in itself a sign of at least relatively high control over an environment. In many ways this kind of listening is similar to walkman listening, with a

key difference – the furniture sounds become a part of a space, rather than an overlay on top, and an environment for *shared* listening.

Overall, using furniture sounds is a method of combating loneliness, making a place more manageable, or creating a ‘cocoon’ (like Roger) in an otherwise intolerable place. This happens in places of higher control, and often without really noticing. Listeners generally seem highly adept at leveraging both types of coping mechanisms (walkmen and furniture sounds) in order to create more desirable soundscapes. Even though some of the reactions to this were the first time the participants had really thought about why they do these activities in general, participants generally had highly fleshed out, in-depth rationales for when, where and how they used walkmen and furniture music.

5.7 Other sensory stimuli: comfort

Links between vision and audition are barely examined in soundscape literature, with Payne et al. (2009b) identifying as a key research gap “a holistic understanding of the sensory interaction in individual’s experience and assessment of the soundscape” (p79). Sensory links are well documented in cognitive psychology, however. Spence and Soto-Faraco (2010) summarise some aspects of this. This section could be a research project in itself, so as a result I will keep it relatively brief, showing an overview of some of the ways other sensory factors were noted as modifiers of soundscape perception in my fieldwork.



The sight of appropriate visual information can result in the enhancement of auditory perception (as when the addition of lip movement enhances auditory speech perception in noise by an amount equivalent to amplifying the signal by as much as 15dB). (p272)

[It is] important to study perception in a multisensory (rather than just a unisensory) context. The majority of experiences in everyday life are multisensory, and [...] people simply cannot focus exclusively on what they hear

and ignore any other sensory inputs that may be occurring at around the same time. (p290)

There is also some evidence that semantic congruency can influence the multi-sensory integration of auditory and visual signals under at least a subset of experimental conditions (p291)

Raimbault (2006*b*, p342) suggests a range of factors affecting soundscape perception directly such as “air pollution [...] visibility of an unwanted noise source [and] living on a pretty street”. While links between vision and sound are the most studied, it seems likely that there are similar links between other senses, even to the extent that we are perhaps missing a significant amount of data by *not* considering the senses as a whole: “some researchers have even started to question the appropriateness of distinguishing between modality-specific and multisensory cortex [activity]” (Spence and Soto-Faraco, 2010).

This was a fairly distinct coding category. Participants were generally much more aware of the effects of the weather on their mood than the soundscape, for example. As a modifying factor most discussion was extremely explicit, with people having a much higher tolerance in good weather and a much lower one in poor weather. Other sensory factors of spaces, and participants’ sense of general well-being, contributes highly to both thresholds and noticed responses, therefore. This can be due to physical, sensory reactions to smells, the weather, lighting levels, temperature, and other similar factors. It’s also important to consider psychological factors, such as the respondent simply being in a good or bad mood.

Decreased comfort tends to lead to a lowered noticing threshold, and a higher potential to perceive the soundscape as negative. Increased comfort leads to to a higher noticing threshold, with increased potential to notice soundscapes as positive. As the threshold is raised however, the soundscape may not be noticed apart from when *engineering normality*.

5.7.1 Unpleasant factors in combination

The biggest and most familiar response group concerned *negative factors in combination*. Once someone experiences sensory discomfort in one sensory mode, they seem to become more easily susceptible to discomfort in others. One of the few places Francesca strongly disliked was a classroom in Arthur Lewis Building at the University of Manchester. This room is windowless, and she noticed the air conditioning for the first time.

Francesca: It just feels so... prison-esque [laughs] and I mean obviously when you're in a room with windows they're usually not open, so it's not like you do have a current of air passing through, but I think the idea is planted there in your mind that they *could* be opened. Whereas in a room that's like a box, a grey box, everyone's sitting there in like uniform rows with no natural lights I think, lights on it, it's really important to me. [...] It's got that kind of mechanical hum constantly, which varies depending on what room you're in, but I particularly dislike that room, and it happens to have been where the majority of my lectures have been for this semester anyway.

Francesca goes on to talk about how her legs fall asleep, and how hard it is to concentrate in there, with the room having a soporific effect. Interesting here is the semantic value of a room with no windows or natural light. Everything else – the grey, the lack of light, the hum – gets noticed and is seen as being endemic to a completely controlled environment, even if rooms *with* windows still have uniform rows, no breeze and a grey colour scheme. The over-long lectures surely do not help either – a perfect example of the threshold-lowering effect of being unable to leave.

On a more short-term scale, hoovering and cooking were disliked by Pablo.

INT: You said this [activity] is really noisy. Does this really bother you, all the cooking sounds?

Pablo: Yes yes, it's a bit noisy. [...]. [It's] hot at home, because you know you are cooking and you start sweating and these things. [...] Noisy things I'm not a big fan basically, doing [things] with a drill or vacuum cleaner [for example]. I remember when I moved in, I had to assemble some furniture, and I had to drill things, and it's not comfortable for me at all.

As a result, he trades jobs involving a lot of noise with his wife wherever possible when they are dividing conjugal roles. There is a combination effect here: the activities named are not only noisy, but also hot and sweaty, resulting in a tangible feeling of discomfort for Pablo just talking about it. This was a common factor for cyclists as well. Hugh gives several examples of this in the ‘traffic’ case study in Subsection 5.3.5 on page 181. Jake has similar responses to different stimuli.

Jake: This is another example of noises that do annoy me: cars. I’m a cyclist so I’m bound to hate cars. It varies, sometimes I don’t mind them, but sometimes especially if it’s not a day that’s conducive to cycling, like it’s windy or a bit rainy or it’s a bit cold then I get a bit, you know, stressed out cycling, and then cars just add to that and I become really aware of the roaring noise they make, and yeah it’s quite annoying. I’d say it was about once a week maybe that the noise gets to a really annoying level, and I get really hyper aware of it. Most of the time I can just filter it out I guess.

In this case, the noise of cars is tolerable until another factor is introduced – the wind, or rain, or cold. There is some precedence for this:

Perceptual judgements of urban environments are influenced by the acceptance of various combined requirements such as functionality, appearance, global comfort (acoustic, thermal, lighting, wind, etc.) and social factors. Previous research has suggested that it is essential to consider the interaction of noise and its context in overall comfort assessment, which is mainly analysed through on-site studies. Raimbault (2006*a*)

In my analysis, these factors contribute to a stress condition, which then lowers the noticing threshold and allows the previously dishearkened traffic sound to come through. This seems to be a common response to busy or stressful areas that were visited a lot – people get very good at dishearkening, but only to the specific level required to ignore something. Public transport environments had similar responses.

Sabina: I hate the tram, because obviously it’s always so noisy, there are lots of people on the tram, it’s hot most of the time, but it’s the fastest way to get to work.

INT: What's your preferred method of travel?

Sabina: The tram, because it's faster, but I hate it.

[...]

INT: So again you don't really like the train station either? What is it about it?

Sabina: It's noisy and it's cold. I think around this time it was very cold and noisy, the tram didn't come on time, so it was making me feel a bit angry having to wait there, I think I just came back from work and I was getting the tram home so I was very annoyed.

Another aspect, on top of the combination of being noisy, cold and crowded, is the inconvenience. Having to wait for a delayed tram seems to open people up to further potential for dislike. Soundscape response, therefore, is influenced not only by measurable, empirical factors of temperature, weather and crowdedness, but also by personal, semantic ones like having to wait longer than expected or being in a bad mood. 'More than one factor in combination' seems to have a much stronger effect than any single one, and indeed people seem to have their dishearing level very finely set just above where it needs to be to ignore disliked sound- and sensescapes.

It's worth noting that cold environments don't always equal a negative response. Tahir works in a very cold lab, which he states repeatedly.

Tahir: [dictating on recording] [I'm] working in the X-ray lab at the University of Salford. I can hear around me the machines, the sounds of the machines, the X-ray machine, and the cassette reading machine. Weather is so cold cos these two X-ray machines have to be kept in a very, well actually the X-ray machine and the uh printer have to be kept in a very cold, at a very cold temperature, and this is why two air-conditioning systems are in operation right now so it's quite cold. The sound of the machines makes you feel like you have to be very quick and work very hard, and finish as soon as possible, I don't know why, it's just this feeling comes to my mind because this machine keeps like 'bee boo bee' and this makes me like go and do the next step.

Given there is a semantic reason why the room needs to be quiet (the safe functioning of the lab equipment), Tahir accepts this as part of the job in this space. The cold

and ‘bee boo’ noises even give him a feeling of routine, emphasising the difficulty and importance of his task. While in general, unpleasant atmospheric conditions result in a lowered threshold and a higher likelihood of a negative response, semantic factors can still override this if the listener knows there is an important reason for their existence.

5.7.2 Good weather as a mood-booster

By contrast, good weather, and more abstractly *positive* elements, resulted in raised thresholds and positive appraisals. Nadia is heavily influenced by the weather.

INT: So you definitely felt better when the weather changed?

Nadia: Yeah. I really see that, my mood and the weather.

INT: This is at work and [you’re] feeling good because of the weather? In the [log book], you didn’t write traffic this time [in the same space as it was noticed before]: was that because it wasn’t as loud, or did you just not notice it as much?

Nadia: I think I did not notice it as much. [It’s a] nice day. You forgive everything.

Good weather seemed to especially be a theme among international students.

INT: Um, so you mentioned the weather, is this a big factor in your moods do you think?

Tahir: Yes, in this country absolutely, cos it’s always kind of cold, rainy, no sunshine, so yeah it is, when it’s sunshine I basically can’t study, I have to go outside, I have to do something, so yeah it is, it is.

This feeling of *distraction* on a nice day was shared by Jake.

INT: [reading from logbook] Outside Arthur Lewis. Quite peaceful, not conducive to reading or study. Why do you think that is?

Jake: Um, I don’t know, because I went outside to like enjoy the sun and get away from my desk that’s miles away from a window to [do] some reading. But then once I was out there I just wanted to you know, lie in the sun and watch the world go by, so the noises kind of alerted me to that going on, and then it became hard to do any reading. Yeah it was just a bit distracting.

Nice weather was universally liked, and directly linked to an increased sense of well-being and happiness, and a conscious awareness of factors which would usually be annoying simply not mattering for a little while. Curiously, unlike other aspects where a raised threshold helps with concentration, in this case, the presence of a nice day or good weather can result in distraction. There is a strong desire to go outside, abandon work and watch and listen to the world go by.

There was no conclusive data linking nice days with getting distracted due to soundscape issues, but this is linked strongly to *activity* – perhaps the rarity of nice days in the UK simply meant people wanted to be outside, not working: and there is no strong soundscape link here. Again however, it seems important to take weather into account when doing both indoor and outdoor soundscape research, as both extremes have the potential to significantly alter responses to both sound annoyance and dishearing competency.

5.8 Judgement of noticed soundscapes

Soundscapes can be noticed when the noticing threshold is lowered enough for a bottom-up sound source or soundscape to break through, or noticed directly using top-down attention. As mentioned, this thesis is more concerned with the former however – while soundscapes can facilitate or impede the transmission of certain types of sounds designed for top-down attention, generally this seems to be a source property not a soundscape property. This section explores the range of possible reactions to noticed soundscapes. Noticed soundscapes were fairly straightforward to categorise, once the noticing threshold theory was established. As discussed, where people did have strong opinions of soundscapes, they were positive or negative, and loud or quiet. This gives four categories which were then evaluated for their key concepts.

5.8.1 Contentedness

To reiterate, my findings seem to indicate that *on the whole, soundscapes are not noticed*. Soundscapes are noticed if a listener's soundscape threshold is lowered to such a level that, due to the above mentioned factors, it becomes an active, apparent part of their environment. This is not to say it doesn't have other psychological effects however, but this study is not equipped to judge those effects. Even when the soundscape *is* noticed, it is also a problem to analyse if what the person is "really" listening to is a single source, or a soundscape. Clearly, the environment facilitates and modifies the audition of single sound sources, but nevertheless this is an important aspect to pay attention to.

It should be noted that just because a soundscape is not noticed, this is not necessarily a negative judgement – sometimes quite the reverse. Indeed, the function of coping mechanisms (Section 5.6 on page 199) can be to make an environment *not* noticeable, rather than simply more positive, and indeed "putting on music so as not to notice it" is a very common coping strategy. The lack, or presence of *company* is another scale operating here. Some like company, others don't, in different environments, with too much or too little pushing the threshold up far enough to make the soundscape noticeable.

This is an imperfect chart. Moving from *not noticing* to *noticing* is a hard point to pin down, the exact moment of which is enormously variable. Soundscapes are usually only noticed spontaneously however if they are either positive or negative, which is usually as a result of being remarkably quiet or loud, or some aspect of the soundscape being present. The rest of this section is about soundscapes which *are* noticed, and the reasons why. Figure 5.4 on the next page shows the layout of this section.

The relationship between this section and *coping mechanisms* is a complex one – as mentioned, coping mechanisms are used to alter disliked sound environments, raising the noticing threshold and making them again, unnoticed. Much like a film soundtrack, soundscapes can modify our reaction to environments: but perhaps a positive design in most cases should not draw undue attention to itself. The 'soundtrack' analogy

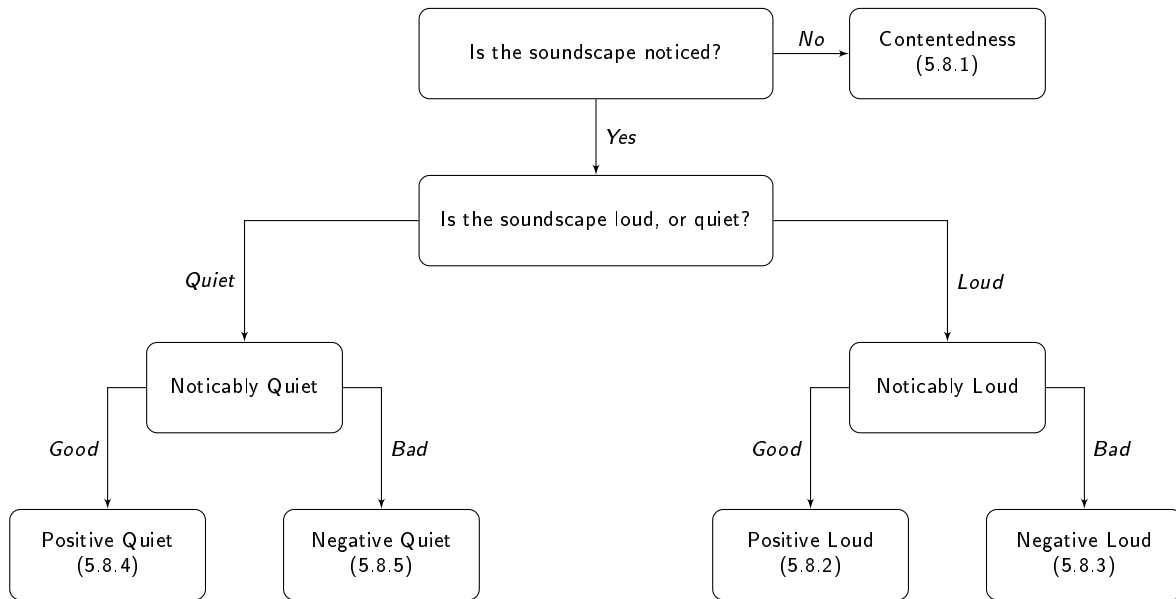
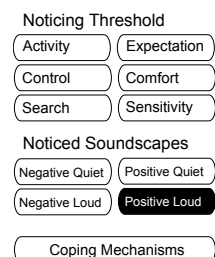


Figure 5.4 – Soundscape basic decision tree

goes further: Beer (2007) asks us to “think of how ambient technologies, such as global positioning systems, or even new Nike trainers that communicate with MP3 players to select music that fits the rhythms of movement, may come to soundtrack cityscapes on our behalf”. Perhaps ‘ambient’ is the key word: something which is part of a thing, but that fits around it⁵ and through it, enriching the experience rather than *being* the experience.

