Trajectories of field recording: Sonic fluxes, fuzzy lines and relational space in practice.

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Abstract

This practice-led thesis is centred on using sound as a resource for thinking relational encounters and processes of spatial constitution. Starting with Doreen's Massey's conception of space, which posits that space is constituted via interaction, I examine my own field recording practice, and the recorded documents I produce, for ways of thinking the diversity and dynamism of interaction. In doing so, I develop six sonic figures: Volume, Propagation, Reverberation, Masking, Interference and Not-Sounding, and explore the aural flows and fluxes these figures entail for suggestive ways of conceptualising dynamic interaction. Thus, the central question this thesis examines is: if space is the product of interrelations (Massey 2005:9) how might sonic dynamics be used to conceptualise the diversity, complexity and hybridity of interaction itself? Relations are, of course, varied, they might comprise contradictory dynamics or take hybrid forms involving, for example, both conflict and collaboration. The sonic figures I have developed for thinking relationality involve highly variable interactions comprising processes of transformation, amplification, silencing and returns. In using them to conceptualise the dynamics of relations, I explore their fluxes for ways of thinking relational complexity. This approach generates a version of relations as hybrid and mutable, with effects which might too be contradictory or in flux. By expanding the ways in which relations themselves might be conceptualised this thesis offers new approaches to thinking the 'how' of relational constitution, locating in sonic dynamics new ways of thinking the constitutive relational flux which produces space.

I draw on three specific artistic commissions, which took place from 2018 to 2021, to develop and put forward the arguments presented in this thesis. *Under Construction* (2019) and *Ascending Composition 1 (For Planes)* (2019) were both installations which were exhibited in London, with *Ascending Composition* also involving documentation of a sonic intervention, while the third *Hawkes End —> River Sowe junction – a sonic transect of the (sometimes absent) River Sherbourne* (2021) was a composition for the Coventry Biennial. All of these projects invited me to work within and through a wide range of complex, overlapping, complimentary and conflictual sets of relations. Throughout the thesis I turn to the sonic figures I have developed for ways of conceptualising the dynamics at play in the locations in which I was working, and those entangled with my own practice of field recording in public space.

Table of contents

Introduction

How do we make space together? How do acts of field recording influence and inflect the locations in which they occur? How might sonic interactions help us think these dynamics? These three questions sit at the heart of this thesis which proposes the use of sonic fluxes as tools for conceptualising relational dynamics of spatial constitution. I began the work of this thesis by asking how, or if, the mix of sounds in the public spaces in which I was recording might help me listen my way to a better understanding of the dynamics at play in these locations. I hoped to locate in the sonic interactions within the acoustic environments I was recording ways of understanding the processes, power dynamics and absences or silences folded into producing these locations in the form in which I was encountering them. Finishing this thesis has involved refining this quest for locational expertise in a more self-reflexive direction. Instead of seeking to comprehend the specific complexities of particular locations via the soundscape, I propose a way of using sonic fluxes as tools for thinking the dynamic and disparate forms of relationality at play when we make space together. As such, the central research question of this thesis is: if space is comprised of the fabric of interactions, as Doreen Massey and other relational geographers insist, how might sonic dynamics be used to conceptualise the diversity, complexity and hybridity of interaction itself? I explore this question across three discrete periods of artistic research in different locations, with particular reference to my own relations as a field recordist.

The three projects I discuss in this thesis took place from 2018 to 2021. *Under Construction* (2019) and *Ascending Composition 1 (For Planes)* (2019) were both installations, with *Ascending Composition* also involving documentation of a sonic intervention, while the third *Hawkes End —> River Sowe junction – a sonic transect of the (sometimes absent) River Sherbourne* (2021) was a composition. All of these artworks were based on my practice of field recording. The work I undertook during this period comprises hundreds of recordings: muffled conversations, people calling across the street, children playing, squirrel calls, birdsong, football games, police sirens, horse rides, the clangs of construction sites, the roar, thump and rustles of flight paths, reeds in the wind, welding arcs, buskers and traffic, among many others. Throughout this thesis, these recordings are explored as documents which contain traces of relations, whether sonic or otherwise, but also as products of my own relational practice.

5

Context and contribution

As a research project which is centred on both sound and space, this thesis moves between sound studies and geography. As has already been touched upon, a relational conception of space is central to the investigations in this thesis. I have chosen to focus on this way of conceptualising space, and processes of making space, due to its profound influence within the discipline of geography (Malpas 2012:228). In doing so, I have focused specifically on the work of Massey due to the foundational role her work has played within the field (Malpas 2012:228). Within sound studies my approach is contextualised by the work of Salomé Voegelin (2010, 2014, 2018) Brandon LaBelle (2007, 2010, 2018) and Christoph Cox (2017) who have all sought to use sound, or a version of sonic thought, to invigorate diverse fields of enquiry ranging from urban studies, geography and political theory. George Revill's observation about the rich parallels which exist between early approaches to acoustic space and contemporary conceptions of relational space (20016:6) helped bring together my focus on sound and space, and was particularly important in convincing me that my attempt to use sonic relations as a way of thinking relational space was relevant and worthwhile. Benjamin Tausig's use of sound to conceptualise political constraint and failure in *Bangkok is Ringing* (2019) has also been an important reference.

It is these researchers' insistence on sound as a modality, or tool of thought; that within sonic fluxes, movements or relations we might find ways to better conceptualise other non-aural aspects of our world, which contextualises the focus of this thesis. Within this field, my contribution consists of an exploration of the ways in which sonic fluxes might be used to complicate and extend conceptions of relational dynamics. It is one thing to assert that space is relational, but quite another to think the full complexity of this formulation, because, of course, relations take many forms. From resistance, suppression and contestation to collaboration, intimacy and alienation, relational forms can involve mutable, multiple, or even contradictory dynamics. In this thesis I investigate the fluxes of particular forms of sonic interaction as conceptual tools for thinking the complex dynamics which can be folded into synergistic, collaborative, or conflictual relational forms.

As a field recordist, my starting point in developing this conceptual framework has been the acoustic environments in which I have been recording. In the soundscape individual sounds interact in diverse ways which might result in aural transformations, obscurations or even processes of silencing. Sounds interact not only with each other but with their sounding contexts, they propagate, reverberate, and fall silent in characteristic ways based on where they sound, and what surfaces,

bodies, landforms and architectures they encounter. In his chapter 'Sonic Thought', Christoph Cox argues that sonic flux is particularly valuable for its ability to "model and manifest" a myriad of constitutive fluxes. In a question central to this thesis he asks "What would it mean to *think* sonically rather than *to merely think about sound?...* What concepts and forms of thought can sound itself generate?" (Original emphasis: 2017: 99). In exploring this question I draw on the complex amalgam of interactions within a soundscape as tools for conceptualising the constitutive flux of relationality. In doing so I use sound itself as a way of thinking the 'between' of relationality as a thick and complex nexus; a flux which is layered, hybrid and malleable.

My examination of the potential of sonic thought as an approach to conceptualising relational dynamics unfolds via the development and exploration of six sonic figures which are referred to throughout this thesis. These figures, Volume, Propagation, Reverberation, Masking, Interference and Not-Sounding are deployed as speculative conceptual tools and explored for the suggestive dynamics they involve, as well as the questions they prompt.

Volume is used as a sonic figure in its most simple iteration in order to examine what processes are loud or quiet within a soundscape, and to ask what relations might underpin these volume differentials. It is also used to explore what further interactions loudness or quietness might produce or curtail, and to complicate notions of any simple relationship between volume and audibility by questioning what voices or processes might not have to be loud to be considered present or audible.

Propagation centres the diffuse influence of presence with its focus on how sound disperses and travels. It is deployed to investigate where or how presence might be felt, and emphasise the relationship between interaction and dispersal. The diffuse cloud of where a sound 'is', or where it might generate relational effects, is produced from the landscape, surfaces, barriers and bodies it encounters and the mediums it travels through. Propagation's value as a sonic figure thus resides in its complication of where relational effects might be heard or produced, as well as the focus on interaction itself as productive of diffuse effects.

Reverberation is used to conceptualise the ongoing effects produced by relations or processes which have ceased. In describing how interaction between a sound and the surfaces and materials it encounters produces echoes and returns, Reverberation encapsulates a process whereby ongoing effects are produced from particular types of interactions long after the original sounding activity

has ended. As such, it can be used to extend notions of the temporal effects of interaction, changing when and how we might listen for the traces and consequences of relations.

Masking as a sonic figure describes how inaudibility can be produced by interaction, rather than resulting simply from an absence of sounding. Masking, the erasure of one sound by another, can be produced simply by volume differentials but can also be produced by specific interactions between soundwaves (Augoyard and Torgue 2005:66). As such this figure offers powerful ways of complicating both aural and non-aural forms of absence as phenomena which might not involve a stilling of activity, but rather its active erasure.

Interference describes, at its extremes, two different types of interactions which result in either silence (destructive interference) or amplification (constructive interference). In between these extremes, Interference describes processes whereby soundwaves interact to produce evolving sounding forms out of these process of amplification and annhiliation. As such, this complex figure is used in this thesis to conceptualise antagonistic and synergistic interactional processes, as well as the unpredictable transformations which might be generated in interaction.

Not-Sounding is explored in this thesis for its relational effects. These range from the simple act of holding open sounding space for another, and the relations which might be enabled by this decision, to an examination of the activities entangled with keeping quiet, and the relations such efforts might generate.

I develop and deploy these figures in reference to the three recording contexts discussed in this thesis. These are the London suburb of Thamesmead, Heathrow Airport and its flightpaths, and the course of the River Sherbourne in the city of Coventry. In doing so, I focus on the inflection these figures bring to thinking relational dynamics in these locations. As the thesis progresses my analysis increasingly seeks to examine not only the relational dynamics within my recording locations, but also those at play within my practice of field recording.

Overview

This thesis comprises three chapters which discuss three discrete periods of artistic research and production. The locations of my making form the focus of much of my thinking in this thesis.

Consequently, each chapter discusses the context of the work and its processes of making, in tandem with the theoretical and conceptual contributions which this making produced.