5.8.2 Positive — Loud (‘atmosphere’, music, people)

These soundscapes, while acknowledged as existing, are not well documented in soundscape research. Andringa and Lanser (2011) demonstrate that loud sounds are more likely to annoy if they are “without choice”, but do not examine pleasurable loud environments to discover why they are liked. My results suggest a range of categories of positive, loud environments.



⁵The Latin root for ‘ambient’ is ‘going around’

Music & Company

Positive Loud environments can be characterised by the concept of *atmosphere*. This stems from two main sources – *people* and *music*. The most direct application of this is at live music events, busy cafés, or parties. The soundscape is loud, but *desirably* loud – the presence of factors which would be an annoyance at other times are what the listener directly seeks.

Hugh: I'd be really aware of sound if I was at a music concert or a gig or something, or at a football match, um, they're very intentional sounds aren't they? [...] Football's just the [sport] that for me has the most sort of passion in it really.

Gloria: I go to a lot of gigs and they're very intimate [...] people right next to you, they stink of sweat and the place stinks of beer, and I'd rather be nowhere else.

The keywords here are *passion*, *intimacy* and *intentional*. There is a deliberateness to sounds in this category, a choice to take part, and be washed in the sound of the activity. This was often linked to other aspects of listeners' sound preferences. Gloria really likes being around other people, and actively enjoys talking, for example. While she likes quiet sometimes, live music is one of her major modes of preferred leisure time. Even though live music events are full, noisy and raucous, they're also very intimate to her, and she doesn't mind sharing her personal space – indeed, the reduction or removal of personal space seems to go hand-in-hand with the environments Hugh and Gloria are describing. The pattern of *loud sounds in close proximity to other people* is repeated in other ways. Desirable, loud environments are characterised by a balance of these two elements, in different combinations. Claire merges these two together, and is highly conscious of her own musical tastes, the tastes of any guests, the correct loudness for various activities, and generally prefers to almost always be surrounded by music and people.

Loud, broadband noise sources

Aside from the above category, the other significant source of loud, positive sounds is cathartic or meditative broadband noise sources. Compare these descriptions of Andrew's shower, and a bus journey:

Andrew: I love showers, they're just really nice experiences. So yeah, you kind of get lost and the water becomes like a wall that can't be penetrated by anything else [...] it just becomes like that kind of cocoon.

—

Andrew: I was right by the engine, and it was sort of, once like the shower, I think when you're in a vehicle the engine becomes this really weird wall that blocks out the rest of the world. [...] You hear a little bit of what's going on outside but not really [...] it creates a wall between you and the rest of the world. There is nothing else other than the engine going on. Sound-wise, there's people, you hear people's voices on the bus. It's almost like, the engine becomes the aural plane of reality that the rest of the world sits on, you know? Everything begins and ends with the engine noise. Or everything sits on top of the engine noise. Or sits within the engine noise.

Nadia had a similar experience: she enjoyed how the shower blocked out everything else, and reminded her of home in Malaysia where running water is everywhere. Andrew's description is highly evocative – the idea of being “cocooned” in sound, letting the sound become everything, is highly relaxing, a space to get lost and switch off. The sound becomes everything, and as a result becomes a meditative experience. Loud broadband sounds then, are sometimes very positive, if the listener is seeking a kind of catharsis.

Modes of *Positive – Loud* listening already covered

Other examples of this were covered in context in other sections.

Alternate work spaces Louder, secondary places for work were covered when discussing ideal places for work in Subsection 5.2.1 on page 150. These environments were

judged loud in comparison to their normal work environments, but loud in a positive way, a relief from usual work drudgery.

Eavesdropping and ‘people watching’ Some people specifically chose places to sit for the express purpose of eavesdropping, especially in cafés, as mentioned in Subsection 5.2.3 on page 155.

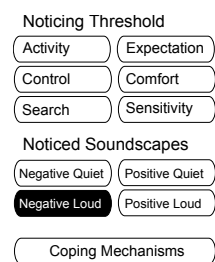
Top-down, active listening This was covered in the *Search* section, Subsection 5.4.2 on page 190. To summarise, this is active attention paid to a desirable film, piece of music, or radio station, for instance, that the listener actively chose.

To conclude, *positive – loud* soundscapes tend to be overwhelmingly loud – loud enough to become by far the most arousing sensory input. Within this there are two main contexts: the live music, close proximity environment, and contexts with broadband, masking-type sounds, such as a shower.

5.8.3 Negative — Loud (intrusion)

The largest category of responses to negative effects is that of *undesirable intrusions*. These are usually loud, often deliberately arousing sounds, such as sirens, alarms, horns and machinery that create a *bottom-up* response. The reactions and rationales for the intrusions are more varied and complex than they seem. Firstly I will look at the sounds that someone might typically expect to be annoyances, that instead are seen as an inevitable part of the urban soundscape.

Police and ambulance sirens are an example of non-annoying ‘annoyances’. Elizabeth works in a hospital, and she is used to ambulance sirens: “you notice ambulances no matter how long you’re there at the hospital”. Elizabeth doesn’t find the sirens distracting or constant however, and identifies them as one of the keynotes of the environment, despite the loudness. However, this is partly due to proximity. If a siren starts right behind her



on the street, she feels “it shaves years off my life”. Sirens therefore are not by default an undesirable intrusion.

Imogen doesn’t like traffic and lives in an apartment in a busy area. While she gets highly annoyed by car horn beeping, like Elizabeth, she finds ambulances don’t bother her nearly as much as there is a *function* to them – getting people to hospital quickly.

Imogen: The ambulances, there’s a purpose, that’s to alert people so that we can drive quicker to the hospital, and that’s that, it’s something serious. Whereas a person beeping is just like “I want to get home quicker”, most of the time I think. And you know, it’s really contagious, once one person beeps, two or three more join in. It’s kind of an aggressive sound I suppose?

This feeling of *aggression* seems to characterise the category *undesirable intrusions*. While sounds can be annoying for their own sake, there is a much higher likelihood of annoyance if there is an embedded semantic meaning, either internally or externally created. Even though the sirens are almost certainly louder, more arousing, and specifically designed to be noticed, the horns are much annoying: a social symptom of intolerance and aggression. This was also a common response in the subsection on *traffic* (5.3.5 on page 181) for cyclists. For example, Hugh has a strong reaction to horns beeping when he’s on his bike, or in listening distance of a road, characterising them as evocative of the increasing aggression and lack of tolerance of other people in the world.

Daniel feels that the alarms going off in his building are a sign of living in an uncared for, undesirable area, that reminds him of a time he got mugged near his front door. The alarms are a signifier of the lack of care in his immediate surroundings.

INT: What annoys you about it? Is it the sound [of the alarm] itself?

Daniel: Well I think it’s the sound itself, the burglar alarms and also perhaps the connotations, of ‘why isn’t somebody dealing with it?’, [and] ‘what sort of place [are we] living in there’s alarms going off all the time?’, and no one give two monkeys. With the other ones, there’s not much wrong with the noise itself unless it’s going on and on and on, *I’m more concerned with what they’re doing to my building.* [my emphasis]

Much like the ambulance siren example, the alarms themselves are only partly the issue; what's much more concerning are the connotations of a perceived crime problem, the sound of the alarm reminding him of this.

Kate found the soundscape of her old towerblock scary and intimidating, like Daniel, and a constant reminder of how the building had become home to undesirables. Revisiting an earlier quote:

Kate: I mean it was a bit of a scumbag place to be honest. It was in a block of flats. But it wasn't horrible to start off with, it just became horrible 'cause loads of drug dealers moved in and so there was police raids and shouting and fights and junkies, and it was really noisy constantly. So the first thing that my children as well thought when we moved into [our new] house was we really, really appreciated the quiet.

Kate and Daniel therefore see these sounds as synecdochical emblems of living somewhere undesirable. Being a corpus living entirely in the city, every participant experienced sirens, alarms, police cars, ambulances, helicopters and other loud sounds of authority at some point. Due to this, they felt a loss of control, as if the place they lived wasn't really theirs, or somewhere they were only planning on being on a temporary basis. Loud sirens or alarms could be annoying with no attached semantic reason as well, but the addition of a semantic reason seems to highly increase the likelihood of the listener finding it undesirable. Quentin, who lives in a similar area but without the associated perceived social problems, has a much more optimistic outlook and as a result gets far less bothered by the soundscape.

INT: You've put 'helicopter in distance' [in the logbook], do you...

Quentin: It doesn't sound like it's such a big deal, but we do get helicopters over our estate quite a lot. I don't know if they're like traffic ones, or if they're involved in other things, but they seem to be kind of at mixed times throughout the day. So they can be really early in the morning or quite late at night.

INT: Do you know what they're there for?

Quentin: I don't know, I think sometimes it's traffic, I live just off the M6 so it's quite a busy area, [with] all the flow into town, but maybe sometimes it's crime and things as well. The later night ones I'd imagine they're probably crime, but I don't know.

INT: Do you live in a nice area, do you like it?

Quentin: It's a nice enough area, yeah, it's quite nice. It's cheap, and it's in Salford, so you're always gonna have a little bit of a rough environment around you, but it was about ten years ago the whole area was knocked down so it could disperse a lot of bad situations, and bad environments. Then they built up a new estate on top of that so it's better than it probably was, I've never experienced it like that. But it's better than it was, and the people who lived there have just been moved, and the problem's not gone away, they've just relocated the problem.

INT: Um, 'walking sounds', 'helicopter in distance' [reading from logbook]. So do you find it irritating, this helicopter, or is it just one of those things?

Quentin: It's just one of those things. It's become so frequent that you just kind of expect it to be there, or it'll be there when you're going to bed sometimes, some sounds like that don't tend to bother me that much anyway, I just phase them out.

Unlike Kate and Daniel, Quentin is happy to associate the helicopters with perhaps being for traffic, not presuming they are crime-related. Despite being in a busy area with a main road junction and helicopter sounds at all times of day, he is highly adept at tuning it out. Again – for sounds to constitute an *undesirable intrusion*, there needs to be a semantic association for the sound source with other values. These semantic differences are touched upon in some soundscape research but rarely explored in depth. For example Guastavino (2006) reports sounds of “voices, children, and human sounds” being positive, and “angry people” being negative, but does not then go on to question “human sounds” as a category in itself. The semantic association for the sound is thus likely a much bigger factor in its judgement than the source of the sound itself.

Elizabeth has an intermittent house alarm, which is annoying but again does not have any of the same kind of connotations – just an annoyance at her landlord for not sorting it out sooner.

Elizabeth: We had this thing a few months ago where, I don't know if you've ever seen that episode of *Friends* where Phoebe's trying to get the fire alarm to stop beeping and she breaks it into little pieces then it finally shuts up, and then it starts again. It's one of the ones that's stuck on, she smashes it into pieces and is like "I've won" and then it goes "Beep!" again and that's what it was [like]. We've had it before now where it's been four of us stood round this thing pushing the code in and it stops and then it starts again, and it's got this very strange fault where the [repair] guy will come out and say there's absolutely nothing wrong with the system, but very occasionally it suddenly goes. Something's terribly wrong with one of the sensors for no reason, so cos I'm on the top floor and it's right the way on the ground floor, I've got to go all the way downstairs and push the code in and then go all the way back upstairs again for it to start ten minutes later...

INT: That sounds really irritating!

Elizabeth: [Laughs]. It's one of those things. It's only a little thing, but it's enough to drive you up the wall.

While Elizabeth finds it annoying, it's seen as somehow inevitable, an annoyance that she just has to deal with, and bewilderingly, a 'little' thing despite the inconvenience. The same sound source to Daniel is an indicator of living in a bad area, even though as this example shows, the alarm could be going off for a multitude of reasons – Elizabeth could live next to Daniel and they would have radically different connotations of the same source.

This category is hinged on this required association. Almost any sound can be an intrusion, and sounds which are liked can be intrusions at the wrong time, in the wrong place, or the wrong mood. The dislike can be aimed at the environment itself, a specific sound source, a description of the nature of the sound, or some idea of whose fault it is that the soundscape is like that in the first place.

Source- and description-based dislike

Annoyance based on the sound source (or perceived sound source) forms the basis for a lot of soundscape and acoustics research. My research was no different – many sources were

seen by themselves as undesirable. However, it was relatively rare for sounds themselves to be the source of annoyance with this duty resting on other semantic factors. Sometimes the dislike of a soundscape is aimed towards some acoustic property of the environment or source in question. Source and description are often in combination – for example, ‘a grating fan’ is both a source, and a description of what it is about the source that’s annoying. This category of dislike also covers most examples of *top-down* annoyance, where the listener tunes into a specific source that they find impossible to ignore, that then fills their attention.

As Figure 1.1 on page 10 right at the beginning of this thesis showed, the variety of potential dimensions of a single sound source are vast. As a soundscapes research project, it is very tempting to avoid detailed discussion of individual sources in lieu of a more holistic analysis: perhaps this has been a trap, in retrospect, and a weakness with this methodology. In some cases, these individual sounds are so arousing that they take over the entirety of a listener’s perception, and become the entire soundscape in themselves: as that is all the listener is attending to. In other cases the detail in these sources may be just as interesting: I critique the atomistic model of soundscapes, but understanding the whole by understanding the parts is clearly a sensible approach. However, a drawback with the sound diary method was that there are little or no identical sounds to compare. I feel that to do a thorough analysis of the noise annoyance of individual sources using a qualitative methodology would require a different research design. For example, it would be possible to empirically explore the *voices* category, or more broadly a complete analysis of the often used soundscape category *human sounds*.

Nevertheless, in the context of *negative-loud* soundscape judgements, source-based dislike is very straightforward. The details of what exactly creates this dislike could potentially be a subject of intense qualitative research however, and it is a weakness of this methodology that it is difficult to compare like with like.

Environment-based dislike

While environments are obviously made up of a variety of sound sources, at some point the environment *itself* becomes the object of dislike rather than the specific sounds. This can be either due to the environment soundscape being unsuitable (a specific library which is too noisy) or unexpected for the place, or simply a combination of noises which are deemed unwanted (a café which is too “clattery”). This effect is mitigated by *engineering and establishing normality* (Subsection 5.3.2 on page 176). Sometimes though, this is unavoidable.

Francesca: I did a film [in the students’ union café] last October and the sound there was absolutely atrocious, just really echo-y [...]. It was uncomfortable, it’s poorly [decorated], there’s mainly grey, and big splashes of purple. [...] It can quickly become really loud with not really that many people in there, which I guess is in part due to the echo, but it just means that sometimes you’re either straining to hear the person you’re with talking, or it can just be quite a deafening situation cos you’ve got loads of clattering plates and things being shifted, chairs being moved, tables being moved, people ordering stuff, and then loads of conversations going on. It’s quite a popular place to go cos the food’s cheaper than anywhere else on campus, and you can also eat there if you don’t wanna buy any food. [But] certainly around lunchtime it can be a bit horrendous.

The environment is clearly to blame here for Francesca – while the colour scheme doesn’t help, the environment has flat, concrete walls which reflect sound very easily, and all the furniture is made of metal. The people, staff or other factors are not to blame at this point – the environment as a whole is the object of discontent, especially as measured relative to other café spaces.

Overly busy places such as this are a large trigger for environment-based dislike, with noone in the study seeming to like shopping centres for example.

Roger: It’s discomfoting because there’s so much noise [in the shopping centre], I wouldn’t like to stay there for long, it’s not strange, but it’s not comfortng, I wouldn’t want to stay there for a long time. I’ll do my shopping, 10 minutes, 15 minutes max, I’m gone.

Reduced comfort levels due to busyness often triggered the negative response.

Quentin: I don't like to be a burden on people, if there's a big queue I'd rather just go away and come back another time because I don't want other people to have to wait if I've got a few things I need to get. It's the other way round as well, if I've only got one or two things to get and there's a massive queue, I don't want to have to wait for all those people to finish with thousands of things that they're then probably not going to want anyway.

—

Gloria: I don't like busy supermarkets or shopping centres. In fact I hate them. But I think that's more the physical space thing. I don't mind in restaurants cos I don't mind how noisy it is because it's my physical space is marked off, where I'm sat.

Roger, Quentin and Gloria all strongly dislike the soundscape of shopping centres, but see it as an inevitable task that needs doing. Roger points out the environment 'isn't strange' – indeed, participants seemed to know exactly what they were in for when going to these environments. Due to their expectations of the space, it's possible they are predisposed to find it annoying or uncomfortable, potentially unwillingly using a top-down response here as a result of the increased, unwanted stress.

Environment-based stress can also be triggered while travelling. Laura and Kate struggle with busy places more than usual when travelling, finding things that are sometimes tolerable like crying children unpalatable when engaged in the relatively high-stress activity of travelling.

Laura: When I'm older and have children or whatever, I don't want to take them on public transport, just have them in a car. [Then] they can make all the noise they want.

Laura therefore dislikes children making noise in these environments so much that she doesn't want to inflict it on other people either – possibly the most extreme response in this section, being so averse to the sound she vows to never inflict it on someone herself. Environment-based dislike then is based on places that compare poorly to others in the same category (such as the students' union café), an entire category of environment

(shopping centres), or activity-based (travelling). Generally there needs to be more than one specific disliked source, and additional factors such as being busy, uncomfortable, or engaged in an already stressful activity. This raises some interesting design questions: is a single, louder source of annoyance preferable to several quieter ones, and to what degree can dealing with temperature, lighting and other sensory factors reduce soundscape annoyance? Equally, which places do people actively like, and what about these places do others in the same category lack? This is potentially a key factor in creating design recommendations that would merit further analysis.

Agent-based dislike

A final possibility is for an external agent to be seen as the source of the intrusion. This most often happens where there is perceived poor acoustic design – while undesirable sounds are heard, the blame lies on the creator or maintainer of the space rather than the source itself, which is often seen as an inevitable part of living. Another potential application of this category is when listeners blame their intolerance or part of their intolerance on themselves, due to their age, self-identified personality trait, or a specific learning difficulty. Kate specifically attributes a large part of her intolerance to her autism when struggling with certain environments. She feels her autism strongly affects her soundscape perception, and thinks that spaces others find manageable she finds intolerable. This affects some of her habits and transport preferences.

Kate: Yeah, [noise intolerance is] kind of an autistic thing. It's all kinds of senses, but loud noises [especially]. Like on the train, if you're near the engine and it's just, you can't get away from it and you feel trapped. [...] It's the fact you can't get away from it.

The multi-sensory nature adds to this significantly though:

Kate: But the train's worse 'cause you're all packed in and people are touching you as well, and people are sniffing and coughing and smell and so [laughs]. The train's got everything.

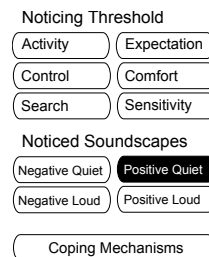
Where others may blame either the train itself or people on the train, Kate chooses to blame herself, even though others might find the space just as undesirable.

Summary

Negative Loud noticed soundscapes are characterised by an undesirable source, environment or agent, combined with a semantic reason for disliking that factor. With only one or the other, it's rare for soundscapes to break the noticing threshold; both seem to be required for the listener to dislike a soundscape. This results in radically different responses to the same stimuli, such as the example of house alarms. There is some evidence that high-stress locations like shopping centres are pre-selected as unpleasantly noisy, whether they are or not, and ample evidence that people go out their way to avoid places that would fit into this category.

5.8.4 Positive — Quiet (bliss, quiet, silence)

Positive Quiet environments are generally characterised by a feeling of bliss or tranquillity. A lot of acoustics research focuses on generalising tranquil environments, with mixed successes. These studies tend to especially focus on urban parks, and their potential restorative nature. The extremes of the scale are well established; the middle ground is more complex.



The perceived levels of tranquillity in environments that combine a high percentage of natural features with low levels of mechanical or human noise, such as the sea cliffs at Bosigran, for example, are not contested, nor are environments such as construction sites which offer no opportunity for cognitive recovery. Urban “green space” however, is positioned somewhere between the two extremes. (Pheasant et al., 2008)

The vast majority (perhaps all) of the data from my participants is in this middle ground. Again, I would suggest that while acoustic factors are important, they are almost meaningless without contextual, social information, with only sonic extremes being easily predictable. Also, there seems to be very little attention paid to the tranquillity of places which are not urban green space. On the contrary, very few people in my study used urban parks for this purpose.

Several categories emerged in my analysis. Places where the soundscape loudness expectation is higher than the actual soundscape (a café at a quiet time of day) can result in a positive response in this category. While a low or very low loudness helps in this judgement category, it is neither required, or the exclusive qualifier of the quality of a *positive – quiet* environment. This category requires some commitment to *enjoying* the silence afforded, generally with the listener needing to specifically choose to be there. If the quiet is unwanted, it can very quickly slip into the *negative – quiet* category in the section below.

An archetypal example of this category would be *places of worship*, discussed earlier in 5.2.3 on page 161. Even though places of worship are generally anything *but* quiet, the sounds that are present are deemed tranquil, relaxing and peaceful. The sound context of places of worship is to sit, listen, perhaps sing and perhaps socialise. For many people these environments are the only indoor public spaces where there is no pressure to do anything other than sit and watch and listen.

For a soundscape to be in this category rather than ‘content’, there needs to be a decision to *actively* enjoy the quiet therefore, something which worship clearly does. For example, a library may be quiet; however unless the person has decided to appreciate it (how this decision is made is an open question), this judgement does not apply. Other contexts may be based around the absence of something or somebody usually present (like children), personal services like massage or acupuncture, or simply deliberately putting time aside for quiet activities.

Self-care and relaxation time

The most straightforward of these categories is personal services like massage or acupuncture: any scheduled time people receive a treatment of some description.

Gloria’s acupuncture sessions are her idea of bliss. For her, it’s quiet time where “you’ll hear nothing”. While the acupuncturist offers to put on music of her choice, she strongly prefers not to, appreciating the quiet instead. Gloria’s day-to-day life is dominated by talking to people and generally socialising, and while she loves this, she has a clear preference for complete quiet sometimes. She goes as often as she can afford, and this has been part of her routine for eight years. While this isn’t *literal* silence as she acknowledges (and possibly notices for the first time) in the quote below, it’s the closest she gets to it on a regular basis.

Gloria: Acupuncture! You’ll hear nothing. I recorded this cos you’ll hear nothing, and it’s a delightful time for me. Oh you might hear my acupuncturist’s feet. Oh that’s his door. He’s coming in to tweak my needles I think.
[laughs]

Aside from these booked sessions, bathing and swimming had similar responses. Gloria likes baths at home, perceiving them in the same way: special quiet time where she won't have any music or radio playing, and enjoy the quiet or read instead.

Hugh: The only place where I think I ever kind of switch off properly is when I go swimming. [...] There's probably other places as well, I can't quite think of them, but yeah it's like when you're under water [...] you can't hear much at all, apart from the water.

This category then simply requires a quiet space, and a personal decision to switch off and enjoy it.

Changing judgement of a place based on comparison to other places, at different times of day, or doing different activities

As discussed in *expectation*, some environments may be judged quiet by comparison to others in the same category. Again, the point of noticing becomes complex here – once an environment has been selected for its relative quiet, it's likely that this may not be consciously noticed as much on repeat visits. Some listeners were more acutely aware of this than others. Home environments tended to have a stronger association with being quiet or loud though.

Roger: [recording plays] Now the house was sunny, very sunny outside, however my room was warm and a bit darker. The gentle sounds of nearby trees. My computer as it boots. I notice the trees in the breeze, I love it, there are so many trees close to my window, about 20 metres from my window, many of them lying in the Cromwell, River, so they often rustle in the mornings when I have some breeze, and they're distinctive, I often notice. [...] It kind of helps ventilation, helps [make] my surroundings more natural, more serene. I like it, I like nature.

Several factors add up here to create Roger's feeling of serenity – the trees, the breeze, the quiet and the rustle of leaves. Nobody in the study directly mentioned choosing a house or flat for acoustic reasons – somewhat surprising, but perhaps again something people

have learnt is inevitable. However, quiet home environments were sometimes noticed after living them for a while, likely after potentially annoying environmental sounds become keynotes. As discussed earlier, Moorhouse et al. (2009) found that “‘sensitization’ to low frequency sound may occur over time, leaving the sufferer more aware of the sound and unable to shut it out or get used to it”. It is interesting then that the same effect can work in a positive sense, with listeners becoming desensitised to things they used to find highly annoying.

INT: When you were picking [your flat] then, was the quietness something that appealed to you?

Andrew: I didn’t notice it. I think maybe we mentioned it when we were walking around, but I mean, I don’t mind noise so much, so it didn’t bother me the idea of living in the city centre and kind of having noise around me, and I actually thought I would hear stuff at night, I thought I would hear like the street or whatever, and hear people laughing and joking and hear my neighbours, I don’t even hear my neighbours. They probably hear me, but I don’t hear anybody. I’ve got a café below me, erm, the guy next door is never in, he only lives here like occasional weekends, and the guys upstairs I just don’t hear them at all. The other side of me is a dojo on the other side, but it has big thick walls. So it’s just peculiar, I feel like I’m in a kind of – people have commented actually – that its like a weird little sanctuary this place, it’s really closed off and it feels really peaceful. Even when you’ve got the windows open like I have today.

Andrew notices this kind of quiet in work contexts too, deliberately going in at certain times for work when he knows it will be quiet.

Andrew: Yeah if you go, if you go to [Arthur Lewis campus] past 5pm, 6pm, it gets quieter, if you go past 7pm, 8pm it’s much quieter, and at midnight it’s dead, and I used to spend a lot of time there at midnight going on my way between [home and work] at the weekend. I used to work until 1am, just the noise, it changes it so much cos it became like *my* space, it’s empty. There’s no one in the building generally at that time so I used to just put some music on, chill out, have a glass of wine, and the odd person would come in and be like “Oooh what are you doing here at this time of night?” and I’d be like “oh, I’m just chilling out”, and they’d think “what a sad bastard”!

By being at work at an uncommon work hour then, Andrew enjoys being in Arthur Lewis, a building others in the study dislike. The sense of quiet and solitude gives him a feeling of *control* over the space, perhaps the central atrium and glass construction emphasising how empty the building really is, in comparison to in the day when it transmits far too *much* sound. As this quote also suggests, there are also times when a certain *activity* is performed in a context quieter than normal. This was usually when working. Similar to the *desirable, loud* places covered in Subsection 5.2.1 on page 150, these were often seen as a relief, sanctuary or change of pace from their regular work context.

In these contexts, *peaceful* perhaps is the operative semantic concept. A feeling of *peace* for Andrew was about feeling visually and aurally *connected* to his current surroundings. Again, this requires a decision to actively notice his surroundings, after which the very quiet, night-time soundscape takes over in facilitating this desire. Returning to Andrew's experience of drawing at night:

Andrew: I think because [drawing] felt like such an intimate time and experience, like all of the night it was just so quiet, and all of the noises I made were like, really seemed to stand out for me. [...] The noises that I was making were directly correlating to something I was doing for *me*, both aurally and visually and that sort of stuff, like I was right here with the noises as I was smudging stuff, and taking footsteps on the ground around what I'm, doing, that was probably my favourite, it just felt really really peaceful and nice. And productive.

Again, there is an interconnectedness here – between the physical act of drawing, the sound the pencil makes, the feeling of the room he was in, and the quiet sounds around him. This category therefore contains relative judgements about environments in comparison to other ones in the same grouping: and judgements about environments that over time, become places of quiet and tranquillity. As we are used to by now, this sensation is boosted by multi-sensory experiences.

As mentioned at the start of this subsection, this category is remarkably similar to quiet space soundscape research. Unlike research analysing the restorative factor or “tranquillity

value” of parks (Pheasant et al., 2008, Payne, 2008*b*) however, these findings answer a different question: “what situations make people feel tranquil or relaxed?”. These questions are congruent. My findings establish some categories for tranquility, and why and where people go for relaxation.

Attention Restorative Theory (ART) refers to an individuals’ need to restore from ‘directed attentional fatigue’. This can arise when an individual has been focusing on one specific task for a length of time, so they are now becoming tired, and are more likely to make mistakes as they have drained certain cognitive resources. Attention restoration contains two components, recovery and reflection. (Payne, 2008*a*)

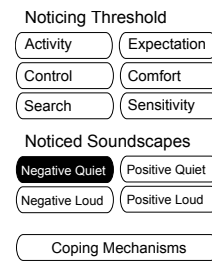
Payne goes on to tell us that “natural environments in general provide more of a restorative experience than built up urban environments”, and analyses soundscapes in some urban parks. This is where our paths differ. Rather than measuring the restorative value of locations, my findings demonstrate *why* people pick certain locations, and what other social factors are at play.

These two approaches could be a good source of further interdisciplinary investigation, however. Firstly, my results suggest that urban parks are not a common place for people to go to experience positive quiet soundscapes, and I would again suggest that soundscape research needs to consider the overwhelming focus on the outdoor soundscape over the indoor. Secondly, the factors involved in the restorative value are, again, equally as much about social text as soundscape response. By first selecting locations that people report as using for relaxation, and then investigating the factors that contribute this, we could arrive at a new understanding of soundscape restoration.

5.8.5 Negative — Quiet (lonely, small sounds are big distractions)

Only one concept emerged for this category in my fieldwork. *Negatively quiet* places are based on ideas of *loneliness* and *isolation*, which as general themes are covered in a holistic sense in *coping mechanisms* under *furniture sounds* (Subsection 5.6.2 on page 207), as coping mechanisms are the key tool listeners use to counteract spaces judged negative quiet.