In Chapter 1 I discuss how a commission I received from TACO! gallery in Thamesmead, London, generated an encounter between my own work as a field recordist and relational theories of spatial constitution. This commission took the form of a year long studio residency, culminating in a solo exhibition called *Under Construction* (2019). The residency and exhibition occurred during a dramatic period of demolition and reconstruction of this suburb. The arc of this chapter thus describes my attempts to conceptualise this period of far reaching spatial change by thinking with the sonic fluxes I encountered in my practice of field recording. This analysis focuses in particular on the prevalence and volume of construction noise in this suburb. Within this arc, I set out the artistic and research contexts for the thesis. I introduce Massey's relational thinking of space, previous sonic approaches to space, and theoretical work within sound studies and beyond which has sought to use a form of 'sonic thought' to generate conceptual approaches to research concerns which extend beyond the aural. I then introduce the primary conceptual tools I developed during this period of artistic research in the sonic figures: Volume, Propagation, Reverberation, Masking, Interference, and Not-Sounding. I discuss the particular sonic fluxes these figures involve, in reference to Thamesmead and propose how they might be used to think the relational dynamics at play in the destruction and re-making of this suburb. Finally, I situate field recording as a practice within this context, outlining the ways this has to-date been theorised and critiqued, with reference to my own practices within Thamesmead. I close the chapter by speculating on the relevance of my sonic figures for thinking field recording as a relational practice.

In chapter 2, I examine the encounter with the flightpaths of Heathrow Airport produced out of my attempts to sonically infiltrate these routes for the work *Ascending Composition 1 (For Planes)* (2019). This work was produced for the group show *Air Matters* (2019-2020) and was exhibited at London's Waterman's Gallery, which is very close to Heathrow Airport. *Air Matters* focused on using artistic interventions as a way of thinking the impact and operations of Heathrow Airport, as well as community and environmental resistance to it. In exploring these issues, I centre my analysis on the sonic fluxes of aircraft noise. In doing so, I trace how my conception of the dimensions and effects of Heathrow's flightpaths was reconfigured by my practice of field recording underneath them. I also outline how my plans for *Ascending Composition 1* radically changed as my aspirations for this work confronted the legal protections and restrictions in place for Heathrow

Airport. In this discussion I deploy the sonic figures developed in chapter 1 to examine the Propagating and Reverberating influence of Heathrow's flightpaths, the use of Volume and Not-Sounding in protests against Heathrow, and the role of the inaudible sonic layer of Air Traffic Control communications in constituting and policing Heathrow's airspace.

Throughout this chapter I position the flightpaths as a 'sounding trajectory', a characterisation which serves to highlight these routes as diffuse aural presences. I discuss how this way of thinking Heathrow's flightpaths again immersed me in the work of Massey, and her conception of space as the dimension in which multiple trajectories meet. In bringing sound to Massey's version of the trajectory, I examine how this way of thinking this particular linear entity changes what an encounter of trajectories might mean, and where and how such a relation might occur. A flightpath, when considered sonically, might simultaneously be hundreds of metres away, and in my lounge room. It may interrupt my sleep in ways which reverberate in my life long after that plane has passed overhead. In re-configuring the trajectory in this way, sound blurs the edges of its line, offering a version of it as a propagating and reverberating entity. Building on this sonic re-configuration of the line of the trajectory, I extend this analysis to discuss how sonic fluxes might be drawn on to re-think the constitution and effects of trajectories of movement, and acts of line making more generally.

In chapter 3, I extend chapter 2's sonic approach to thinking trajectories, particularly those of my own practice, through discussion of the methods I employed to make the work *Hawkes End ---> River Sowe Junction: A sonic transect of the (sometimes absent) River Sherbourne (2021).* This composition was produced for the Coventry Biennial and exhibited in the Coventry Cathedral from October 2021 to January 2022. This chapter focuses on my use of the transect protocol to structure my recording locations along the course of the River Sherbourne. In examining my use of the transect I discuss how my field recording practice troubles this protocol's conventional positioning as a neutral and objective tool. In this analysis I focus on the encounters the field recording transect produced and inflected along the course of the River Sherbourne. I turn to the sonic figures of Propagation and Reverberation to explore the diffuse and diverse effects of field recording along this trajectory, and explore the implications of this way of thinking the protocol for the dimensions and boundaries of the transect line. This chapter, thus, uses my field recording practice to generate new ways of thinking and using the transect. I conclude the chapter by discussing the role of the mobility of walking within my transect protocol. Drawing on Tim Ingold's counterposition between the continuous line of the walk and the fragmented line he associates with surveying, I discuss how

the hybridity of the field recording transect might be drawn upon to complicate conceptions of walking, and surveying. I extend this analysis to the practice of soundwalking, which shares with the field recording transect a focus on both listening and walking, but is typically positioned as offering very different knowledges and experiences to that of surveying.

Why re-think space sonically?

The work I discuss in this thesis is presented chronologically. This period of thinking began, then, in Thamesmead amid a period of rapid and far reaching spatial change. The scale and complexity of this moment, and the myriad of relations which produced it within Thamesmead, was pivotal in determining my focus on relational space in this thesis. Turning to sound as a way of thinking interaction and encounter within this context, was my particular way of confronting my own limitations. I could never know all the complex relations at play in Thamesmead, but I could, perhaps, use sound as an approach to thinking such complexities.

As a field recordist it made sense to me to turn to sound for approaches to thinking relational dynamics. A soundscape is itself a relational space. A soundscape contains sounds which can be heard, and ones that cannot. Sounds which are ongoing, and sounds which are singular. Sounds which travel from far away, and sounds made right beside us, or by us. In a soundscape there are ways of thinking relations which are not simply one thing or another, but rather amalgams of partial, incomplete and ongoing dynamics. In these co-mingling sounds, and the diverse dynamics involved in these interactions, I have sought for approaches to conceptualising the dynamic ways we make space together.

To now, performance has been the favoured modality geographers have used in order to think the complexities of relational space more vividly. Theorists, including Nigel Thrift (2000, 2007) and Nicky Gregson and Gillian Rose (2000), turn to the idea of performance as a way of positioning relational space as a doing, involving multiple actors, stages, actions and processes, which change from moment to moment. Using sound as a conceptual tool for thinking relational space provides a different inflection to this. In contrast to performance's focus on the particular actions which constitute specific iterations of space, sound invites an emphasis on interactional dynamics. The sonic figures I have developed in this thesis contain complex sonic fluxes involving hybrid, mutable and even contradictory dynamics. In coming together, sounds transform in interaction into new

forms, which might involve moments of amplification, silencing, echoes or propagation. These fluxes thus provide ways of thinking interaction as comprising ongoing changeable dynamics. If performance emphasises actors, sound provides a way of thinking the relations betweens actors, and the complex mutability of this interactional nexus.

For Massey, re-thinking space as relational is a political project. For her, one of the most important characteristics of relational space, as compared to other closed or completed conceptions of space, is that it is open to change (see Massey 2005:11-12). Space can change in this formulation, because our relations change, and we change. In using sound to think relational dynamism, this thesis contributes to this broader political project by emphasising the mutabilty of dynamic relations. A sonic approach to thinking relational space requires a particular openness to hybridity and unpredictability which brings with it the possibility of change. For Massey an open future requires an open conception of space (Massey 2005:12). In imparting flexibility to ways of thinking relational dynamics, the sonic approach developed in this thesis insists upon a certain openness in relations themselves. In doing so, this thinking generates new ways of conceptualising both how we make space together, and how these spaces might change.

The spaces of practice
The focus of this thesis on thinking space as relational increasingly confronted me with the spaces I contributed to making via my practice. As such, I began to ask myself how field recording inflects the locations in which in took place? If I was using sonic figures to conceptualise relational forms, how might I deploy them in ways which could help me understand the impacts and influence of my own practice?

These questions prompted an examination of how I, as a field recordist, contributed to the constitution of my recording locations. In attempting to answer this question in this thesis, I explore instances where my practice produced, interrupted, altered or curtailed particular relations. Thus, in chapter 1 I discuss the particular actions associated with Not-Sounding as a recordist: the holding still, the careful steps, the quiet breathing, as activities with relational effects. In examining this way of undertaking field recording, I discuss how these acts halt certain relations, and generate others, and in doing so work to constitute a particular version of these locations, both within the world of the recording, and in the time and place of the recording. Building on this analysis in chapters 2 and 3, I turn to the sonic figures of Propagation and Reverberation to examine the dispersed effects of field recording, and the ways in which these effects might continue after the act of recording itself

has ceased. In doing so, I consider both the porosity and propagating aural presence of my recording trajectory, and examine the generative and co-constitutive dynamics at play within field recording itself.

It is important to acknowledge that my analysis of the particular impacts and influence of field recording as a relational practice are entangled with my own identity, as a woman, a queer person, a white person, and someone who is able-bodied. I am convinced it is important and worthwhile to attempt to think through the inflection field recording brings to the locations in which it takes place, but how field recording is practised, experienced, and what responses it prompts will always occur in relation to who is doing the recording, as well as when, where and how it is practised. As such, while this thesis aims to provide tools for conceptualising the relations at play within field recording, I do not seek to define or limit conceptions of the types of relational experiences, or impacts field recording might generate.

Like field recordings themselves, acts of field recording are always a bit messy. They are rarely if ever simply one thing, but fragments of many different encounters, actions and processes. One of the intriguing aspects of field recording is how it changes what might be meant by the term encounter, or relation. When I record I gather traces of both proximal and dispersed sounds. In doing so my recording practice produces a relational space which is porous; receptive to sounding acts I want to record, but also open to those I do not want. A recording gathers sounds I make, as well as those which might occur far from where I am physically. Thus the recordings I discuss in this thesis contain traces of interactions and activities I can be heard in, and ones I cannot. Sounds I intended to record, and ones I had no idea I would find in my recordings. Sounds I intended to make myself, and the sounds of other humans, and many other species.