The process of actively perceiving these soundscapes as negatively quiet is relatively straightforward. Listeners generally desire some level of passive human company. If they cannot hear or otherwise perceive anyone to be around, then feelings of loneliness kick in, and generally a coping mechanism will be used.



This is often linked to a space itself. Returning to Hugh’s feelings of his parents’ house overly acoustically insulated:

Hugh: The house is kind of, it’s sort of quite well built [of] stone, sounds don’t really carry particularly well between rooms and stuff. Although that’s nice, it’s also a bit annoying, I think it’s nice to have a kind of uh, privacy, but at the same time you don’t want to be too cut off, you want to be knowing what’s going on to a degree, otherwise it sort of feels a bit lonely, doesn’t it?

Laura describes this sensation as an “unfilled space”. There is an absence, which needs to be filled, or it results in an undesirable quiet.

INT: Do you normally have the TV on when you’re at home, or the radio, or something?

Laura: Yeah, I’ll have something on unless I’m studying, like really seriously studying, then I’ll have nothing. Then I’m just writing notes and reading, but usually I’ll have some radio or the TV and move around, otherwise I just feel like [it feels so completely empty], so just to fill the space I think in a way, just having something on. Sometimes I think its wasting electricity.

This judgement then is simply based on a lack of sound of other humans, and is remedied by using coping mechanisms, or simply going somewhere public.

I was surprised to not find more discussion of feelings of safety in very quiet outdoor urban space here. Valentine (1990) found that:

Women feel safer in the presence of visual range of others [...] the design of the public environment can have an influence on women’s perception of safety and hence on their willingness to use spaces and places.

Perhaps these feelings were a little too personal to cover in an interview primarily about sound and day-to-day life, and certainly the locations where people felt unsafe would not

be locations where they would conduct a sound diary recording. Still, this is a potential category for further, more specific analysis.

5.8.6 Awareness of good and bad acoustic design

A few listeners commented on acoustic and soundscape design directly. These were all for negative reasons. However, in all cases the bad design then became the subject of the listener's intolerance, rather than the person or sound source producing it – for instance, noisy neighbours were seen as an inevitable part of modern living, with poor soundproofing being perceived as the 'real' issue. All the issues mentioned were due to unwanted porosity. Returning to Arthur Lewis building, Andrew had several sonic problems with the design even though he was the only person to like it in general. The building has a large, central atrium, hard tiled surfaces and glass walls and barriers almost everywhere. By way of extended example, here is a lengthy section of a discussion with Andrew about the building. It's interesting to note that by contrast he had very little to say about the sound politics at home, but had so much to say about his primary place of work. This also shows the detailed knowledge some listeners have about their sonic environments when pushed to it, in places they are in a lot.

[recording plays]

Andrew: There you go, you can start hearing the voices now. So it's normally the admin side that's blamed for making all the noise.

INT: Really?

Andrew: Yeah, there's like a real separation between this idea that the admin people, I suppose their jobs involve communicating with each other, whereas all the academics and all the PhD students always moan about how our sides really quiet and their side's kind of like, noisy, and that makes it very distracting for them to work.

INT: So the admin and the research staff are on different sides of the building?

Andrew: Yesss. But it's all open. It's all open plan. So, you get the noise travelling around.

INT: So is it actually possible to tell where sounds are coming from?

Andrew: Yeah, definitely. And, there's some distinctive noises, like there's a guy who laughs really distinctive and everyone knows who he is now. Because we hear his laugh. From *allllllll* the way around, it's like the sound bounces around to us almost, I suppose. You always hear him going "haurgh! Huh huh huh huh huh huh!". Everyone always kind of looks up at each other and goes, they raise their eyebrows and roll their eyes.

INT: Are there actively, like sound politics in that building then?

Andrew: Erm, a little but not too much. The academics wouldn't raise an issue. There's other politics, like the admin staff don't like the way the academics treat the kitchen, or at least the way they claim the academics treat the kitchen. Erm, they don't like all the staff, and there's just a general perception of difference and like, this idea that the admin staff assume the academics don't know what it's like to be admin staff, and the academics assume that the admin staff don't know what it's like to be an academic, and it's just – there's a real separation there. It's just a bit unnecessary.

I mean I chat to everyone, I get on quite well with the other side. But, it's that thing, of, it's not even like, people don't even have disagreements, it's this weird kind of, atmosphere that people don't talk to each other generally. It's funny. But yeah, the sound is normally raised as a problem, pretty much every erm, postgraduate meeting thing. They raise it as a kind of like, but there's nothing they can do. Because the admin staff need to talk to each other, er, I think originally there must have been this plan to have partitions up. Like, glass partitions, but they ran out of money or something, is what I've heard. But that would make sense, if you could partition off each one of the shared working areas, that would make so much sense. Literally, just talking about a simple glass wall, but there's no money to do that.

[...]

INT: Are there any other kind of noise issues in that building? Apart from sort of, voices?

Andrew: Well, I'm trying to think. I hate it because the environment's so sterile. I support a part of this is, one of the funny things I've really noticed about a lot of my recording was the noise of air conditioning. It's everywhere

INT: It's often designed specifically to cover up background levels of noise.

Andrew: It's just so strange, like, there's just, everywhere I go there seems to be some kind of conditioning to the environment. Makes it feel so false.

In this extract, there are a number of factors at work. Firstly, it's apparent that sonically, this building doesn't really seem to suit *anyone's* needs, except potentially the needs of the administrative staff. The building's general porosity gives an impression of interconnectedness, but in practice this interconnectedness seems to be more of a hindrance than a help. People frequently found it hard to get any privacy either physically (unwanted attention from friends coming into a workspace and feeling like being able to see someone makes it acceptable to talk to them) or aurally, with sound bouncing around the building. Secondly, Andrew notes how many different ideas of *who is at fault* there are here. Andrew blames the building design, but mentions that academic staff simply blame the administrative staff, or resent the trolleys rolling, or the air conditioning. There is a strong sense of semantics here about the *right* kinds of communication, or what an academic sounds like when they are talking, compared to an administrative staff member. Without conducting a specific study, it's impossible to know how accurate his observations are, however.

Thirdly, it hardly needs saying that the fact a new, modern building has such basic issues with its soundscape design shows a real failure in building design, and lack of consideration about the soundscape as a factor. It also demonstrates that at least some people really do notice sound transmission issues, and in a lot of detail. This supports studies on corporate workplaces.

Working in an open, transparent office, without walls or with a lot of glass, is also perceived in different ways. An open environment offers more opportunities for communication and social interaction, but also generates many complaints about reduced privacy, both visual (seeing and being seen) and acoustic (hearing and being heard). In open offices there are considerably more visual and acoustic stimuli than in enclosed, cellular offices. This mental burden raises stress levels in some people while the additional stimuli actually appeal to others, but noise pollution generally leads to a loss in concentration.

The corridor is often an additional source of irritation when an open area also connects two or more other areas. (van der Voordt, 2004)

It is curious then that this design was chosen, when the open plan trade-off seems unsuitable for an academic environment. However, as would be expected there are multiple perspectives. Jake also works in Arthur Lewis, but has a very different experience of it. To him, the sounds were simply “distant mumbling from the third floor”.

Jake: It's a weird building cos it's got this big hollow centre that connects all the four floors so you like you can hear distant mumbling from the 3rd floor, but generally it's just a general office hum that's not that intrusive.

INT: Do you do you like the building, do you find it good to work in?

Jake: No, I think, but it's more of a visual thing, I don't like cos it has fluorescent lighting and I'm miles from a window so I don't get any natural daylight and I never even know you know, if it's sunny or raining outside, and that really frustrates me, so quite often I'll often leave work with a headache, but that's more of a visual thing.

While Jake is in a different place in the building to Andrew, the differences between their experiences are large. However, Jake generally uses a walkman as a coping mechanism in this environment, and is aware he is a source of noise annoyance to other colleagues in the building. Perhaps then Jake simply never ‘really’ experiences the soundscape of the building, and his noise production contributes to the kind of unwanted noise pollution Andrew refers to.

When people are aware of perceived poor acoustic design, they are more likely to attribute their dislike of a soundscape to the environment than any specific source, or person. This usually works only as a negative factor – there were no instances of people reporting good acoustic design being pleasurable, aside from active listening environments like live music and cinema. The sole exception was Elizabeth, who was grateful her landlord installed sound insulation: again, altering the environment to make it *not* noticed can often be the best design. This may be a fairly depressing finding for architects and acousticians however!

5.9 Listener profiles

Whereas this chapter has so far been focussing on ranges of responses to different stimuli, illuminating and attempting to theoretically saturate the key dimensions, it's important to note that each listener has trends and preferences within themselves as well. This is very roughly titled "listener sensitivity", in lieu of a more descriptive word that describes: "the entirety of the reactions, dislikes, preferences, and threshold factors of a listener", or some variation thereof. This is another area where current soundscape vocabulary starts to elude us.

Inter-listener differences were a large factor in my analysis. People had a huge range of personal preferences based on a variety of factors. Some preferred the noises of the company of others all the time, some only while at home, and some simply preferred silence wherever possible. Some were easily annoyed at the slightest intrusion, while some had an incredibly high threshold. Some had very specific views about the composition of the soundscape, while some didn't notice it at all unless prompted. Some are tourists and noticed difference far more readily, and almost everyone's auditory context as a child went on to influence soundscape preferences.

Sensitivity thresholds varied from very low to very high. They also varied whether in negative or positive spaces. These have all been explored in separate chapters, but it's worth looking at the connections between individual listeners' preferences. Listeners are roughly ordered according to threshold, in an attempt to ascertain if there are "listener profiles". While there are many factors in soundscape response, noticing threshold seems to be the strongest single indicator of listening habits.

One of the most unexpected findings in my study so far is the variety of ways people both listen and dishearken. The majority of participants had some form of what could be considered 'expert' listening. Even though only one of my participants had any kind of music background (a drummer), several showed high degrees of aural acuity in certain situations. Some, working in other areas of sensory research (visual anthropology), had

spent significant time thinking about and processing sounds, generally with a vocabulary different to people with an acoustics background.

Recent noise annoyance research acknowledges the issues with measuring inter-listener sensitivity, and emphasises its importance.

Community noise surveys, visitor intercept interviews, and fieldwork on sleep disturbances would benefit from the addition of an individual difference measure of noise sensitivity but cannot always include the additional items necessary for such a measure. Oftentimes, such situations necessitate the use of a single-item noise sensitivity question, but such measures have been shown to lack reliability. (Benfield et al., 2014)

When measuring spaces then, sensitivity is difficult to work into a methodology in these areas. My analysis had no problem describing individual listeners' preferences, but struggled when it came to generalising these sensitivities. In every case, the listener's acuity was linked to some other aspect of their lives, and therefore was a complex process. I would therefore propose that there are perhaps a number of listening 'types' – further investigation would have to be done to verify this thoroughly, and this is a possible starting point for an interdisciplinary research project. This section will also examine the various types of listening competencies participants have.

5.9.1 Elizabeth

Elizabeth has a *very low* threshold, and gets easily annoyed by sounds from buzzing lights, people above her flat, her radiator, faulty burglar alarms in her house, and doors slamming. The main aspect of home living she *does* like is soundproofing her landlord installed, making her house much less noisy than ones she's lived in before, although this is still not quiet enough. She gets easily sleep-disturbed from noises.

She likes to explore a lot, and finds Manchester very noisy, which she attributes to her Welsh ethnicity. As a main coping mechanism she uses her walkman. Generally her good environments are characterised by as little sound as possible, especially from other people,

but apart from that she seems to dislike most intrusive sounds unless there is some kind of intrinsic interest to it.

Elizabeth uses a lot of high precision machinery. She's sensitive to very small changes in the noises of lab equipment, and very jumpy and sensitive to loud or improper noises. Buzzing lights will stop her being able to do any work. She does very sensitive work in very quiet environments and places high value on concentration and focus. She has a personal, almost silent room for her own lab work, described on page 148, that is by far her preferred work environment and the one she feels most at peace in.

She is highly adept at listening to technical machinery, even to the extent of knowing what other people's machinery sounds like and if it's gone wrong, even if she doesn't know what the machinery does. Is it surprising that she then notices so much noise annoyance in other parts of her life? Having a raised threshold would actively impede her technical work. Does this lowered threshold come from a quiet family home and childhood expectations, a long period of *having* to pay attention to small sounds from working in a lab, something else, or a combination of the above? Perhaps she has trained herself to listen to quiet sounds in a similar way to a sound engineer or acoustician. Answering this is outside the scope of this thesis, but for now let's just note that these things are all inter-related elements – a high sensitivity for technical work, and being highly sleep-disturbed, could be seen as different sides of the same coin.

5.9.2 Claire

Claire is another example of a *very low* threshold listener. Unlike Elizabeth, instead of getting annoyed by the plethora of unpleasant environments she is in, she uses furniture sounds and walkmen almost constantly, to create the soundscape she wants to be in: counteracting *negative – quiet* contexts she doesn't like. She is incredibly selective with music, whether alone, working, or with friends, and is basically never without it, and music forms a large part of her identity that transcends whatever space she is in.

Like Elizabeth, Claire associates her sound preferences with her childhood expectations, in this case having a twin sister, and almost constantly being surrounded by other people while growing up. Claire is very careful to select music that will make everyone in a space feel comfortable, ‘tuning’ social spaces in a highly adept way to make her, and the other people in these spaces, feel comfortable or maybe find out about a new band she thinks they will like.

Most of the reasons she dislikes working in public places seem to be sound related. Libraries are too quiet, computer labs too noisy, not enough or too much talking is bad. For her, the key is *balance* – between music and potential for chatting: with overall environment loudness coming in some way behind. Claire, like Elizabeth, seems to not really like sounds or public places in general. Unlike Elizabeth, she actively creates the sound environments she wishes is to be in, with music being a much bigger part of her life. Therefore Claire uses coping mechanisms actively and effectively to counteract her highly specific soundscape preferences, creating a personal feeling of balance, where it didn’t exist before.

5.9.3 Hugh

Hugh prefers an outdoor horticultural context, and overall has a *low* threshold. He has a high sensitivity to noise annoyance, especially around roads, but equally has some ability to ‘switch off’. Hugh prefers working outside, finding it a more satisfying place to work, with a higher diversity of more interesting sounds. Hugh often finds himself distracted both indoors and outdoors by the soundscape, especially when using computers. He likes the outdoor space as tasks have a physicality they don’t when on a computer screen – while he still gets distracted outdoors, there is a much bigger barrier to walking off and doing something else compared to the ease of internet procrastination.

Hugh plays the drums, and picks up on rhythm and tempo in both his music listening and soundscape interaction. He thinks about composition a lot, and what he would change if he was the composer of the soundscape. Rhythms of traffic and life are factors in his mood.

He sees overuse of car horns as sign of aggression in general being on the increase. More than anyone else in the fieldwork, he talked extensively about soundscape composition and what it represented. Generally he sees the world as fairly imbalanced, with an unfair focus in the balance of cities given to cars and drivers.