To record in public space, as a resident, newcomer, visitor, insider or outsider, is a complicated act which demands constant questioning, not only about who, what, where, when or how to record, but also why or why not. In undertaking the projects discussed in this thesis I have occupied a range of identities from resident artist, to visitor, hiker, commuter and lost pedestrian. I have, furthermore, operated within and through complicated, challenging and problematic sets of relations. In my practice I have sought to negotiate, comprehend and, in some cases, intervene in a range of relationships I am both involved in, and external to, and done so from positions which range from relative privilege to marginality. In the messy, layered and incomplete recordings I have gathered

13

over the six years of practice and thinking which comprise this thesis I have listened for ways of conceptualising the diverse dynamics of relational processes, both those entangled with my practice, and at play in the public spaces in which I have recorded.

Chapter 1
Sonic fluxes and relational space in Thamesmead

Inside/Outside – gallery minding.

Footsteps, the rustling of reeds, the slow creak of a door opening, scuffs, whispers, a jack hammer, another jack hammer, a dirt bike, birdsong, wind. Deep bangs, faint music, swans feeding, children squealing, the air brakes of a bus, the spray from a car wash, beeps of a pedestrian crossing. The gallery door slowly opening. Sirens, faint, and loud. A horse whinnies, children discuss football, a snatch of conversation, thuds from tyres hitting cracks in the highway. The ice cream truck drives past, its jingle slowly fading out.

> – *notes from a day spent minding the gallery for Under Construction, TACO!!, Thamesmead.*

From 2018 to 2019 I spent a year travelling to and from Thamesmead in London as part of a 12 month long studio residency at TACO! gallery. During this period large parts of Thamesmead were being demolished and rebuilt, as part of a vast re-development of the suburb led by the housing association and developer Peabody. This chapter draws on that residency, and the exhibition I produced out of it, *Under Construction (2019),* to propose a sonic approach to relational dynamics of spatial constitution. The dramatic transformation all around me in Thamesmead during this period, and the complex links between these changes and the gallery in which I was working, focused my attention on how precisely I might conceptualise the dynamics at play in such a moment. What is involved when space is made and unmade? What relations are created, destroyed, obscured or transformed as part of such a vast project? And how might I conceive of the complex dynamics involved in such interactions? As a field recordist I encountered the sonic traces of this moment of profound change in the construction noise which infiltrated many of my recordings. Listening to the many versions of this sound I recorded, and the different ways this noise interacted with other sounds in the acoustic environment, emphasised the diversity and dynamism of sonic interactions within a soundscape. From this starting point, the question I have sought to explore in this chapter, and in my practice more broadly, is: what version of relational space do we discover by conceptualising relational flux via the movements and encounters between sounds?

A soundscape, and its collectively generated forms and fluxes, contains not only many different sounds, both hearable and unhearable, but an ongoing array of sonic interactions. As a relational medium, sound carries within itself complex traces of its interaction with its sounding context. It is always sounding in relation to and with its context, bouncing off walls for example, being dampened by soft surfaces, reverberating and resounding in buildings, bodies and objects. A

15

soundscape too involves interactions between different acts of sounding, and different sounds - some dominant and overwhelming, drowning other sounds out, others combining in transformative ways, some quiet but persistent, others jarring and singular. A soundscape thus emerges as an arena in which diverse aural interactions are constantly unfolding. These interactions might involve echoes and returns, amplifications, or processes of silencing and obscuration. This chapter draws on such forms, dynamics and fluxes of sound as a resource for conceptualising broader, non-aural, forms of relationality.

In the book chapter 'Steps to an Ecology of Place' Nigel Thrift notes that his 'non-representational theory' is "anchored in an irreducible ontology in which the world is made up of billions of happy and unhappy encounters" (1999:302). And yet, of course, encounters are not just happy or unhappy, they might be neither or both, or something else entirely. Writing in *Strange Encounters: Embodied Others in Post-Coloniality* (2000) Sara Ahmed contends that the term encounter suggests "a meeting which involves surprise and conflict" (2000:6). Some encounters, she contends, such as those involved in colonialism while not in a simple way one-sided, are characterised by assymmetry and inequality (2000:11). Furthermore, she argues, although an encounter involves the coming together of two (or more) elements or entities, it can carry with it the traces many other encounters; broader relations of power and antagonism, which stretch across time (2000:8). Although definiing what an encounter is or might be is not the main focus of her book, Ahmed's work offers a very instructive example of an attempt to flesh out of the forms and dynamics involved in a particular type of interaction, which imbues this relation with nuance and complexity. She insists on relational dynamics as transformative and power-infused; as bringing with them the echoes of other encounters both ongoing, and in the past.

In thinking with the fluxes of sonic interactions this thesis is concerned with investigating and complicating the relational nexus of encounter. As Paul Harrison argues in regard to the discipline of geography, although many different theoretical approaches to space converge around the term relational, there is little work, or agreement, on what is meant by it (2005:590). In attempting to contribute to a project focused on thinking relationality with greater depth and nuance, my starting point is that relations take many dynamic forms. Furthermore relations involve power differentials, and unfold in ways which might deepen, undo or in other way transform these differentials. Relations might take the form of synergies, conflicts, collaborations, or contestations. They might fade, endure, or return unexpectedly. Some relations might involve multiple dynamics, obscured

ones, or ones which rapidly and unpredictably change. Relations are not static, they shift, change and evolve. Over the course of my work in Thamesmead the suburb itself changed in ways which aimed to cultivate new relations between residents, and with Londoners more broadly. My relationship with the suburb also changed, as did my relationship to, and practice of, field recording.

In this chapter I seek to deepen and extend ways of conceptualising the mutability and complexity of relationality by drawing on the fluxes, flows, co-minglings, transformations and interactions involved in sonic relations. In doing so I seek to locate in the dynamics of sonic relations nuanced ways of thinking the complex dynamism of relational forms. Sonic interactions offer ways of conceptualising relationality as propagating and reverberant, hybrid and mutable. In a soundscape we can find examples of sonic interactions which are transformative, amplifying, silencing and obscuring. In this chapter I put forward six sonic figures: Volume, Propagation, Reverberation, Masking, Interference as well as the figure of Not-Sounding as examples of dynamic fluxes which might be deployed to think relationality with greater flexibility, subtlety and nuance.

To now, geographers have been focused on how we might better think the ongoing aspects of relationally-constituted space via performance, a modality well suited to emphasising the active doing involved in spatial constitution. Intent on exploding traditional understandings of space as pre-ordained, permanent and static, Nigel Thrift (2000, 2007) and Gillian Rose (1999) writing alone and with Nicky Gregson (Gregson and Rose 2000), explore performance as a way of thinking the doing of relational space using this framework as a tool to conceptualise how spatial constitution involves not just multiple actors, but multiple actions, stages and processes. I see my attempt to think relational space sonically as complimentary to these endeavours. While performance offers powerful ways of thinking space as an emergent doing, as something which is constituted in action, Gregson and Rose's (2000) exploration of the doing of car boot sales, offering a vivid example of this. In thinking with sonic relations I am searching for ways of exploring the dynamics of relationality, rather than the specific actions which constitute particular versions of space. I am seeking to use sonic fluxes as a way of thinking interaction as multilayered, involving hybrid or even contradictory dynamics, which might be heard or not heard.

In probing the ways a sonic approach to relationality inflects conceptions of spatial constitution I seek to apply this way of thinking relational space to a particular time in Thamesmead, and the

spaces I participated in and created as a field recordist in this time and place. Field recording underpins all of the creative work presented in this thesis. The recordings I have gathered together in this chapter to explore relationality via sound are themselves a product of interaction and encounter. In gathering recordings of the particular moment I encountered Thamesmead, I found myself not only wondering what dynamics, layers, alliances, assemblages and silences might have been involved in producing the suburb I encountered, but also what version of Thamesmead my own practice in the suburb was producing, as well as the versions my work obscured. What presences and absences was my practice amplifying, or silencing? And what about my own interactions as a field recordist in this context? How might I draw on sonic fluxes to conceptualise the influence of my own relations?

In examining these issues in this chapter I start by introducing the specific context of Thamesmead, and the gallery I was working in. I then discuss Massey's relational conception of space, before examining acoustic conceptions of space, and other sonic approaches to spatiality within geography. I outline the work of a small number of theorists, including Christoph Cox, Salomé Voegelin and Brandon LaBelle who might be positioned as drawing on the modalities of sound as a way of invigorating diverse fields of enquiry which extend far beyond the strictly aural. I also consider the alternative approaches to thinking relational space which centre performance, and the particular inflection this modality of thought brings to spatial constitution. I then situate my own processes of making within this contextual framework, before outlining the particular form of the artistic work I undertook in Thamesmead, and the ways in which this practice generated a sonic approach to relationality.

The short description which starts this chapter is drawn from notes describing the sequence of sounds which reached my ears over the course of about 30 minutes while I minded Under Construction at TACO! gallery in Thamesmead in early 2019. In it we can already discern sonic relations; some sounds are closer, repeating, more well defined and louder, others quieter, muffled and elusive. *Under Construction* was a sounding installation involving tape machines and mp3 players which were set to shuffle through a collection of field recordings taken in Thamesmead. This shuffling process worked to stage and re-stage sonic encounters between the sounds on the six mp3 players in the exhibition as they sporadically broadcast their suites of sounds and silences. It was through making and listening to this work in its complex contexts that I began to consider how sonic encounters might be drawn upon to think relational forms in more creative, diverse and

18

nuanced ways. As such, *Under Construction* provides both a framework as well as a set of practices which I will refer to throughout this chapter.

Thamesmead in motion

The ideas presented in this chapter were developed in a particular place at a particular time. I visited Thamesmead regularly between 2018-2019, a period when the district was in the midst of a rapid and far-reaching transformation, which continues in 2023 as I conclude this thesis. When I began travelling to Thamesmead in 2018 it became increasingly clear, and indeed audible, that Thamesmead was experiencing a remarkable period of change. This change took the form of a one billion pound construction project led by Peabody, a housing association and developer. Peabody's vast redevelopment plan involved the construction of 20,000 new homes, the demolition of a significant amount of the existing housing estate, new leisure and commercial facilities, civic squares, libraries, major refurbishments to existing housing, and an upgrade to pedestrian amenities.[1] The spur to at least some of this frenzied activity was the long planned and long delayed Elizabeth Line, which promised a new and far more rapid connection between Thamesmead and broader London. Such a significant new transport link predictably brought with it the promise of spike in property values, and real estate companies at the time and since have been promoting the promise of the area in these terms.[2] This constellation of events meant that during the 12 months I spent travelling to Thamesmead much of the suburb was in the process of being demolished and rebuilt.