Hugh dislikes walkmen, and uses furniture sounds sometimes: usually the TV or radio. In places of low control, he much prefers to hear what's going on, in order to be aware of how things are changing. This shows a high degree of consideration about the soundscape. More than perhaps anyone in the study, Hugh thinks in depth about what sounds he would like to be around, and how they affect him. Other listeners would perhaps use walkmen where he does not, and be more content – Hugh chooses to pay attention to the world, which he thinks is a valuable thing to do. Where Claire is highly adept at using music to convert disliked environments into liked ones, Hugh is highly adept at paying attention to soundscape spaces.

5.9.4 Gloria

Gloria has a *medium* threshold. Many contexts she only has an opinion on when pushed, or an opinion which has sound as a low priority – such as busy pubs and restaurants. She constantly has some kind of company. However, she has both active likes and dislikes for loud environments, and likes for quiet environments – her acupuncturist (quiet, good), live music (loud, good) and busy town environments (loud, bad). Gloria is very social, and likes being around other people and talking a lot, but equally she likes being able to turn this off – having control *when* she needs it.

Gloria is an example of a highly *versatile* listener, who appreciates all levels from the very quiet to the very loud, and finds very few soundscapes annoying – the environments she dislikes tend to be crowded shopping centres and the like which have a number of non-soundscape reasons to dislike them. She surrounds herself with people, but is content without; she loves very loud music but also the silence of her acupuncturist.

5.9.5 Oliver

Oliver was the one participant with an audio technology background. As would be expected, he has a much higher degree of acuity when listening to music and sounds, for instance criticising and comparing the quality of club soundsystems. In other respects though, his threshold is *medium-high*.

Oliver: One of the clubs I went to in Ibiza was Space. It's quite a famous club and they had a *Function One* soundsystem in there and it sounded really brittle and really loud [at] the top end of the frequencies, and it was pretty horrible. You know, it was big sound system and it sounded like really loud, but I wouldn't say it sounded *nice*. What was interesting was we went to another club the next night with a different sound system, like a *Mars Hill Audio* soundsystem and it wasn't offensive as you know, [even though the sound levels were similar].

He has a similar dislike for mobile phones and headphone sounds in public places, which he sees as “second-hand sound”. Oliver is therefore an example of someone with a very high appreciation and attention to detail for *one specific category* of sounds – music, and sound systems. However, this is an active process of listening to a single specific source, and not one that really affects his general soundscape perception. It's interesting that there is no link here between high aural acuity in active listening contexts, and awareness of the soundscape at large. While Oliver has a slight preference for quieter soundscapes, it doesn't really affect any serious life choices – he would still be happy to live in London, for instance as long as it wasn't a main road.

5.9.6 Jake

Jake has a *high* threshold. He used to be much more sensitive, but nowadays seems more adept at coping with a wide range of soundscapes. He tends to only notice extremes – the work microwave, or annoying laughs when he's hungry and stressed for example. However, generally as long as nothing is too intrusive, he has no strong opinions. As a

result, he engineers his soundscape exposure to ones he knows he will like. He avoids busy pubs and bars, spends a lot of time on his allotment, and has a relatively calm home environment. He also uses a walkman and furniture sounds wherever possible.

5.9.7 Francesca

Francesca has a *very high* threshold. Barely anything seems to bother her. As a child, she became used to very loud environments. She prefers being around a lot of people. Her only real annoyance is a very loud and obnoxious housemate. Like Claire and Elizabeth, Francesca associates this high tolerance with growing up in London. She likes constant company even more than Claire, and regularly has a house full of twenty or more people. Even when working, Francesca likes being in very busy areas, and generally always prefers to be surrounded by an even, but loud SPL rather than a quiet one with high dynamics. Perhaps unsurprisingly, she is also a constant music user, and although she doesn't quite have Claire's attention to detail, music is almost always on and used in a furniture sounds context, to create a pleasant backing to group dynamics. Francesca then has an exceptionally high threshold, and reports almost no instances of noise annoyance: the only exceptions being embroiled in more complex household dynamics. This high threshold is very closely linked to her social identity.

Despite this, she is more than capable of homing in on sounds she does want to hear, such as eavesdropping on the bus, even when wearing headphones in a noisy environment. She is arguably a listener then who likes a constant level of auditory stimulation, which she does using a large variety of means.

5.9.8 How do these profiles help?

A common task when designing complex websites is to start with 'user stories': narratives of fictitious users of the end product, from members of the public to administrators. I hold off on calling these profiles 'types' without doing further research, but certainly

it seems likely these could be generalised. My findings suggest that a similar approach would make sense when designing buildings. Finding out what space users want and need, and then designing sound contexts to be reflective to this, could prevent issues reported in Arthur Lewis. To refer to this building again: the way academics, administrative staff, students, and porters use this building is very different. Speaking to space users and determining needs seems a valuable, cost-efficient way to stop some problems before they begin. Designing specific sound contexts already happens, to a degree. Brill and Weidemann (2001) questioned 13,000 office employees and found the top ten factors affecting productivity were:

- The possibility of working individually without being distracted
- Spatial conditions favourable to spontaneous interaction
- Ditto for gatherings and undisturbed group work
- Workplace comfort, ergonomics and enough space to put things
- Suitable conditions for working ‘side-by-side’ and having a chat from time to time
- Staff are close to colleagues, or colleagues are easy to find
- Good relaxation areas
- Access to technology
- High-quality lighting and daylight
- Temperature and air-quality control. (Brill and Weidemann, 2001)

Several of these relate to the soundscape issues discussed, on a number of levels, for example “working individually without being distracted”, “conditions favourable to spontaneous interaction” and “suitable conditions for working ‘side-by-side’ and having a chat from time to time”. These reinforce other factors: in the first point, the *possibility* to work without being distracted is as important as the environment itself, linking to *control*

issues. Equally, environments which make spontaneity *possible* (although presumably spontaneity within certain limits), even if it is not realised, are highly rated.

These standardised responses strongly reinforce my findings, but still miss the finding that there are *different types of listener*. Creating all the design requirements in the list above would seem to fit all needs in my survey so this distinction may be moot. However, a recognition that listener differences are not based on the job at hand is key to understanding this: it is not possible to generalise that all academics prefer the same sound environment and design an environment accordingly, for example. On a more abstract level, these profiles help to conceptualise the listening habits of individuals as holistic members of built environment locations.

5.10 Summary

The following tables summarise the key findings from this chapter.

5.10.1 Noticing Threshold

Category	Subcategory	Details
Activity	Work	High stress, low control environments. <i>Exception:</i> alternate, secondary places for work.
	Leisure	Have a baseline of expectation. More likely to be judged on presence of positives rather than absence of negatives. Feedback very important.

Examples

Cafés Selected for their perceived quiet, diversity of potential sound contexts, or potential for eavesdropping.

Pubs & bars Similar response to cafes except higher expected loudness. Should be possible to talk without having to shout. Top limits of comfortable background level.

Clubs & live music People very specific about music choice. Sense of “home” in familiar places.

Places of worship Judged quiet and serene regardless of actual level. Meditative sanctuaries.

Expectation	Establishing Normality	Environments are compared to others in the same category. A listener preference is selected, and becomes the desirable context. Other soundscapes in the same category are compared to this.
	Engineering Normality	Once the listener has judged an environment, they can still alter their perception. This can be selecting locations for tasks, moving places in an environment, going at different times of day, or using furniture sounds.
	Dishearkening	Once a context of normality is established, certain soundscape elements cease to be actively noticed elements, and become part of the ‘normal’ fabric of the location.

Example **Traffic** Despite its ubiquity, nobody in the study was consciously aware of road noise at all times. Another trigger is needed, be it activity- or place-based, while cycling or walking. Some people barely noticed the road at all, only mentioning it when specifically prompted. The sound of roads is likely such a common, ubiquitous sound that it is simply the sound of the city.

Control	Low Control	Being unable to leave a space, or unable to influence people making undesirable sounds results in high stress and an undesirable soundscape. Listeners' dishearing skills get worse as control is taken away, resulting in high annoyance.
	Feedback & Negotiation	Ability to negotiate, especially in home environments, leads to high satisfaction. Listeners can dishearken or tolerate disliked soundscapes if they are able to negotiate.
	High Control	Places and spaces which are either literally or figuratively controlled by a listener have a high degree of satisfaction and generally high threshold. This tends to apply only to cars and the like in modern contexts, although some people have very quiet work environments.

Comfort	Multiple unpleasant factors	Once someone experiences sensory discomfort in one sensory mode, they seem to become more easily susceptible to discomfort in others. However while in general, unpleasant atmospheric conditions result in a lowered threshold and a higher likelihood of a negative response, semantic factors can still override this if the listener knows there is an important reason for their existence.
	Good weather	Good weather, and more abstractly positive elements, resulted in raised thresholds and positive appraisals.

Sensitivity	Listener Preference	Some preferred the noises of the company of others all the time, some only while at home, and some simply preferred silence wherever possible. Some were easily annoyed at the slightest intrusion, while some had an incredibly high threshold. Some had very specific views about the composition of the soundscape, while some didn't notice it at all unless prompted. Some are tourists and noticed difference far more readily, and almost everyone's auditory context as a child went on to influence soundscape preferences.
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Expert Listening The majority of participants had some form of what could be considered ‘expert’ listening. Even though only one of my participants had any kind of music background (a drummer), several showed high degrees of aural acuity in certain situations. Some, working in other areas of sensory research (visual anthropology) had spent significant time thinking about and processing sounds, generally with a vocabulary different to people with an acoustics background.

Dishearkening Sensitivity thresholds varied from very low to very high.

Search Road Safety Road users, especially cyclists, need to be aware of their surroundings, and will make a conscious choice to lower their thresholds and really pay attention when cycling on the roads.

Active Listening The main locations where listeners actively paid auditory attention was the cinema, with recorded music some way behind.

Waiting Waiting for a phonecall or text message: or the anticipation of waiting for a friend to arrive at a cafe, or an important phonecall.

5.10.2 Noticed soundscapes

Category	Subcategory	Details
Positive, Loud	Music & Company	Stems from two main sources – people and music. Live music events, busy cafés, or parties. The soundscape is loud, but desirably loud – the presence of factors which would be an annoyance at other times are what the listener directly seeks.
	Loud, broadband noise sources	Cathartic or meditative broadband noise sources – showers, loud bus engines, anything that blocks out all else.
	<i>Modes of listening</i>	Alternate work space Louder, secondary places for work judged loud in comparison to their normal work environments, but loud in a positive way, a relief from usual work drudgery. Eavesdropping & ‘people watching’ Places selected for the express purpose of eavesdropping, especially in cafés. Top-down listening Active attention paid to a desirable film, piece of music, or radio station.

Negative, Loud	Undesirable Intrusions	<p>This whole category requires a semantic reason for annoyance – even sirens can be acceptable if they are on an ambulance, for example. Almost any sound can be an intrusion, and sounds which are liked can be intrusions at the wrong time, in the wrong place, or the wrong mood. Generally the blame falls on a source, an environment, or an agent.</p>
	<i>Source</i>	<p>Loud, often deliberately arousing sounds, such as sirens, alarms, horns and machinery with attached feelings of aggression.</p>
	<i>Environment</i>	<p>At some point the environment itself becomes the object of dislike rather than the specific sounds. This can be either due to the environment soundscape being unsuitable (a specific library which is too noisy) or unexpected for the place, or simply a combination of noises which are deemed unwanted (a café which is too “clattery”).</p>
	<i>Agent</i>	<p>An external agent to be seen as the source of the intrusion. This most often happens where there is perceived poor acoustic design – while undesirable sounds are heard, the blame lies on the creator or maintainer of the space rather than the source itself, which is often seen as an inevitable part of living.</p>

Positive, Quiet	Bliss, quiet, silence	Category generally characterised by a feeling of bliss or tranquility. Needs to be a decision to actively enjoy the quiet. E.g. places of worship are generally anything but quiet, the sounds that are present are deemed tranquil, relaxing and peaceful.
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	Self-care & relaxation	Personal services like massage or acupuncture: any scheduled time people receive a treatment of some description. Simply requires a quiet space, and a personal decision to switch off and enjoy it.
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	Temporal changes	Environments may be judged quiet by comparison to others in the same category, at different times of day, or doing different activities. For example, people may prefer night-time quiet, doing art in a certain place, or one café compared to another.
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Negative, Quiet	Loneliness & Isolation	Smallest category. Actively perceiving these soundscapes as negatively quiet is relatively straightforward: listeners generally desire some level of passive human company. If they cannot hear or otherwise perceive anyone to be around, then feelings of loneliness kick in, and generally a coping mechanism will be used.
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5.10.3 Coping mechanisms

Category	Subcategory	Details
Headphones (walkmen)	Frequency	There was a large range of walkman use in the study, from constant use to use in specific circumstances, to never. Frequency was the primary factor in understanding usage.
	<i>Common</i>	People in this category generally used their walkman as a kind of acoustic blanket, an almost constant background ‘soundtrack’ to their daily lives. They often used a walkman as a matter of habit, and had routine music use embedded into their routines. Generally, people in this category didn’t use the walkman to drown out the world, but as effectively an additional soundscape element on top of or in unison with existing factors.
	<i>Sometimes</i>	Listeners in this category used a walkman in some situations, but it was much more a choice than a default activity. Triggers for walkman use in this category were either environment- or noise-annoyance related. Activity based listening could be as habitual as listeners in the ‘common’ group. This was usually for a specific place deemed undesirable, or boring, like commutes and workplaces where the soundscape was disliked.

Never People who strongly disliked using a walkman (as opposed to simply not owning one) tended to find that using a walkman was distracting or just unpleasant. Tahir finds walkman listening unpleasant in quite a holistic way, simply not liking sounds that close to his ears.

Furniture sounds Improving places TV, radio or music was generally done to combat loneliness and create a feeling of ‘homeliness’ or ‘sanctuary’, improving people’s homes or work in different ways. These sounds are not actively listened to in a top-down manner, but introduced into an environment as a comfortable background sound. Using furniture sounds is a method of combating loneliness, making a place more manageable, or creating a ‘cocoon’ in an otherwise intolerable place.

Loneliness Environments which at other times would not be noticed, or judged positively for their quiet, suddenly become uncomfortably quiet due to their lack of sounds. The most common solution is to use furniture sounds as a coping mechanism.

- TV People who used TV as a background sound tended to use it selectively, most commonly when alone or as an antidote to an environment that is undesirably quiet. Nobody really mentioned what was actually on the TV, or which station they were viewing, except when watching a specific program. In some cases, it was not the participant who turned on the TV but their spouse or housemates.
- Radio Radio users tend to be much more aware of the station they preferred, and have a set of criteria for which station at which time. Generally, people who used the radio had it on more commonly than people who used the TV. Radio listening is more routine, easier to dip in and out of, and more likely to be on all the time when possible; it seems to more deeply reflect the listener's personality, and forms an intimate part of their life.
- Skype Video calling fills a lot of functions – it is company and furniture sound in one, dispels loneliness and makes an auditory window into another space. As people increasingly live alone, perhaps this will become a more predominant auditory coping strategy over time.
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Chapter 6

Discussion

The outcomes from this thesis are many, and varied. I have investigated what qualitative soundscape research could be, from a variety of perspectives. This chapter covers a brief overview of the philosophical perspective that has emerged, and summarises my criticisms, revisits the thesis aims, outlines the uses and practical applications of my work, and identifies future investigatory avenues. I also reflect critically on my own practice, and analyse the strengths and weaknesses of the approach.