Thamesmead's transformation can, in part, be understood as stemming from the prospect of the Elizabeth Line's completion, and the new relation with central London it entailed. But it is useful to examine the complex ways the suburb has historically been linked to inner London. It was designed and built as one giant estate by the Greater London Council (GLC) in the 1960s as a means of relieving overcrowding in inner city London districts such as Peckham, and formed part of a radical utopian experiment in estate planning. At the time its design and intentions were widely heralded. In 1969 the Union Internationale des Architectes in Paris gave the GLC's chief architect Hubert

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1   Peabody has since taken down its description of the original plans but press coverage of them can be found here: https://www.theguardian.com/business/2016/oct/26/peabody-approval-build-1500-homes-thamesmead-south-east-london
https://www.standard.co.uk/homesandproperty/buying-mortgages/a-game-changer-for-southeast-london-new-ps1bn-town-centre-at-thamesmead-to-bring-20-000-riverside-homes-with-crossrail-connections-a112441.html

2   See, for example: https://propertyindustryeye.com/house-prices-along-elizabeth-line-boosted-by-up-to-100-claims-estate-agency/

Bennett an international award for the council's plans calling the project "a harmonious integration of human values, aesthetic expression and modern techniques" (in Chadwick and Weaver 2019: 17). It was famed for its distinctive Brutalist architecture, numerous canals and water features, and raised walkways which linked its high density estates.

Since the late 1960s, however, the reputation of Thamesmead has dramatically changed. In 1970 Stanley Kubrick shot some of the most famous scenes in *A Clockwork Orange* (1972) within the Thamesmead estate, and its appearance in this dystopian classic has become, for many commentators, the perfect way to encapsulate the areas ills (see The Clockwork Orange Town 2018, Noble 2016). Until very recently Thamesmead appeared to stand in for the very worst aspects of suburban living, ugly, unkept, disconnected, poor and dangerous. Writing of the area in 2016 journalist Will Noble described it as "unabashedly ugly as you'd hope it might be; all pebble-dash cuboids, limp water features, faded murals and swans screaming out for a transfer to Richmond" (Noble 2016). The BBC Radio 4 program *The Clockwork Orange Town* (2018), made to mark the 50th anniversary of Thamesmead in 2018 saw historian Matthew Green declare that Thamesmead had over the course of five centuries managed to transition from a "boggy dreary windswept terrain" to a "desolate windswept wasteland" which was famed as an example of a "ghetto in the sky" (in *The Clockwork Orange Town* 2018). This program far from celebrating the area's half-century was primarily given over to investigating what went wrong' with it. "What was dreamt of as a utopia seems to many eyes within a decade or two much more of a dystopia," Green intoned on the program before BBC host Helen Castor concluded the show by noting that today the utopian dream of Thamesmead "lies in tatters" with the bulldozers poised to move in and recreate the area once again (in *The Clockwork Orange Town* 2018).

The Radio 4 view of Thamesmead as dystopian failure was not the dominant view I encountered among residents I met either directly via TACO! or while undertaking my own field recording practice. However, there did seem to be a feeling that Thamesmead was missing out on important civic infrastructure. Several participants in RTM, a community radio station run out of TACO!, mentioned to me that the station had given them the opportunity to meet and speak to other residents for the first time. Furthermore, since its inception Thamesmead seems to have suffered from a lack of connectivity, planning coherence and commercial infrastructure. It has always had extremely poor transport links to inner London, there are few local jobs, and the town centre is notoriously quiet and empty (see, for example, Noble 2016, Collins 2008). Additionally, despite the aims of the original architects, the area's canals and raised walkways did not foster the usage and

sociability originally intended. For example, an article by Michael Collins (2008) in *The Guardian* noted in 2008 that 21 vehicles were found submerged in Southmere Lake when it was dredged, while crime and anti-social behaviour are highlighted as concerns by some residents (in The Clockwork Orange Town 2018 and Collins 2008). Adding to planning confusion and failings, the area falls between two boroughs, and is dominated by two different political parties, with Labour-dominated Greenwich and Conservative Bexley responsible for its northern and southern halves. Thamesmead thus emerges as a complex, divided, and, until very recently with the opening of the Elizabeth Line, disconnected suburb.

In addition to its redevelopment Thamesmead has also been changing demographically. When it was founded Thamesmead's population was predominately populated by white working class residents relocated from more central locations in London. However, this has dramatically shifted. Today the area is home to large numbers of migrant groups, particularly from Ghana and Nigeria, with 21%[3] of residents identifying as Black in the most recent census of 2021, compared to the UK-wide average of about 4%[4]. Furthermore, it is a significant area for London's Traveller communities. At the border between Thamesmead and Abbey Wood is the Thistlebrook Travellers' site, and Travellers, one of the UK's most marginalised groups, form a highly visible and audible component of the area, particularly through the prominence of their horses, and use of horse drawn-carriages. Traveller's horses were often grazing outside the Thistlebrook site when I walked past it, and in other green spaces in Thamesmead as well as within the area's major park.

In my encounter with Thamesmead I came to understand its trajectory of change as the product of these complex interactions involving new transport linkages, the area's particular history and contemporary reputation, its political divisions, demographics and mix of infrastructures. In this amalgam of relations there are many different actors and dynamics at play; those between residents and local councils, residents and broader London, Peabody and the national government, Peabody and local council, Peabody and residents, relations between and among residents, community groups, and TACO! itself, to name just a few.

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3   Greenwich (which includes Thamesmead) census data on ethnicity can be found at
     https://www.ons.gov.uk/visualisations/censusareachanges/E09000011
4   UK census data on ethnicity: https://www.ons.gov.uk/peoplepopulationandcommunity/culturalidentity/ethnicity/
     bulletins/ethnicgroupenglandandwales/census2021#ethnic-groups-in-england-and-wales

Visiting Thamesmead

I did not live in Thamesmead for the duration of my residency there - the gallery space was offered to me as a studio residency rather than one where I actually was able to live in the space. Consequently, I experienced Thamesmead's disconnection first hand on my commutes from Brixton, where I live, to Abbey Wood station, and then to TACO! Gallery, a one way journey of about 90 minutes. During this time my walk from Abbey Wood station to TACO!, which became particularly important to the work I eventually produced, varied enormously. It often involved negotiating absent pavements in various states of demolition and construction, passing a few small shops and one giant Sainbury's grocery store, a number of evolving and very large construction sites, greeting a few of the horses - often tied outside the housing estates, crossing the freeway on what is known as the A-bridge, going back under the freeway again before tracing a muddy track alongside a small woodland, before popping out near the gallery.

This 20 minute walk from the station to gallery generated much of the recording content of the installation I eventually produced for TACO!. It was the way I most regularly experienced and encountered Thamesmead and its soundscape, and the diverse locations I moved through, as well as the rapid change I experienced and heard in these locations, infused the project. For the final three or four months of my residency my walk was perhaps best described as taking place through one giant construction site. Jackhammers rang out, sometimes singly, but usually as a chorus, cement trucks reversed with cascades of beeps, bobcats whizzed by. Cranes lifted and clanged; bulldozers excavated and revved. Pedestrian crossings vanished, and then popped up elsewhere. Hoardings went up and down, heavy machinery moved in and out. By the end of my residency in February 2019 the transformation of Thamesmead was in full swing. Several housing estates along my walking route had been demolished, replaced by piles of rubble and sprawling construction sites. New wide pavements had been built, or were being built, holes had been dug, filled in, and dug again.

It was a dizzying amount of activity to witness. However, despite the physical transformation I witnessed during this period, the acoustic environment altered very little. Construction noise remained prevalent and dominant, drowning out many other sounds of the streetscape. The pervasive and propagating aspects of this noise, the ways it turned up in so many of my recordings, at times expected, at others as an unwanted surprise, provided an important prompt for my artistic research. Tired of trying to get recordings of things other than construction noise, I resolved to

attempt to think with this aspect of the soundscape, and examine the relations this sound was involved in; the ways it diffused and reverberated within Thamesmead, for example, and the quieter sounds it masked and obscured in the process.

TACO! gallery

Situated within this swirl of activity was TACO! gallery. Run by local resident and arts producer Mat Jenner, TACO! is funded in part by Peabody itself, as well as, for specific projects, by Arts Council England. It was launched prior to construction gathering pace in Thamesmead, and was located in the former control centre for the Thamesmead Energy Centre, which was used to distribute power to Thamesmead residents, and had long been empty. I was the third show scheduled for the gallery after a small group show, and a major program involving the launch of a community radio station called RTM (Radio Thamesmead). The radio show was initially planned as a temporary station, however it proved so popular with Thamesmead residents that participants advocated for its continuation. During my time at the gallery I shared the space with meetings centred on how the station might continue to survive now that its initial funding had run out. The enthusiasm for RTM, to some degree underlined a tension I observed at the gallery, between its role as a community space, and Jenner's ambitions to show work of relevance to a broader contemporary art audience. At TACO! openings, which I continued to attend until TACO! closed in 2021 for a planned relocation in 2023, there was a mix of local residents who were involved in the radio station and a contemporary art audience who largely did not live in Thamesmead.

TACO! was firmly stitched into Peabody's strategy of using cultural activities to change the conversation about Thamesmead from that exemplified in BBC Radio 4's *The Clockwork Orange Town* (2018), discussed above, into something more positive. Peabody's website on Thamesmead has an outline of the area's history, which from 2019 onward, when their construction work really escalated, is full of cultural events[5] . It lists TACO's radio station RTM, a new festival of lights, Thamesmead festival and a new international art competition called Thamesmead Open[6], which is "designed to establish the area as a cultural destination and innovator" in the two years to 2021. As such, TACO! might be understood as a mixed community and art space which has programs and events focused on fostering relations between residents in Thamesmead, as well as forming part of a

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5   Peabody website for Thamesmead is here: https://www.thamesmeadnow.org.uk/the-story/ (accessed November 2, 2021).
6   Thamesmead open details are here: https://www.thamesmeadnow.org.uk/news/200k-open-arts-commission-and-the-launch-of-london-s-first-cultural-infrastructure-plan/

broader strategy to reposition Thamesmead as an upcoming and vibrant area which is a desirable place to live.

Of course such a configuration involves many complex dynamics, and is not without its ethical and political problems and tensions. Inevitably, having Peabody as a funder limits to some degree what might be possible at TACO!, even though the organisation, as a not-for-profit housing cooperative, does not act simply as a developer. I asked, for example, at the beginning my residency about what would happen if the space was devoted to showcasing resistance to Peabody's plans for Thamesmead, and it was clear that this would be a difficult proposition, although it was not ruled out. As it stood I did not find a huge opposition to Peabody's plans for the suburb. If I had lived there no doubt I would have had more insight into if such views existed, but with many of the estates either empty or in the latter stages of being emptied, and myself only commuting in and out of the gallery I did not encounter meetings or protest activities aimed at resisting the changes. Within TACO! itself the residents who were attracted to its activities seemed more focused on what they might be able to get out of the changes being wrought around them.

The relationship between Peabody, and TACO! also brings with it the well established and discussed links between the arts and processes of gentrification. The relationship between art spaces, artists, demographic shifts and property value increases has been explored extensively.[7] As Andrew Harris outlines in an article addressing gentrification in a different part of London, 'Art and Gentrification: Pursuing the Urban Pastoral in Hoxton, London', these processes take many different forms and can be especially subtle, focused more on building a particular edgy or otherwise exciting identity for an area, rather than taking on any explicit aims of displacement (Harris 2012:226). Building on this insight in the context of TACO! I came to consider the gallery and its operations as a site of complex amalgams of relations, which created both possibilities and foreclosures. The gallery was both a valued actor in the suburb providing programs and activities of interest and value to residents, while also forming part of Peabody's broader efforts to position Thamesmead as a vibrant and desirable place to live in ways which will likely contribute to demographic shift in the area. It might best be understood as operating in a mixed and hybrid way, with effects which are also layered and complex within the context of the redevelopment of Thamesmead. As a gallery partially funded by the organisation developing the area it was enmeshed

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7 For an overview of academic work on the links between the arts and gentrification see, for example: Mathews V. 2010 *Aestheticizing space: art, gentrification and the city* and Pratt, A. 'Gentrification, artists and the cultural economy' in the *Handbook for Gentrification Studies* (2018).

in processes relating to gentrification, reputation management, social cohesion, civic pride and cultural production within Thamesmead.

There is also my own relation with TACO! and through it Thamesmead. I had never lived in Thamesmead, in fact I had never been there until I was invited by the gallery. As I have outlined, my relation to the area centred on my commute to it via its (at that time) slow and unreliable connections to broader London, and the time I spent in the gallery where I had been commissioned to make a field recording-based project about this moment in Thamesmead. I experienced this encounter with Thamesmead and TACO! amid the particular and dramatic context of the massive development and demolition projects in the district as somewhat disorienting, but also exciting and, in significant ways, troubling. Although I could see TACO! was a valued organisation within Thamesmead, I was to some degree conflicted and uncomfortable about my own role which, as I saw it, centred on making a work about an area I had spent very little time in. I was troubled too by the direct relationship which existed between TACO! and Peabody, despite Peabody's mixed role as a not-for-profit developer and housing association. As I have already discussed, I wondered what resistance to Peabody I had missed and how I might have dealt with it should I have encountered it.

In undertaking this period of artistic research I sought to situate this tangle of complex relations at the centre of the work I made. I have gone through this context in detail because it was this complexity which generated the work I produced. During this residency I sought to think with and through sound, and the practice of field recording for ways of conceptualising the broader complexities of this particular moment in Thamesmead, and this particular residency and gallery space. My practice did not seek to resolve these issues, if such a thing were even possible, but rather to explore approaches to them. As such, I listened to Thamesmead's dense and jarring construction noise, as well as the area's quieter rustles, sighs and vibrations, with the hope that I would locate in these sonic fluxes ways of conceptualisaing the complex relational swirl within which I was working.

Relational Space

A relational conception of space is central to the investigations in this chapter, and this thesis as a whole. There are of course other ways of conceptualising space, however within geography relationality has proven particularly influential (Malpas 2012:228). There are a number of theorists

associated with relational spatial theories such as Nigel Thrift (2000, 2007), Ash Amin (2002, 2004) and Nicky Gregson (1999) writing alone and with Gillian Rose (Gregson and Rose 2000). Although any of these could be a fruitful starting point, I focus here on the work of Doreen Massey due to the foundational role her work has played within the field. As Jeff Malpas notes, Massey's work "can be taken as representative of (and is certainly an important influence on) what is now the dominant view of space and spatiality within geography and many related disciplines..." (2012:228).

Massey's relational conception of space is centred on the proposition that it is interaction which is productive of space. For her, and other relational theorists, interaction is not separate to what space is, nor contained within space, but forms the fabric of space itself (2005:9). Consequently space is configured as an arena which does not exist prior to these relations, but rather comes into being through them (2005:10). In an essay in *The Doreen Massey Reader,* Peck, Werner, Lave and Christophers (2018) argue Massey's ideas are centred on a concern to explain "dynamism, complexity, emergence and process" (2018:23) and that her highly abstracted imagination of space, and the dynamics involved in its production, focus on "constellations, conjunctures, crystallisations and shifting patterns of co-existence" (Peck, Werner, Lave and Christophers 2018:23).

It is difficult, and perhaps misguided, to separate Massey's thinking on space from her broader political project. *For Space* (2005) represents Massey's most thorough and wide-ranging examination of what space is, and the political implications of how the term is conceptualised. In it she criticises imaginations of space she sees as static, or as approaching space as pre-existing and complete. In doing so she argues that such versions of what space is close off possibilities for not only spatial but political change. "For the future to be open space must be open too," she writes (Massey 2005: 12). At the centre then of Massey's project is her insistence that the ways we imagine space matter because of the political possibilities and foreclosures they entail here and now. In her book on London, *World City* (2007), she writes: "...we make geographies through the implicit imaginations we deploy. And geographies relate not only to the past but also to the present" (2007:23).

It was within the context of this set of political concerns and priorities that she put forward her, now oft-quoted, conception of space as a "simultaneity of stories so far" or, as she also liked to define it, "the dimension of multiple trajectories" (2005:9, 24). As a way of thinking space centred on encounter, an encounter of narratives or trajectories, Massey uses her formulations of multiple

26

trajectories or simultaneous stories, in part, to emphasise that interaction involves operations of power. This can seen through her approach to her term "stories-so-far" where, by tying her conception of how space should be thought to narrative, she is able to emphasise that in any encounter some stories are more powerful than others. In *For Space* Massey uses the Spanish colonisation of the Aztecs as an example of the asymmetry of historical narratives, noting that so often in the telling of this encounter the Aztec's are given no stories, they simply await 'discovery' by the Spanish. It is the Spanish who move and act, and, indeed, narrate this story, traveling across the world to find and colonise a timeless people (see Massey 2005:1-5). For Massey, part of the appeal of re-thinking space then, indeed part of the reason it should be rethought, is to shift conceptions of space from those which centre a single narrative, or a single trajectory, to formulations which must necessarily insist upon space as entailing the encounter between multiple stories or multiple trajectories. In this way her work might be understood, to place it in a sonic vernacular, as continually asking us to enquire: Whose story is amplified, and whose is silenced?

Finally, it is useful to emphasise that Massey's version of space is one which is not only never still, but a formulation which can never be fully grasped if held still. For her, space is stitched into a relationship with the temporal, and it is only in appreciating this link between space and time that we can grasp space as something which unfolds in an ongoing and never ending way. In one telling passage in *For Space* Massey describes what it would look to actually slice through space, to still it. Such a slice, she writes, would be "full of holes, of disconnections, of tentative half-formed first encounters" (2005: 106). It would in this way be incomprehensible, as what were once trajectories toward meeting points, or perhaps paths of separation are rendered in the slice as immobile points.

Sound and relational space

Massey's version of space is full of movement and dynamism in ways which are profoundly sympathetic to, and indeed reminiscent of, earlier work centred on thinking acoustic space (Revill 2016:6). In examining the ways sound might be used to interrogate and further enliven relational conceptions of space, it is useful to examine some of these early conceptions of a specifically sonic spatiality. Edmund Carpenter and Marshall McLuhan, for example, conceived of auditory space as "a sphere without fixed boundaries, space made by the thing itself, not space containing a thing. It is not a pictorial space boxed in, but dynamic, always in flux, creating its own dimensions moment by moment" (Carpenter and McLuhan in LaBelle 2010: xxii). Marshall McLuhan, writing this time

with his son Eric, states: "Acoustic space, always penetrated by tactility and other senses is spherical, discontinuous, non-homogeneous, resonant and dynamic." (McLuhan and McLuhan in Lacey 2013: 5).

What is striking about this version of acoustic space is the degree to which the dynamics described foreshadow later formulations of relational space. As George Revill notes, early conceptions of acoustic space are "recognisably familiar" to those already working with relational approaches to space (2016:6). In *For Space* (2005), for example, Massey writes: "This arena of space is not firm ground on which to stand. In no way is it a surface. This is space as a sphere of dynamic simultaneity, constantly disconnected by new arrivals, constantly waiting to be determined by the construction of new relations" (2005: 107). Here we have relational space conceived not only in the same spherical shape as acoustic space, but also as comprised, indeed generated, by a set of dynamics which are "the thing itself". In acoustic space this constitutive doing is the vibratory movements of sound, while relational space is positioned as being constituted via the endless doing of interaction. The doing of relationality, like the doing of sound, creates its own version of spatiality from its processual dynamics. Like acoustic space, relational space is never separate from this processual doing, but is constituted via its unfolding. These richly suggestive parallels between these two conceptions of space was an important leaping off point for my own research, offering a link between field recording and sound, and research within geography on processes of spatial constitution which seemed particularly relevant to my work in Thamesmead. As I gathered recordings I resolved to explore what the complex and unfolding relations within a soundscape might offer as tools for conceptualising interactions more generally. I also began to ask myself how my own activities as a recordist contributed to or inflected the locations in which I was working.