6.1 What does this mean for soundscape research?

Top down, findings can be said to be in one or more of five categories. The following questions are ones which could all do with a great deal more attention in soundscape research, as I have repeatedly made the case for.

Ontology What is the object under study? Why do we study soundscapes?

Epistemology How do we understand and research the soundscape? How do my findings refute, alter or support existing theories? Where does my research position itself in the field?

Methodology How should research be designed to be reflexive to finding out about the soundscape?

Methods Can my methods be used in a general sense? Can they be ‘packaged up’ and used in a rote manner for soundscape evaluation? How do the results of the process help?

Pedagogy How can we learn to be better researchers? How do people learn to listen? What jobs and roles should soundscape researchers fill?

6.1.1 Ontology & Epistemology

In the *introduction*, I defined ‘soundscape’ as ‘the listener’s perception of their auditory surroundings’. The key word here is *perception*. As I have demonstrated, listeners likely *do not consciously notice the soundscape most of the time*. Therefore, a key ontological question for soundscape researchers is: when is the soundscape a relevant concept to use, given the relative rarity of people caring about it at all? The most obvious answer to this question is: ‘where there is a reported noise annoyance in a particular or general place or space’. A less obvious one is: ‘where there is a desire to make a generic or specific place acoustically desirable’, or more generally simply fit for purpose. From another angle, when is the soundscape a good way of conceptualising the lived experience of humans?

Practical examples of these will be given later in the chapter. For now, I am simply making the argument that while the ISO working group are developing a standardised definition, we also need one or more clear ontologies of what the soundscape *is* and what it is *for*. There are times when it is the most relevant thing in an environment, and times when it does not matter. There are times when the same soundscape is completely appropriate, or utterly inappropriate, not just to the listener, but as *a way of thinking about doing research*. Perhaps also, despite the ISO efforts, a single soundscape definition should be treated with scepticism at least within research: why do we need to have a *single* concept

of what the soundscape is, outside planning regulations? Three archetypal definitions seem obvious starting points, all with associated epistemologies and methodologies:

Place-focused A soundscape is the acoustic environment of a location. Dimensions, light levels, function can all be measured: so can sounds.

Sound-focused A soundscape is a recording of a place. A binaural recording can be analysed as a piece of audio in its own right.

People-focused A soundscape is how a person perceives their sound environment. A person can be interviewed about their experiences of listening.

These all are perfectly valid – depending on the application – with most practical examples emphasising some of these aspects over others. My soundscape definition therefore remains intact: but with a *caveat emptor* that it should not be used as a blanket solution when thinking about ‘human response to sounds’, when other avenues may be more appropriate. I would contend that the main time it is *not* a useful concept is where there is a specific sound source that the listener is paying top-down attention to, in which instance listeners’ sociological associations with the source play a much larger role than any kind of overall ‘montage’ response. The soundscape however is an incredibly useful concept when investigating the mundane, day-to-day, lived experience of familiar environments.

There is a tendency in soundscape research to presume that everything empirically measurable in an environment is part of the soundscape. I contend this is simply not so, with many listeners noticing things on recordings they did not notice *in situ*. As researchers, we have to be very careful to report this accurately. With a *location*-based study, this becomes difficult to unravel – on-site interviewees will notice things they wouldn’t normally, when being asked. Again I emphasise the need for further *listener*-based research, as I feel it is currently the *best* and possibly *only* way to study reactions to the *soundscape* rather than *sound sources*. However, we need to be increasingly careful in our question setting, and question answering.

In terms of my approach's epistemology, while I've provided a lot of thick description and diagrams, the *truth* and *validity* are down to the reader to decide. The same could be said of any research however: as I have argued, poor research questions and methodologies can raise concerns around validity just as easily. It may indeed be that I managed to select twenty 'freak' listeners, and ask them leading questions which resulted in faulty conclusions – however I think this is extremely unlikely, and that their responses seem credible and personally validated by informal conversations with dozens of people over the course of my research. Given the diversity of listeners shown in Section 5.9 on page 250, my sample group seems justified at giving a large range of responses.

However, while my postgraduate research group was very good for this piece of research due to their ability to elucidate their responses with a degree of depth and breadth, the wider application of these findings need further investigation to check for theoretical saturation. Several areas do not have theoretical saturation – for example, only one person in my study liked loud clubs, and all participants preferring quieter environments. A Grounded-Theory study is ideally open-ended, and switches between participant groups as useful for the research to continue (Glaser and Strauss, 1967). However, this wasn't really practical given the needs of the Research Ethics Committee and my own personal access to willing participants.

If this work was to continue, it would be important to think of ways to fully explore some of the axes – for example, evaluating work environments for people with a fixed place of work, or interviewing a bigger range of users of pubs, bars and clubs as to what their preferences are. As an exploratory group, I don't think I could have hoped for a better response though, and even re-visiting early interviews where I was still finding my feet, there is a surprising amount of data given to me by research participants.

I hope that the reader finds my findings intuitively correct, trusts my analysis, and tests these ideas further. Theory and data are merged into one: I imagine this could arouse suspicion for those whose methods and analysis are usually more distinct. However, I feel that my results are well evidenced, in depth, and that the categories I have described

form a convincing, robust model of soundscape response directly grounded in the data.

6.1.2 Methodology & Methods

Soundscape methodology rarely seems to be discussed, with many papers being extremely quick to skip directly to methods, usually re-using previous ‘safe’ methodologies such as soundwalks, or Likert-scale-based questionnaires. I am not arguing that these cannot be effective methods; however as mentioned in my literature review, I am sceptical about how these methodologies are being used.

Adams et al. (2008), reviewing soundwalking methodologies, surmise that “some have employed [soundwalking] as a means through which the researcher immerses themselves into the urban soundscape while others have used it as a way of engaging others into the practice of listening to and describing the city”. The former case has merit as a pedagogical exercise, and is one I think is a duty for *all* soundscape researchers to engage in. However, this is simply *not* the way most people engage with the city, at least on a day-to-day level and it’s very important to separate these cases. Again, it is missing *context*: people are listening for the novel in spectacular ways, not starting from a position of function.

The latter case also has pedagogical merit, but only in that it trains others to be expert listeners. Soundscape research, as all research, has an interest in bringing others into its way of thinking. Perhaps soundwalks then could be re-appropriated as a way to allow users of a shared space to discuss their preferences together – as the start for a debate about sound contexts within a space. They could be used as a way to engage with the public, allowing open critical dialogue. Indoor soundwalks are practically unheard of, but again, referring to Arthur Lewis building, what would be the result of a soundwalk around the building with people performing different roles? Would these people be able to feed back their own experiences of the same sounds and sound preferences? This could be imagined almost as a survey: the key thing added here is context. People are in the space as representatives of their job. All my evidence would point to this being a fruitful

exercise, one which gives people a feeling of control, as well as a greater understanding of the pressures of other roles.

The issue is not the method of soundwalking: but the methodology of soundwalking. The latter could use a thorough examination. Measurement is equally fraught.

Moving from acoustic measurements to numerical ‘people’ measurements seems to me a misapplication of method without methodological review. Many of the same assumptions are made of what the soundscape is, and again the presumption arises that *people always care*. Scales and measurement are clearly needed. However, we should not be so fast as to presume what the scales of most importance to listeners are. Truth, justice and beauty (Stockfelt, 1994) might be seen as a starting point, for example. The needs of the participants in a location should form the bedrock of the measurement scales used. If we wish to know what a tranquil space is (beauty), why don’t we ask people where they go to relax as a starting point? If we want to know how people use sound to navigate a city (truth), then why don’t we examine the way people do this?

Likert scales can be good measures of overall feelings of a space, but only with a clear definition of what it is that the listeners in the space use it for, and with accurate measurements set. By far the most fundamental shift in my thesis is that understanding people’s reactions to a single environment requires knowing their reactions to other environments – in other words, a more explicit focus on learning about listening habits. Measuring environments is important, but can be understood much more effectively with a holistic overview of how people listen.

The Diary-Diary Interview method, twinned with a Grounded Theory methodology, I feel has very successfully answered my research questions. The interview data was very high quality, and had no significant shortcomings with regard to developing a detailed qualitative model of soundscape attention. The sound recordings themselves however, have been of little direct use for analysis. In the interviews, the diaries were excellent at keeping people honest, as the *Diary-Diary* process suggests (Zimmerman and Wieder, 1977), and instinctively I feel it would have been extremely difficult to get accurate

feedback about the mundane, the day-to-day, without this systematic record to refer to. Without this central document, and shared listening experience, establishing rapport and opening revealing lines of questioning would also have been very difficult. While the sound diary methodology was excellent at getting people to notice sounds that they did not *in situ*, finding the exact points where sounds become arousing enough to be noticed would require a different methodology. This is one potential area for an interdisciplinary study of, for example, users of a single building.

Cataloguing and backing up the audio recordings themselves was highly time consuming, and in future I would simply burn the recordings to two or more DVDRs for permanent archival. The recording data itself could perhaps have further uses in an interdisciplinary research setting where quantitative measurement of the recordings was deemed desirable. They could also be of use if a study was taking place in one specific building or type of environment, and the researcher wanted to confirm certain details empirically. The value of the logbooks far outweighed any potential sound data for my research needs; for my requirements, what people *think* is there is the only real factor that matters.

Additionally, transcribing and annotating the diary data provided little fruit aside from identifying the two main sound sources (people and traffic), despite significant effort cleaning the data with Google Refine. The quality and quantity of the interview data though, for a qualitative analysis, far outweighed any potential value I could have gained from extensive data manipulation of sound diary logs. Equally, after cataloguing, recording, sorting and acquiring cloud storage for the recordings, they have only been listened to a handful of times. In future I would most likely use a cheaper recording device, or allow people to use whatever device suits them – a smartphone or dictaphone, for instance.

The main drawback to this would be a lack of formality in the process. However, the benefits are: a much smaller equipment outlay, the possibility of starting a much larger group at once, and less risk of equipment going missing – in total, three recorders never made it home. Also, the recorder was for some a liability, and not one they wanted to take to a club or a workplace in some cases. Allowing people to use their mobile phones

as data recording devices would have been much more convenient for these cases.

Overall, this methodology was highly successful for the reasons documented, with these issues being relatively minor complaints. I strongly urge other researchers to use similar methodologies where in-depth knowledge of listening habits, or an idea of the relative importance of a location, is a significant factor in the research question. If I were to do it again, the only significant change would be to reconsider the role of the diary data and audio recordings themselves, and if it could be made more useful, or less time consuming, to record. Otherwise, I think I have demonstrated the effectiveness of a sound diary method in getting an enormous range of high quality data from hard-to-reach environments, and giving detailed overviews of individual listeners.

6.1.3 Pedagogy

Many questions arise around pedagogy. How can we learn to be better soundscape researchers? How do people learn to listen? How we can teach others about soundscapes, and what would the curriculum be? All these questions are huge topics in themselves. Currently we have Schafer and Lefebvre neatly spanning a spectrum from the spectacular to the mundane. A pragmatic approach for built environment professionals should be somewhere in the middle. We lack vocabulary, understanding, and empirical data. Self-reflexivity about our roles as pedagogues should be a valuable and integral part of forging a new research area.

6.1.4 Summary

In an extremely condensed form then, here are some key recommendations, specifically for soundscape researchers but more broadly for any sensory study.

- Don't presume people care about the soundscapes they inhabit.
- Don't presume people use the spaces they are being questioned about.

- Judge environments relative to other environments of the same type.
- Social context is key to understanding soundscape response.
- Be careful about generalising responses when there may be more than one distinct response group.
- Consider diary methods when specific feedback is needed: a specific workplace or locality, for example.
- Think about power relationships and what sounds represent.
- Keep seeking new ways of teaching soundscapes, questioning our practices, and learn the ways people learn to listen.

6.2 What does this mean in a wider context?

This section outlines the practical applications for people not working within soundscapes.

If there was a single conclusion for my research, it would be this:

Opening dialogues about sounds and soundscapes is the single most effective way to improve people's perceptions of sounds and soundscapes.

These dialogues can be between neighbours; employers and employees; co-workers in any context; bars and cafés and patrons; in short: any time people are spending significant amounts of time in a space or in each others' company. As discussed, libraries go out of their way to establish many different sound contexts; and yet people still feel uncomfortable and uneasy talking about it. The narratives people construct around identifying the human sources of sound annoyance are wildly hyperbolic: for example, Imogen jokingly suggested a noisy neighbour was, in her head, "[a] kind of massive creature who wasn't a human at all". By and large when people *did* get the courage to ask people to turn down their music, or alter their behaviour, the person they confronted had no idea about the sound they were creating.

While engaging neighbours may be too intimidating for a lot of people, public or semi-public places like workplaces, libraries, bars and shopping centres theoretically have almost complete control over their environments. All these are low-control environments for the participants, resulting in a lowered noticing threshold and a high likelihood of a negative judgement – whether for being too quiet, or too loud. Workplaces, or *low-control* places where work is being performed are an especially large culprit here. Employers or co-workers could potentially open a discussion about sound-related issues though, before allowing things to get to the kinds of snapping points we have already touched upon.

Libraries are an excellent case study to refer to – developing different environments for all kinds of work, allowing people with different sound preferences to be together, seems a sensible route. However, I’d hypothesise that the act of merely *allowing people a sensible, non-judgemental way of reporting sounds* will do a lot to either raise people’s noticing thresholds to a level where previous annoyances cease to be noticed, before discussions of creating positive loud or quiet environments come to pass. The following table shows my recommendations on how to raise people’s noticing thresholds, in the abstract.

<i>How can the noticing threshold be raised?</i>	
<i>Potential Action</i>	<i>Relevant categories</i>
Consult with space users and open dialogues about sound preferences	Control, Expectation
Create a culture where it is acceptable to discuss sound annoyance	Control, Sensitivity
Give users a choice of spaces with different sound contexts to use	Control, Sensitivity
Discover what people like in other environments of the same type	Expectation
Ensure other sensory stimuli are attended to: heat, light, moisture	Comfort
Accomodate differing sound context preferences	Control, Sensitivity
Allow use of walkmen while being sensitive to headphone bleed	Coping Mechanisms

Figure 6.1 – Guidelines for improving listener perception in fixed sound contexts

It’s worth keeping in mind when doing this that *negative quiet* is equally as undesirable as *negative loud*. Both should be addressed when considering ways to raise the noticing

threshold. Andringa and Lanser (2011) tentatively state “annoying stimuli activate immediate needs that transfer control from the individual to the environment, and in doing so reduce autonomy and viability” – I would add that this can equally refer either a presence of unwanted sounds, or a lack of *wanted* sounds. In addition, it’s worth thinking about creating spaces aimed to be actively perceived as positive good or positive quiet. This may have a knock-on effect on *expectation* – the knowledge that quiet and loud spaces exist can be enough, for some, to feel more comfortable – a metaphorical ‘open and closable window’.