Beyond Carpenter and the McLuhans, it is also useful to chart the broader academic discourse on sound and space. There is of course much literature which addresses sound and space through the prism of specific musical geographies. This work typically examines social, economic and community assemblages which spring up around musical scenes in particular locations, and, although interesting, these concerns fall outside the scope of this thesis. The theoretical context of relevance to my work is research which attempts to engage with a specifically sonic spatiality. Such work, at least in part, seeks to examine how sound creates or contributes to particular experiences of space. Although not specifically on sound and space, David Harvey's essay 'Space as a keyword' (2006) provides an example of this sort of approach. In this essay he describes the spaces

constituted when he gives a lecture to a live audience which is simultaneously streamed online, noting the ways in which aural divisions, for example, between those who can and can't hear the talk, might differ from visual divisions of space. Thus, he uses a discussion of sound to destabilise or otherwise complicate visual understandings of space. He notes, for example, that sound and hearing might be positioned as linking disparate geographical locations, bringing together in a shared sonic space those online with those physically in the room with him. As such, Harvey reveals the ways in which conceptions of shared or divided spaces are constituted differently when considered aurally compared to visually. Barry Blesser and Linda-Ruth Salter's book, *Spaces Speak, Are You Listening?* (2006), also discusses the differing ways spaces are constituted visually and sonically. In this book the pair note that although we expect the relationship between the visual and aural components of space to be mutually supportive, at times the visual may be undermined, contested and complicated via the aural (2006:3).

The idea that our senses might offer up differing versions of the world is also addressed in Yi-Fu Tuan's *Topophilia* (1972). In this book he argues that contemporary society has seen the ascendance of a purely visual sense of space, where space is positioned as no more than 'a matrix for objects' (1972:11). According to Tuan, this privileging of visual conceptions of space has resulted in a situation where sites without either objects or boundaries are conceived of as as empty (1972:11). However, he argues that this is only one possible sensorial reading: a visually empty location may be experienced dramatically differently when other senses are engaged. "It is empty because there is nothing to see even though it may be filled with wind," he writes (1972:11). In contrast to an exclusively visual sense of space, Tuan outlines a 'non-pictorial' sense of space whereby all senses are used to orient to the invisible participants in space: the feel of the wind, the smells of the space, or the sounds which give it a particular character (1972:11). In arguing in this way Tuan's work, like Blesser and Salter's, gives offers an example of how sound might complicates the visual. We are introduced to the possibility that an empty visual space might in be rediscovered as full or otherwise lively, when approached using other senses.

Tuan also argues that hearing provides an important and unique way of connecting with the world. Without hearing he writes: "space itself contracts, for our experience of space is greatly enhanced by the auditory sense which provides information of the world beyond the visual realm" (1972: 9). The world without sound, according to Tuan, is less dynamic, less demanding, and we feel less connected to it as a result (1972: 9). Tuan's broader work on the experiential and felt aspects of

space and place has also been adapted by John Levack Drever to specifically address the relationship between sound and place, via his term *topophonophilia* which he uses to describe the relationship between 'place, the sensation of sound and sentiment' (Drever 2007:100). For Tuan, and Drever building on his work, sound provides a particular inflection to our experience of space, it expands our perceptions of its dimensions and generates affective connections to locations.

George Revill also provides an important reference point with his focus on exploring the specifics of a sonic spatiality. In 'How is space made in sound? Sonic mediation, critical phenomenology and political agency' (2016) he aims to set out the 'processes and practices' by which sound makes space (2016: 1). In this he highlights the mediation of sound as a way of approaching sonic relationality, and puts forward four effects central to the making of sonic space: complexity, trajectory, acousmatism and touch at a distance. These effects, he contends, go some way towards explicating the processes which underpin sonic spatiality (2016: 1). Revill is interested in identifying how precisely sound acts to create space, and in doing so how it generates particular types of affective political spaces, actions and engagements (2016:1). As such, his focus in on sound's capacity to transform or generate particular experiences of spatiality and in doing so provide provide particular resources for political activity.

Georgina Born's edited collection *Music, Sound and Space* (2013) is also centred on the mediation of sound, for the most part in the context of musical geographies and so largely falls outside the scope of my own research. However, in the introduction she raises a particularly suggestive point, noting "the provocative thought that music and sound – in their capacity to catalyse and augment the relational propensities of lived space, in this way generating complex and motile topological forms - elicit especially subtle reflections on spatial processes" (Born 2013: 24). Born here seems mainly concerned with arguing that the dissemination and affective impact of music might connect disparate individuals in topological ways, of relevance to contemporary experiences of space more broadly. But her insistence on sound's capacity to drive reflections on spatial processes due to the dynamic synergies between sound and relational space is highly relevant to my focus in this chapter.

These theoretical investigations share a focus on identifying particular properties of sound, and how these are, or could be, drawn on to forge, shape or re-configure relations across space and time. Sound, for example, may permeate and cross physical borders and boundaries, its affectivity might offer the opportunity to experience a particular emotional resonance with geographically disparate

others, or to foster a connection to a location, whether it be it one lived in, or far removed from your listening position. It might offer a version of presence, where visually there is an emptiness, it might connect us more immediately or affectively, or offer the opportunity to connect in ways which might be seen as topological, as folding space itself. In this research sound is positioned as a layer of the world which offers an alternative to visual space, a different way of conceptualising connection, separation, affectivity, fullness or emptiness.

The second type of analysis centred on sound which I seek to lay out below attempts a different project. In this theoretical work sound is positioned not so much as a layer of space, or as offering an alternative version of space, but is deployed as an approach to thinking which might reconfigure our foundational understandings of particular political, creative or spatial processes. Aural dynamics here are drawn on to drive an analysis which attempts to move beyond the strictly sonic. These theorists attempt to use a sonic vernacular, or a particular modality of thought derived from the sonic, as a way of approaching concepts or processes which extend beyond the aural. They might be described then as using sound as a way of thinking.

The generative potential of sonic thought

Perhaps the most directly relevant research for this chapter is that of Christoph Cox who explicitly examines the generative potential of adopting a sonic approach to thought. In his chapter 'Sonic Thought' he asks: "What would it mean to *think* sonically rather than *to merely think about sound?...* What concepts and forms of thought can sound itself generate? (*Original emphasis: 2017 99). In outlining what precisely a sonic thought might do, he argues that "sonic flux is not just one flow among many; it deserves special status insofar as it so elegantly and forcefully models and manifests the myriad fluxes that constitute the natural world." (2017:102-103). Furthermore, he notes: "sonic thought follows the flows of matter and energy that constitute the real, producing concepts that are themselves instances of the syntheses by which the real articulates itself" (2017:107). Although I am not using sound to approach what might typically be understood as 'the natural world', Cox's insistence on the generative conceptual potential of sound's fluxes and flows for thinking constitutive dynamism, provides a central tenet of this chapter.

The sound studies theorists Salomé Voegelin and Brandon LaBelle both turn to the characteristics of sound as a way of exploring how the aural might invigorate diverse fields of enquiry ranging from

31

urban studies and geography to philosophy and political theory. Three of Voegelin's books address sound's relationship to space. In *Listening to Noise and Silence: Towards a Philosophy of Sound Art* (2010) she argues that sound gives movement and temporality to the visual, and that a 'sonic sensibility' makes thinkable complex connections and trajectories in time and space. In *Sonic Possible Worlds* (2014) she writes: "A sonic sensibility reveals the invisible mobility below the surface of a visual world and challenges its certain position, not to show a better place, but to reveal what this world is made of, to question its singular actuality and to hear other possibilities that are probable too, but which for reasons of ideology, power and coincidence do not take equal part in the production of knowledge, reality, value and truth" (2014: 3). While in *The Political Possibility of Sound* (2018) she specifically uses sound in the context of geographical discourse, arguing that a 'geography of sound' as opposed to a "sonic geography" might drive a re-orientation within the discipline from a focus on investigations of actual territories to an appreciation of possible worlds. Here she puts forward sound as a tool for invigorating geographical imagination via its ability to attend to "variants of the actual" (2018: 77).

Brandon LaBelle's earlier books explore the relationship between sound and space. In *Background Noise: Perspectives on Sound Art* (2007) he argues that sound 'converses' with space, is inextricably connected to space and is involved in an interlocking dynamic with space (2007:123) which sees sound and space performing 'within' and 'through' each other (2007:x-xi). In his later book *Acoustic Territories: Sound, Culture and Everyday Life* (2010), he follows Steven Connor to argue that sound performs to disintegrate and reconfigure space (Connor in LaBelle 2010: xxi, LaBelle 2010: xxi). He writes: "The temporal and evanescent nature of sound imparts great flexibility, and uncertainty, to the stability of space. Sound disregards the particular visual and material visual delineations of spatial arrangements, displacing and replacing the lines between inside and out, above from below" (2010: xxi). In these earlier works he is more focused on an approach similar to Harvey, Blesser and Salter, where sound complicates the visual world. However in his more recent work he explores broader applications of sonic thought. In *Sonic Agency: Sound and Emergent Forms of Resistance* (2018), for example he turns to sound as a way of re-invigorating political praxis. Here he argues that: "The complex and entangled ontology inherent to an auditory position, of sonic thought and materiality, voice and care, is, from my view, enabling of a deep and generative ethics" (2018:8). LaBelle is interested in exploring relations via the frame of sound and listening due to the capacity of these practices to acts as "carriers of compassion" which cultivate an "engaged attention" (2018:7). In comments which are of particular importance to my

work in this thesis, he discusses the ways in which sound "is a powerful force from which can learn about the entanglement of worldly contact" (2018:7). And furthermore that auditory experiences offer the opportunity to "learn from the affective and conflictual dynamics of relations how to recognize *more* than what appears in the open" (LaBelle original emphasis 2018:8).

In his later book LaBelle can be positioned as using sound as a way of broadening conceptions of political possibility and solidarity as well as ways of cultivating care and resistance. Voegelin's *Sonic Possible Worlds* (2014) and *The Political Possibility of Sound* (2019) also can be understood as exploring sound's capacity to expand conceptions of the multiplicity of what is, and also what might be. Sound here is expansive, offering new possibilities for political change, engagement and connectedness. In contrast, Benjamin Tausig uses sound as a way of exploring political constraint and failure. His book *Bangkok is Ringing: Sound, Protest and Constraint* (2019) explores how we might use sound to conceptualise the complexities and power dynamics involved in political struggles. Tausig is focused on deploying sound to think the limitations on what acts of protest and contestation might achieve. The book examines the, ultimately unsuccessful. political uprising of the 'Red Shirts' in Bangkok in 2010 and 2011. Tausig focuses on how the sounds of the protests, both protest speeches, and political songs, were constrained and curtailed, and how these dynamics might be used to analyse the broader political failures and reverberations of the Red Shirt movement. In doing this he disputes the notion within sound studies of sound as unbounded (2019:4-5) in favour of one which positions sound as especially suited for thinking constraints and limitations. As he puts it: "Sound does of course move and act, but the world is crowded" (2019:5).

For Tausig sound encounters both concrete and semantic barriers which limit what it can do and where it can go (Tausig 2019: 4). He argues that sound is always "running into things", whether these be physical structures and barriers or prevailing political opinions (Tausig 2019: 4). He writes: "A chanted slogan at a protest event may be inhibited by a row of tall buildings, just as it may be inhibited by a moral sense of which sounds belong where, by people tuning it out, or by the differing auditory abilities of listeners" (2019:4). Tausig uses this conception of sound to explore the sonic niches, overflows and constraints present in both the Red Shirt's protest site in Bangkok, and the distribution of protest songs and media associated with this movement. In doing so he begins with a sonic frame centred on the constraints on the sounds and music of the protest and builds out from here to explore much broader questions regarding the limits to political agency and

33

resistance. Thus, he seeks within in such phenomenon as limitations on the amplification of protest speeches and songs, for ways of thinking broader processes of political constraint.

Finally, a more explicitly field recording-oriented take on sonic thought can be found in Steven Benson and Will Montgomery's edited collection *Writing the Field Recording: Sound, Word, Environment* (2018). This book asks if "a sound-oriented sensibility" might lead to "a new kind of writing" (2018:7). In exploring how field recording might be generative of new approaches to writing Benson and Montgomery are focused on how field recording's practices of attentiveness, and hybridity might be echoed or pursed within writing. Within this framework they focus on the "creative-critical" relationship of field to sound, arguing that a type of writing in "pursuit" or "allusion" or "imitation" of this relation might be embarked upon (Cascella in Benson and Montgomery 2018:25). Such writing, they posit, using the contribution of Daniella Cascella (2018) to the edited collection as an exemplar, might take the form of "a fluid and variously site-specific mix of autobiography, reading diary, description and memorial, moving always around and about the matter of sound and listening" (Benson and Montgomery 2018:25). This sort of writing, they argue, might "attend to the peculiar combination of materiality and elusiveness that characterises sound" (Benson and Montgomery 2018:3), and in doing so maintain "the possibility of its sounding partner" (Benson and Montgomery 2018:26). Not everything in this collection is of relevance to my thesis, but I have included it here due to Benson and Montgomery's insistence on how the practice of field recording, rather than simply the recordings themselves, or the far broader category of 'sound', might be folded into a generative frame.

Benson and Montgomery are interested here in centering both the attentive modalities of field recording, the decisions involved in defining and limiting the 'field' itself, and the dynamics and characteristics of sound as a way of re-approaching writing. This orientation was influential on my own work, as it underlined to me the ways in which I had, to some degree, separated the outcomes of my field recording trips (ie. the sounds gathered), from the processes, activities and encounters these trips involved or generated. Rather than positioning the recordings I gathered as 'field recording', I resolved to broaden the frame of my focus on my practice to include the physical activities, journeys, and the encounters with people, other species, locations, activities, processes and technologies my recording activities generated. As such, I began to pay more attention to my non-recorded investigative walks and impromptu acts of listening, the processes of setting up my gear, the failed recordings, the chats I had about locations to record and sounds I might encounter,

34

and the ones I had with curious passersby. In doing so I began to focus increasingly on the relations my own practice generate both in the recordings themselves, and beyond these. In re-framing field recording in this way, I came to consider how I might draw on sonic dynamics, to not only approach the relations at play in the locations in which I was recording, but those generated by my own practice. This collection helped me find the ways to situate my own practice within, rather than outside, the relational dynamics at play within the spaces within which I was recording.

Field recording in Thamesmead

My field recording practice for the installation was, as outlined earlier, centred on my walks to and from the gallery. I didn't initially know the way from station to gallery, so at the beginning my recording practice involved staring at google maps, and getting lost. I lingered around the relatively busy but small retail areas as this was where I found the most people using the public spaces of Thamesmead. I also spoke to parents and children, geese and horses in the important green space of Southmere Park, and spent time at Abbey Wood station recording the movements of commuters, and the attempts some of them made to play the public piano at the station. As I ventured further afield I traversed muddy bogs in the undeveloped parts of Thamesmead, pushed my way through brambles and crouched next to leaves blowing in the wind. Typically my recordings involved footfalls, faint voices, perhaps a car stereo, birdsong and, of course construction, noise.

As I was interested in encounters I attempted to record the ways in which the structures of Thamesmead, the fences, bridges and pavements vibrated in response to use. I attached contact mics to walkways, wire fences, freeway guard rails and suspension wires in order to explore the sonic traces of their vibratory interactions with pedestrians, cars, trucks and even horses. A particularly memorable recording involved climbing to a highway overpass to record the shuddering of the guard rails as cars, trucks and buses passed by. Another recording began as an attempt to record cars passing on the freeway below a pedestrian bridge, but became a recording of teenagers racing their dirt bike across the bridge. I produced some encounters: stamping on bridges and plucking fence wires. I started packing carrots and frozen peas from home to feed to the horses and swans I encountered on my walks to the gallery, which I also recorded. There are traces of my acts of sounding in many of these documents. I can be heard muttering, breathing, walking, speaking and, in one instance, being told I am about to miss the train. Almost all of the recordings I gathered were short, ranging from about 30 seconds to three minutes.

As I came to know Thamesmead a little better, I also undertook several excursions to particular locations in order to gather specific sorts of field recordings there. The most notable was Southmere Park which I visited several times, recording many horses, including me feeding them, the sound of visitors to the park undertaking recreational activities, as well as the rustle of reeds, and underwater recordings of geese and swans feeding. The park, like all of the district, was impacted by the soundscapes of construction. Southmere Lake faced an estate scheduled for demolition, so my recordings there often registered construction noise. I particularly remember one recording where I had placed a small mic perhaps a centimeter from the surface of the lake under a wooden deck which extended over the waterway only to find, upon later listening, within the gentle lapping I had hoped to gather, the bang of hammers hitting steel (This recording can be heard here).
A representative suite of recordings taken in Thamesmead can be listened to here.

I started this project by listening closely to the soundscape of the area and my field recordings of it, attempting to locate in these sonic documents a way of analysing or understanding broader processes of change and contestation in the area. I wondered, for example, if I should attempt to catalogue what sounds might be being lost or introduced in the area as a result of the changes being wrought. Or how I might apprehend which sounds among the hundreds I had gathered were particularly evocative or characteristic of Thamesmead. This focus on specific sounds in Thamesmead, and their importance, longevity or otherwise, as well as my attempts to chart simple and direct relationships between changes in the soundscape and in the suburb more broadly only served, however, to emphasise my lack of suitability for such an endeavor. I had no personal knowledge of Thamesmead's soundscape prior to Peabody's activities in the area as I had never been there, nor did I have the capacity, in the format of a studio residency, to achieve either a broad or a deep level of knowledge about the significance, pervasiveness or novelty of particular sounds throughout the district.

Consequently, the questions I sought to explore in my practice changed through my encounter with Thamesmead, and my own positionality in relation to the suburb. Instead of situating my practice as a tool for gaining locational expertise, I began to explore the dynamics of sound and sonic relations for ways of thinking interaction and encounter. In doing so I resolved to re-examine construction noise, that near constant presence in my recordings, to think with the volumes, movements and

interactions of this sound in my recordings. This approach led me to devise the following sonic figures as speculative approaches to thinking the layers, diversity and dynamism of interactions. These figures are intended as a conceptual toolbox which might be drawn on to suggest ways of thinking relational complexity and mutability. The fluxes and interactions these figures involve are not put forward in an attempt to model specific relations exactly, but are explored for suggestive ways of conceptualising relational diversity and dynamism. In *Sonic Agency*, La Belle argues that sounding practices grant us the capacity to create and occupy a "highly malleable and charged relational arena" (2018:8). In devising and thinking with these sonic figures, I am starting from the perspective that the relational arena is malleable and charged; that the ways we encounter each other involve power differentials, contestations, conflicts and connections which can and do shift and change. I then turn to the malleability of sound, its movements, fluxes and flows for ways of conceptualising relational dynamism and mutability.