As well as enabling people to dishearken, enabling positive sound contexts could also be of use. This could be creating quiet areas and loud areas, and encouraging people to use them as such. I will now look at some more specific ways people can establish more desirable soundscapes.

6.2.1 Sound designers/musicians

It is curious that the works of composers such as Brian Eno and Erik Satie have fallen so by the wayside in a modern context. ‘Musak’ is widespread; non-explicitly-commercial, environment-based compositions are not. The famous designer William Morris comes to mind, whose work on wallpaper was at one time seen to be a career dead-end: where bad artists went when they could get hired in no other area. One commentator said: “we owe it to [Morris] that an ordinary man’s dwelling-house has once more become a worthy object of the architect’s thought, and a chair, a wallpaper, or a vase, [are] a worthy object of the artist’s imagination” (Pevsner, 2005, first published 1936). Why should this attention to detail stop when it comes to music and sounds? It would be a fruitful avenue for composers to take on as a serious task: music designed to accompany other activities, rather than to be an element all by itself. With modern generative methods of composition, such a piece of music could alter itself by time of day, workplace busyness, the weather outside – the central concept being very much Eno and Satie’s, though: *to create more desirable places to be*.

6.2.2 Architects

The concept of auditory ‘user stories’ was introduced when examining *listening profiles* in Subsection 5.9.8 on page 256. This seems a useful way to include many people’s sound preferences in acoustic design. Planners and architects can both consider ways to raise the noticing threshold, in addition to generating positive loud or quiet environments. While some papers focus on creating new sound sources to create aural interest or sense of place, for more ‘mundane’ environments it may be that the goal is to construct a soundscape which draws attention *away* from itself, rather than towards it. In short, the key design question becomes about *activity*: what are people doing in a space, and how can the soundscape be facilitated to help it? Cain et al. (2013) support this finding, concluding that “as listening states can be associated with activity, it is important to understand the intended activities of users within a space, in order to design the soundscape for the corresponding listening state”.

6.2.3 Social scientists

Social scientists have been slow to consider sensory data as part of social text. Perhaps listening can be a way to engage with social power, gender performativity, and space dynamics. Sound- and sensescapas should both be part of analyses of lived experience – after all, we experience everything through our bodies, so how can we come to deeper understandings of experience without a sensory analysis? The sounds of a society reflect its social values: what can we tell about environments from their sounds?

6.2.4 Club, bar, café, and restaurant owners

One of the strongest pieces of feedback from the fieldwork process was people feeling like most bars were too loud, most of the time; something overwhelmingly ratified when talking about my research with friends and peers. Yes, the postgraduate corpus likely was a factor here: even bars seemingly aimed at postgraduates had similar undesirably

loud volume levels. It is curious that for businesses which rely on music played over loudspeakers as a primary way of attracting business, there is so little, if any, attention paid to the volume. I am unsure what the decision making process is for setting the level: in my personal experience it seems to be staff members selecting the volume based on their preferences. The worst culprits here are DJs starting a set and turning the music up very loud at inappropriate times of the day to small numbers of people – which makes communication all but impossible.

Overall, it seems that venue owners are missing a trick by *not* considering volume level, not just in avoiding annoyance, but creating *positive, quiet* and *positive, loud* spaces at levels people want. There are enough bars and pubs in most cities to cater to everyone's needs: here is another way places can establish new marketing strategies.

6.2.5 General public

Many of the coping strategies and methods people used in this thesis are processes people generally seem to not be aware of. However, there are many people dissatisfied with the soundscapes, either consciously or subconsciously. Optimistically I would hope that by people learning my model of soundscape attention, and by having the vocabulary to discuss soundscapes, people could regain control over their own audition. Most of all, removing the taboo around talking about sound production is key.

The sound of a neighbour's music does not have to be loud, to compromise our sense of autonomy in the domestic setting. (Atkinson, 2007)

In other words: social text is more important than loudness. I would encourage listeners to learn about their own preferences and habits, and for people to be responsive to others' requirements. A lot of social attention is paid to how people look: I encourage people to think about how they sound.

6.2.6 Workplace managers

As mentioned at the start of this section, there seems to be a plethora of ways which all revolve around enabling communication. Think about employees' sound preferences – can they be facilitated? Can people with different listening preferences work together? Perhaps not, but it seems an important part of workplace satisfaction.

Libraries could publish pamphlets and guides to using sound spaces in the library effectively for listeners. These places are very attentive to sound contexts, but do little to convey this apart from in non-pejorative ways, such as “keep quiet” signs. Further communication and encouragement of people to use louder spaces as well as quieter ones may well be the final piece of the puzzle.

6.2.7 iTunes/Spotify/YouTube, and music software in general

Listeners have two basic modes when it comes to recorded sound: active attention, and as a passive, furniture sound. The latter is much more common. Music software design doesn't seem to reflect this. While all these services allow the listener to set up a playlist, they do not have a simple way to actively listen to something that might be needed for the task at hand (a specific talk, or a phone call) without switching to the audio program and pausing it, switching back to listen to whatever requires foreground attention, and then switching back and unpausing afterwards. All of this can be highly disturbing, and feels like two different activities: one creates a sense of comfort and enables dishearing, the other an active, critical process.

I would suggest then that modern operating systems should have a universal audio playback system, where a “background” music stream can be played, which is then automatically paused or dampened when any “foreground” sounds are played. This could also allow for people to ‘queue up’ links to songs or videos their friends send them that they don't want to or can't listen to at work for later listening, on an “active listening” stream.

In short, there could be a lot done to streamline how people use music software, in ways that are much more responsive to listening modes. Lack of user input is a main draw for radio listening: sometimes, *not* interacting is what the listener needs. The current model prioritises every sound equally: a two-track system seems more reflexive to listening habits.

6.3 Revisiting thesis aims

How do people listen in different environments?

This question has been answered comprehensively in Chapter 5 on page 135 – for a summary, see Figure 5.2 on page 141. Most environments are not actively noticed most of the time (Subsection 2.9.2 on page 76). The factors that affect noticing are: activity, control, expectation, comfort, and sensitivity. Search can be used when needed (Section 5.4 on page 186). When environments are noticed, they generally are judged as either loud or quiet, and negative or positive (Section 5.8 on page 224). In disliked environments, people use coping mechanisms to change the soundscape (Section 5.6 on page 199).

How does the design of the built environment affect this?

This is a harder question to conclusively answer. I have given several examples of design recommendations (Section 6.2 on page 277), but these are largely around communication as much as design. Design has a strong effect on listening (Subsection 5.8.6 on page 246), but arguably not more than semantic, social factors around listening. Another way of answering this question: buildings can be designed to have better sound contexts; these must be reflexive to the listeners within. Use patterns are therefore a better guide to appropriate sound contexts than acoustic measurement (Section 5.9 on page 250), and should be used as a starting point in any design process.

How do people learn to listen?

Childhood seems to form a very strong element of soundscape attention (Section 5.3 on page 168). Tentatively, it seems being surrounded by people in noisy environments results in listeners with less tolerance of quiet (Subsection 5.3.1 on page 172). Growing up somewhere quiet as an only child tends to result in listeners with little tolerance of noise. Generally, although people are adept at traversing the soundscape, they have poor skills when it comes to vocalising these preferences.

How do listeners differ?

Listeners differ enormously in both their thresholds, and what they consider desirable, even to the extent that people can have opposite opinions of the same sound source (Section 5.9 on page 250). Preferences tend to be linked to social contexts (Section 5.5 on page 192). Listeners therefore have both a basic tolerance threshold which affects their bottom-up attention (Section 5.1 on page 140), and a conscious awareness of their own personal taste which affects their top-down attention.

Are we asking the right questions about the soundscape? What are good questions to ask?

Soundscapes needs a stronger and more critical analysis of question setting, question asking, and a thorough investigation of different ideas of what the soundscape is (Section 2.6 on page 57). More clarity around why we are using it, and what we are trying to measure, seems a vital progress point for soundscape research as a whole (Section 6.2 on page 277).

Why should quantitative researchers care about using qualitative data to inform soundscape policy, environmental planning, and acoustic measurement?

Qualitative research excels at investigating the under-explored, generating thick description of real-life experience (Chapter 3 on page 84). Listening to recommendations from

qualitative research can help quantitative researchers set more accurate and rigorous questions, but also re-frame what it is that we are researching.

There have been many areas of agreement between my work and quantitative work. The biggest area for potential progress from my perspective is shifting the focus from outdoor urban spaces with a value-neutral social context, to a use-case oriented design that takes into account practical needs. For example, I suggest that parks are not the primary place people go to relax or unwind, or indeed a big concern at all to most people especially with relation to the soundscape, and that workplaces are a much higher source of stress than anywhere else. These are all findings which could be explored in detail in quantitative research designs.

What kinds of things is possible to know about the soundscape?

The soundscape and sensescapes in general seem ripe targets for analysis in a number of subject areas, as discussed in Chapter 2 on page 11. Reading them as everything from social texts, to place documentation, to vibration maps will surely broaden our understanding of hearing and listening.

6.4 Further potential topics for soundscape analysis

As with any research project, there were several things which were cut from the project to keep it on track. A short list of some of these areas:

Gender performativity

Originally, this PhD focused on how people perform gender identities through interactions with soundscapes. Much attention is paid to visual aspects of gender performance: next to nothing for how this is conveyed through sounds. Using Cage's concept of the world being a constant composition, analysing gender and gendered social power would, I think, make for a robust and new approach to thinking about this topic.

Is listening gendered?

As well as performance being more obviously gendered, listening, as an embodied act, is perhaps gendered too. What elements of socialisation affect our sound annoyances? To what degree do men and women appraise sounds and soundscapes differently?

Quantitative analysis of sound diary data

There is still potential to do further analysis of the sound diaries themselves: there is no intrinsic reason why these could not be adapted to make for easier quantitative analysis. The quality of data intuitively feels much lower than that generated from the interviews however, with respondents significantly changing the quantity and quality of feedback over the fortnight. Doing anything quantitative with this data ended up being a step too far for this project, and would require a novel analysis method. Further iterations could see this methodology being developed to allow for easier, broader data collection, using more familiar semantic scales – however, I suspect this would be better suited to a fresh sound diary study with more clearly defined objectives.

Chapter 7

Conclusion

This thesis explores the phenomena of listening, using empirical, diary-based research. I defined a soundscape as “the listener’s perception of their auditory surroundings” in order to completely shift the focus onto lived experiences of individual listeners. This has led to some unexpected and novel findings, and given a unique perspective on soundscape studies.

7.1 Literature review, impact, conclusions

In Chapter 2 I presented a broad reading of soundscape literature, from re-evaluating key literature in the field (e.g. Schafer, 1977, Truax, 2001, Payne et al., 2009*b*, Jarviluoma, 1994), to exploring works which may not even mention soundscapes, but seem to have a strong sonic element (e.g. Jacobs, 1961, Valentine, 1990). I conducted a strongly interdisciplinary reading of the area, and outlined areas of conflict and agreement. I critiqued soundscapes’ lack of a strong theoretical backbone, and suggested that perhaps aiming for a single soundscape definition is hindering progress, when plural definitions with a greater understanding of the multiple objects under study is equally valid, and would allow for easier demarcation of research approaches. The literature review is critical of

a wide range of literature – a necessary part of qualitative analysis is to cast the net as wide as possible, and analyse different areas for their strengths and weaknesses. I used a soundscape definition that isn't in common use and my critiques reflect that.

My literature analysis has three main aspects, which all aim to greater outline soundscapes as a research area – the traditional questions of epistemology, methodology, and pedagogy. As an interdisciplinary field, there are lots of epistemologies in use. Most significantly, acoustics uses the soundscape concept as a way of understanding acoustic space as a holistic entity, rather than a reductionist one measured using sound level meters (ISO, 2014). This has been a significant and meaningful shift. Acoustics is also the only area within the soundscapes umbrella to do significant work using methodically gathered empirical data. Other epistemologies use the soundscape as a mediator of social text – a way meaning is communicated and received. Our ways of listening and performing are social (Butler, 1990, Lefebvre, 1992), and social sciences approaches to soundscapes emphasise this aspect.

Methodologically, there is an emerging set of tools being used to evaluate and measure soundscapes. Methods range from the highly qualitative (interviews, participant observation) to the highly quantitative (neural networks, MRI scans), with multidisciplinary methodologies using a combination of these, summarised in Section 2.6 on page 57. In this section I outline my critiques of the weak links between methodology and epistemology, and suggest ways that current soundscape research designs can be improved – this forms the bulk of my critique of soundscapes as a research area.

There have been few attempts at a pedagogy of soundscapes, but I feel this is an especially exciting area for the future. I cover two: Schafer's *Soundscape Designer* and Lefebvre's *Rhythmanalyst* (Schafer, 1994, Lefebvre, 1992). As the soundscape concept becomes more widespread, we should become better teachers and advocates for the approach. This requires in turn a critical evaluation of our roles as teachers, so we can better communicate our ideas to potential acolytes.

7.2 Methods and methodology

I developed a novel methodology, using a Grounded Theory epistemology, based on the Diary-Diary Interview process, outlined in Chapter 3 on page 84. This approach was designed to discover the key factors in listeners' soundscape response. The data was analysed using a variety of tools, including ones custom-built for this thesis. This methodology has been highly successful as an investigatory study, and paves the way for further qualitative analyses that use the listener as a starting point.

I used a sound diary method. This involved giving twenty people audio recorders for two weeks, and getting them to keep a diary of the things they heard. This process evolved out of a Grounded Theory methodology, as this proved the best way of developing a method that is responsive to my thesis aims. The methodology was designed to allow people to talk about where soundscapes mattered to them, when, and in what ways. The diary method was extremely successful, and gave a huge amount of varied and detailed information.

The vast majority of the data analysis was based on Grounded Theory interview coding – the diaries themselves acting as a way to engage people with the subject on their own terms. I describe the iterations of this research process in Chapter 4 on page 110.

7.3 Analysis

Using this data, I built a robust model of soundscape response, detailed in Chapter 5 on page 135. I demonstrated that soundscapes are not noticed most of the time, and outlined factors that cause a soundscape to be noticed, linking these factors to existing literature. Soundscapes which *are* noticed fit into one of four basic categories, based on if they are liked or disliked, quiet or loud. Finally, I demonstrated how listeners use a variety of coping mechanisms, generally involving recorded music or radio, to manipulate the soundscape and create more desirable places to be. This model is summarised in

Figure 5.2 on page 141. This figure is a complete overview of my final findings. The rest of this section explains this model in more detail.

7.3.1 Noticing threshold

Listeners do not notice soundscapes most of the time. This is the major finding that came out of my data analysis, and has implications so far reaching, it is the cornerstone of the analysis. There were six key categories affecting this, which also affect soundscape perception in general.

Activity What the listener is *doing* is a vital part of understanding their soundscape response – this is now becoming more recognised in soundscape research. People are more laid back in home environments than work. Libraries were explored as a case study of a place where activities and contexts rarely matched.

Expectation This is the other side of activity – the two are closely linked. Listeners have a three stage process: *establishing normality*, where they learn the variance of different spaces, and select places based on their preferences. *Engineering normality* is where the listener then adapts spaces to their needs, whether they like them or not – this could be by introducing music or other recorded sounds (coping mechanisms), sitting in another place, or going at a different time of day. *Dishearing*, or the ability to ‘un-listen’, is a key competency, and one that improves the more familiar a listener gets with a location.

Control While all these aspects have some social context, control is completely rooted in it. A listener’s presence or absence of control due to social factors has a large impact on their soundscape perception.

Comfort Senses do not exist in isolation: smell, temperature, weather, sight, touch and sometimes taste all impact on soundscape perception.

Sensitivity Listeners differ enormously in their personal sound preferences. This category outlines the range of inter-listener differences.

Search Top-down, active listening was relatively rare, and works distinctly differently to the other five, more bottom-up categories.

When soundscapes were noticed, this then led to a judgement.

7.3.2 Judgements of noticed soundscapes

Noticed soundscapes fall into one of four categories, based on either if they are noticed or not, and if they are liked, or not. Very few spaces were actively noticed but the listener had no opinion.

Positive – Loud This was characterized by *music and company*, such as when socialising or at a busy party or music event. A second concept was loud, broadband noise sources, such as being in the shower or on a loud bus, where the sound level becomes cathartic.

Positive – Quiet Characterized by quiet and perceived silence, especially during self-care activities such as going for a massage or having some quiet time alone. Also can be noticed when a usually noisy environment is much quieter than normal.

Negative – Loud Undesirable intrusions – ‘sonic weeds’ – form the vast majority of *negative, loud* judgements. Also can occur when a known environment is much noisier than normal.

Negative – Quiet The smallest category in this section, mostly occurring when the listener feels lonely or isolated.

7.3.3 Coping mechanisms

People use recorded sounds to augment their soundscapes using devices such as radio, TV, Skype/VoIP services, music, walkmen, and personal computers. This is the most dominant way people to alter their sound environments – I refer to this as ‘sonic furniture’: sounds are played, but to create a more comfortable environment, rather than to be actively listened to. This kind of use was more common than listening to music in my fieldwork – everyone in the study used sounds as furniture, whereas only a few routinely actively listened to music.

7.4 What’s next?

Overall I’m hopeful that this thesis can help soundscape research move forward as a complete entity, with a clear definition of purpose, and using the strengths of all our disciplines to gain a complete understanding of soundscape response for everyone. The discussion chapter (6 on page 269) outlines the benefits of this approach to a range of stakeholders, and summarises my approach’s contribution to knowledge.

Overall I have presented a strong new analysis of soundscape literature, created a methodology that directly responded to documented research gaps, and analysed this using grounded theory, creating thick description and theory. I have demonstrated that the *listener* is possibly the most important aspect in understanding soundscape response, and deserves direct attention from all soundscape researchers.

Appendix A

Participant information and consent form

A.1 Who I am

My name is Kim Foale and I am doing research at Salford University into how people experience acoustic environments differently. I am interested in the places people inhabit, what they think of them and what they like and don't like.

I need your help. I need you to keep a diary of your life, using a portable sound recorder and a log book that will be provided. Over the course of two weeks, I'd like you to keep a record of your environment on a day-to-day basis.

If you need to contact me my contact details are:

- Phone/SMS: XXXX XXXXXXXX
- Email: kim@alliscalm.net
- Address: X XXXXX, Manchester

A.2 What is required?

I want to keep track of your movements for about two weeks. Here is the rough itinerary:

1. I will give you an initial interview for suitability, to check you are fully aware of what I'm asking, and that you have the time to do it.
2. I will train you how to use the portable recording device.

3. You will be asked to go and make two diary entries a day, with recordings, for two weeks. I will email after a few days to make sure you're doing OK.
4. At the end of the two weeks I will interview you personally about your diary and recordings. This will typically take under an hour, and be in a place of your choosing.

There are no right or wrong answers, and I am not expecting anything specific. I'm interested in *your* experiences and opinions, so don't feel like you have to impress me or go anywhere unusual or exotic!

Again, this can all be conducted in a place of your choosing – apart from the time involved, there are no travel commitments on your part.

A.3 Consent Form

In order to take part in the research you must agree to all of these statements. If you have any questions or queries, please talk to me (Kim Foale) about them and we can work through any issues you might have.

Tick here

- I have read and understood the nature of the study.
- I have read and understood what is required of me.
- I agree to take part in this project. Taking part will involve (*keeping a log book and making recordings for a two week period / being interviewed / listening to recordings*).
- I understand this is voluntary, I can withdraw at any time, and will not be asked questions about why I no longer want to take part.
- I understand my personal details are confidential, and will not be revealed to people outside the project.
- I agree my words may be quoted in publications, reports, web pages and other research outputs, but my name will not be used.
- I agree that recordings *with no identifiable person on* may be used in publications, reports, web pages and other research outputs, but my name will not be used.
- I understand that other researchers will have access to your written data, but only if they agree to preserve your confidentiality.

- I agree to assign the copyright I hold in the materials to Kim Foale. □
- I am happy to be contacted at a later date to be involved in later stages of this research. (*Optional*) □

Name (sign):

Name (print): Date:

A.4 Reminder

Thank you for agreeing to participate in my study.

You will be required to fill in a log book and make recordings (all provided). The aim of this study is to find out what kind of environments you inhabit on a day-to-day basis, how you feel about them and how you interact with other people in the spaces.

I'd like you to aim to make 2 recordings a day for 2 weeks. After a few days, I'll email you to make sure everything is OK.

Over all the recordings and logs you make, I'd like you to consider covering at a minimum all the places you inhabit on a weekly basis. This might be work, the route to work, home, where you go for leisure, shopping, and so on. It's fine if you don't feel comfortable in any given space – we can talk about this either at the interim meeting or at the end of your period.

As well as places you visit often, I'd also like you to record places you visit on special occasions (if there are any while you're doing the study), and changes to existing places – this could be a house or office party, a train that breaks down, and so on.

Every day I'd like you to make two recordings of about a minute each. This should be accompanied by about 1 minute filling in the logbook. Please do this at the same time if possible – it's important that the log book is filled in in situ, either during the recording or straight before or after if this isn't possible. If it is impossible to fill the book in straight away for whatever reason, don't worry – do it anyway from memory, but please mark the record accordingly.

There will be a short version of all these instructions in your log book. Please feel free to contact me at any point if you have questions or queries.

Please bear in mind there are no right or wrong answers, and I'm not looking for interesting or unusual sounds particularly! I'm interested in what people actually encounter on a day-to-day basis. Even if it sounds really boring to you, be assured this is very important data

for my research. Think of doing recordings where you'd take a photograph – it's more of a snapshot of an environment rather than a particular sound I'm looking for.

Either at our first meeting or via email afterwards, I will then arrange for an interview of under an hour where I'll talk to you in depth about your experience. At this point you can also ask me any further questions you might have, and tell me things you did or didn't like about the research.

Appendix B

Publicity text

This text was sent around university email lists and printed onto posters placed around Manchester, Manchester Metropolitan, and Salford universities.

Participants Wanted

I am a PhD student at the University of Salford, doing a study into how people experience sensory environments. You will be required to keep a short audio diary for two weeks (will take about 5 minutes a day) and then have a follow-up interview of up to 60 minutes. I'll give you a full briefing and detailed instructions when we first meet (takes about 15 minutes).

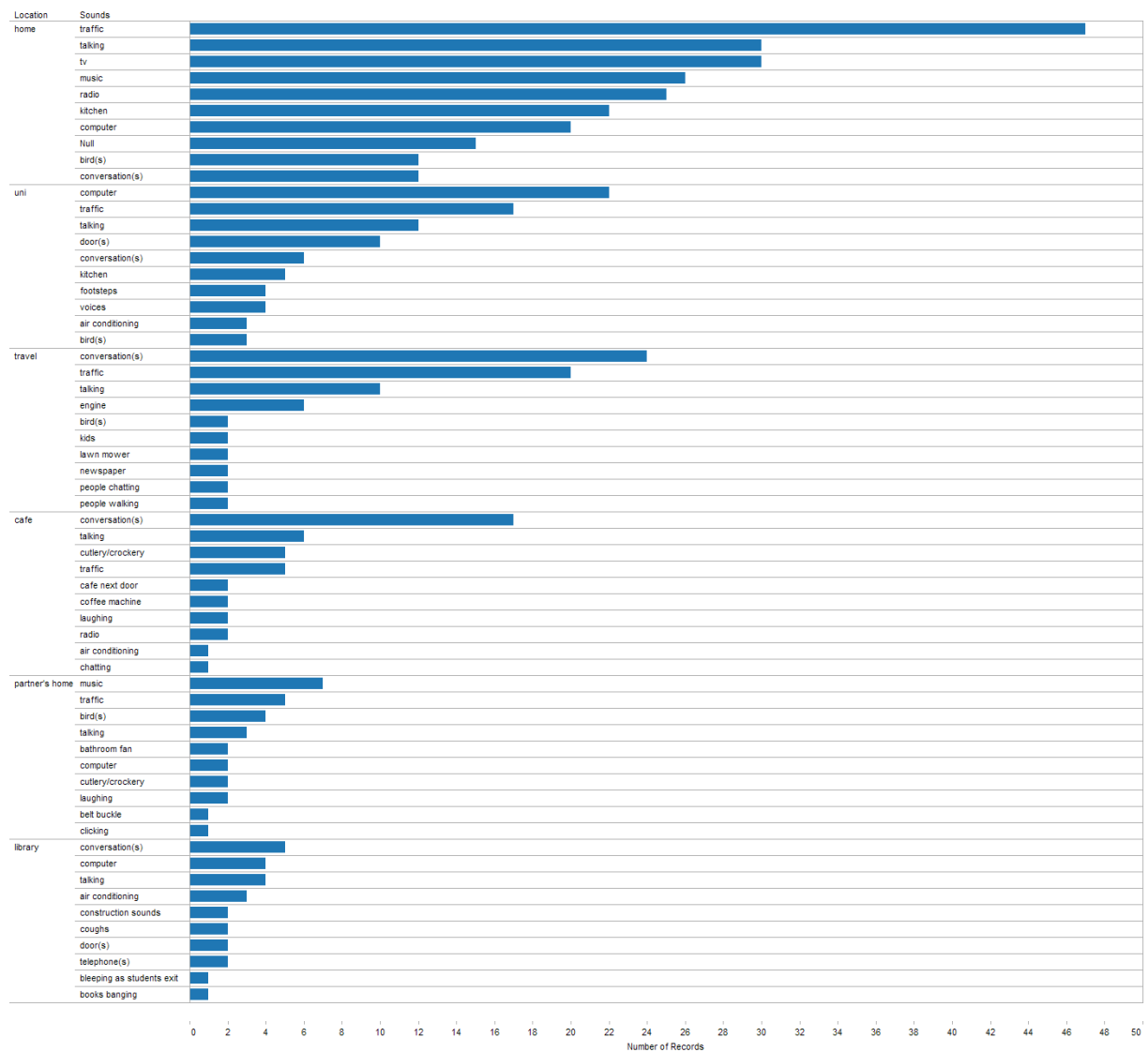
On completion you will receive a £20 Amazon voucher. You can also ask me any in depth questions at the end - I'm intentionally keeping this fairly vague.

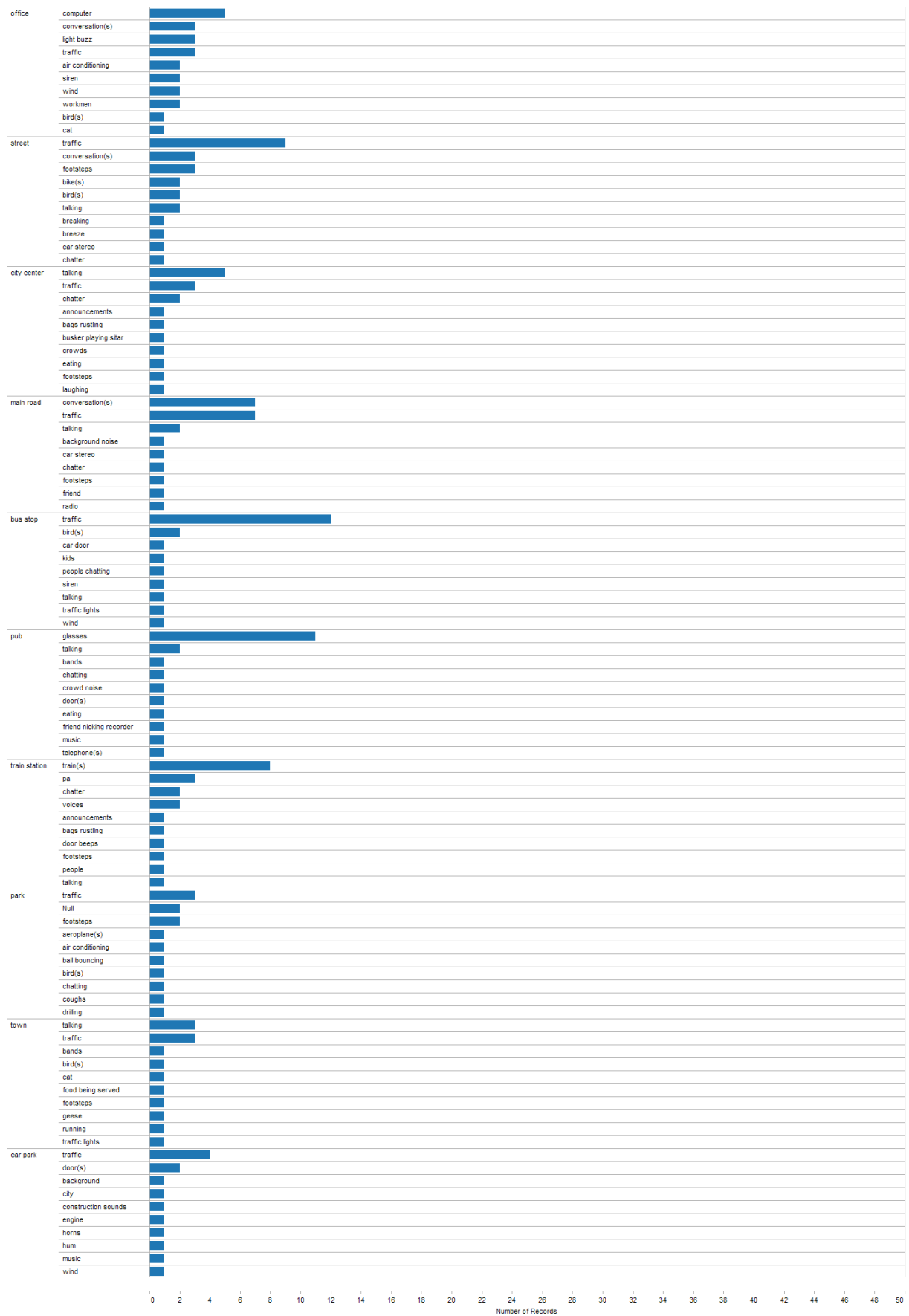
You must be a postgraduate student at any Manchester university; apart from that all ages, genders and ethnicities welcome. I can travel to wherever is convenient for you, for all stages of the research.

For questions, or more information, contact Kim.

Appendix C

Sound diary data by location





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