Sonic figures

Volume: Most obviously, construction noise in Thamesmead was loud. It dominated the soundscape in various locations, and propagated throughout the suburb, moving through and around walls, buildings and green spaces, and popping up in my recordings in unexpected ways. Loudness has long been associated with power (see, for example: Schafer 1994:71-88, Hendy 2013). As R. Murray Shafer writes: "Where ever noise is granted immunity from human intervention, there will be found a seat of power" (1994: 76). As a prompt for conceptualising relational dynamics, thinking with the figure of Volume prompts us to ask most obviously: who or what processes or activities are loudest, or most dominant? But this figure also offers opportunities to reflect on other aspects of the dynamics encapsulated by relative volumes such as: who or what processes are not permitted to be loud? Or, conversely, who or what processes do not have to be loud to be present and heard? In the context of construction noise in Thamesmead, its volume might be drawn upon to discuss broader power relations at play in the area, and London in general. Its dominating presence underlines the ways in which most of us are not able to control or influence not only our day to day sonic environment, but also the built form of our neighborhoods. More generally, volume also offers useful ways of thinking about proximity and its relationship to clarity, detail and presence. The same sound experienced at high and low volume offers a profoundly different experience viscerally, but also in terms of what sonic details might be heard and missed. Volume too drives other effects: the propagation, reverberation, echoes and returns of any given sound are influenced by the power of the initial soundwave. To put this most simply: loud sounds travel further than quiet ones, leaving

37

their original sounding context, and occupying, contaminating or otherwise shaping dispersed and geographically distant environments. In lower frequencies high volumes resonate objects, structures, and surfaces, which themselves vibrate and sound in response, creating new sounds to propagate and flow. When they encounter the body such loud low frequency sounds are felt as a physical pressure or touch. Volume is deployed here as a sonic figure which can be used to reflect on the dominance of particular processes and actors, and the ongoing and cascading effects of this dominance. In the distance travelled by loud sounds, in the vibratory and tactile effects they produce along their sounding trajectories, and in the new sounds these vibrations generate we find suggestive ways of conceiving of the ways in which power might produce dispersed and varied effects.

Propagation: Propagation refers to the way a sound travels. I have already discussed its relation to volume, but propagation has value as a stand alone sonic figure due to its capacity to encapsulate the diffuse effects of sound, and the relationality of this diffusion. Sound complicates precise notions of presence, a sound might be both 'over there' and 'right here', its location uncertain, and the limits of its influence blurry. Propagation is used in this thesis to refer to this diffuse and dispersed aspect of sound, but is furthermore deployed to explore the relationship between interaction and diffusion. The diffuse cloud of where a sound 'is', or where it might produce its relational effects, is generated in sound's interactions. The propagation of a sound is influenced by many factors, its volume, the frequencies of the sound itself, the landscape, surfaces, barriers and bodies it encounters and the mediums it travels through. Weather, wind and humidity for example influence sonic propagation (see, for example: Loubeau and Coulouvrat 2009), and so too does the capacity of a waveform to vibrate the structures it encounters, creating in the process new ways of continuing its journey, from these new moments of sounding (see: Dijckmans, Coulier, Jiang, Toward, Thompson, Degrande, and Lombaert 2015). As such Propagation offers an opportunity to centre the relation between presence, interaction and dispersion. Its value as a sonic figure resides in its capacity to focus our attention on the complicated questions of *where* a sound is, as well as *how* an act of sounding in one location might flow beyond this original context. As such, it generates questions about what type of encounters facilitate the further propagation of sound, and what relations curtail sound's capacity to flow in this way. Taking this term out of the aural register, it can be drawn on to conceptualise how some relations generate dispersed and diffuse effects.

Reverberation: Reverb occurs via the interaction between sound and surfaces, and is used to describe a phenomenon whereby a sound continues after the original act of sounding has ceased. Reverb is produced when sound reflects from objects, walls, or other types of surfaces it encounters. A very well known site where reverb is encountered is in churches with their high ceilings and stone walls, but it might also be found in natural settings. An echo for example is a form of reverb which can be found in particular natural or human built landscapes which produce a return in the sound as it reflects back to where it originated. In Thamesmead there were locations where a slight echo surrounded some of the more striking metallic bangs, as they reflected off the surrounding buildings. This was a bit disorienting as it made it difficult to gauge where precisely this sound was originating from. In thinking with this term I am focused on its usefulness in foregrounding the relationality of ongoing presences, echoes and returns. In the same way that propagation is relationally produced, so too is reverb. A sound continues after it has ceased being produced because of the way it interacts with its sounding location. Thus, the absence of reverberation might also be thought of as relationally-produced as the soundwave encounters materials or surfaces which promote absorption rather than reflection. When field recording in Thamesmead I was often searching for locations which did not reflect construction noise into my mics, where a combination of landscape, surface and materialities worked against a return of this particular sound. Reverberation's usefulness as a sonic figure is thus located in how it models dynamics which suggest how ongoing effects might be either produced or curtailed in specific types of interaction.

Masking: This term provides powerful ways of conceiving dynamics between sounding and inaudibility. As Jean-Francis Augoyard and Henry Torgue explain the term in *Sonic Experience: A Guide to Everyday Sounds,* masking describes the process by which one sound erases the perception of another (2005:66). Masking can be produced simply by volume differentials between different sounds, but might also be produced by the specific interaction between soundwaves (Augoyard and Torgue 2005:66). Within Thamesmead the white noise of saws, or the engines of industrial machinery regularly obscured other more subtle sounds. One particular instance involved my attempt to record wind in a large tussock of grass. I waited for a pause in construction to do so, rushing to press record when it finally arrived. However, upon pressing record I immediately became aware of the presence of a new sound: an electrical transformer was right next to me droning away, but until that moment it had been completely obscured by the construction noise. In describing dynamics whereby a reduction in intensity of one sound is produced by its interaction with another, Masking offers an example of how a lack of audibility might not be the result of an

absence of sounding. In doing so Masking gives provides ways of complicating inaudibility, and by extension other non-aural forms of absence, as a phenomenon which might not involve a stilling of activity, but rather its active erasure. It also underlines the potential importance of decisions not to sound with the cessation of the masking sound enabling perception of the sonic world which always existed beneath it. Moving beyond strictly aural relations, Masking as a sonic figure might be drawn on to provide ways of thinking how absence might be relationally produced, and how presence too might be cultivated by the stilling of activity. To press this point further, the complex sonic dynamics involved in masking offer powerful ways of thinking relations of domination, contestation and resistance. This figure might be drawn on to conceptualise how resistance or contestation, for example, might be ongoing in ways difficult to perceive. In such a framework suppression or other acts of domination might entail not only attempts to silence particular voices by preventing acts of sounding, but a focus on rendering these voices less audible, despite their ongoing sounding.

Interference: Masking can be the result of a type of destructive Interference, a term which describes a range of outcomes involved when soundwaves interact. Interference can be constructive, making sounds louder, destructive, making them quieter, or a mixture of these processes (For a basic discussion of Interference see Espinoza 2017). It is a phenomenon extensively researched across diverse fields of enquiry ranging from office design to the transmission of insect, bird and whale calls. It is not really a process readily discernible while field recording; aside from the example discussed in the section on Masking, where the cessation of construction noise brought into perception the droning transformer. Usually when I am recording I am not able to tell what sounds 'should' be present but are not due to processes of Interference, or which sounds might be louder or quieter than they otherwise might be due interactions with other sounds. It is, however, in prompting these questions, that Interference, in part, underlines its value as a tool for thinking interactional forms and effects in the soundscape and beyond.

At its extreme end destructive interference, which forms the basis of noise cancelling headphones, describes the process by which two waveforms of the same or similar frequencies cancel each other out, resulting in silence. In such a scenario it is the timing of this encounter between waveforms which determines the outcome. If the peaks and troughs of the two waveforms align their volume will increase, if they are counterposed they will fall silent. Slight differences in frequency and alignment can result in an effect known as 'beats', where the resultant waveform produces a

throbbing type sound generated via alternating processes of destructive and constructive interference. In this example of 'beats' a new sonic entity, quite different to the original two, is created in their ongoing interaction. Thinking with these characteristics of Interference provides many suggestive ways of approaching the nuances, mutability and unpredictability of interaction. The range of outcomes Interference describes are influenced by the similarities and differences between the shapes of the soundwaves, their respective volumes or intensities, and the timing of their encounter. Put another way: the form interference takes is determined by how soundwaves fit together in a particular moment. The nature of this 'fit' produces outcomes ranging from silence at one extreme, to amplification at the other. In between these two extremes an encounter might generate successive moments of 'beats' out of these processes of silencing and amplification. Interference as a sonic figure thus can be used to conceptualise the role of timing, similarity and difference in the production of a vast range of potentially complex and hybrid relational forms. The fluxes of interference, for example, can be drawn upon to conceptualise how differences interact over time; as subtle shifts, initially imperceptible, over time generate a different sonic forms and effects. Or it might be deployed to think the role of similarity, difference and timing within a relational dynamic which shifts from mutually reinforcing or amplifying, to destructive.

I have devised these sonic figures as tools which might be drawn on to think the ongoing, layered and mutable characteristics of interaction. In developing these figures in this manner I am focused on their capacity to convey the fluidity and instability of relational forms; the ways in which encounters might comprise amalgams of unfolding dynamics, which in turn might generate multiple and unpredictable effects. I have also used these figures to attend to the ways in which relational dynamics might not be heard, or might produce instances of inaudibility. As such, they are intended as a speculative tools, rather than as precise devices for modeling a given relational encounter. Their usefulness is situated in the ways their unfolding fluxes can be deployed to thicken the relational nexus, complicating and extending ways of thinking the multiple dynamics involved in our always unfolding interactions.

These figures were generated out of my practice of recording within whirrs, drones, thuds and clanks of construction noise in Thamesmead. They began then with my relationship with this sound: my efforts to avoid it, record in between it, mask it and dampen it. They evolved, however, from this prosaic starting point into a methodology centred on using sonic flux and flow as tools for thinking relational dynamics. As such, this toolbox, while just a starting point, contains in its sonic

figures new vocabularies which are transferable across many disciplines, and might be drawn upon for theoretical or artistic research which is attempting to explore the relational production of space, in all of its layers and complexity.

Making a work from encounters

As *Under Construction* developed into a work which explored relationality via sound my aim for its physical form centred on establishing the work's capacity to generate sonic encounters within the gallery. In devising a sounding installation my central concern was how to produce a soundscape within the gallery which was varied and layered but also obviously constructed and incomplete. Thus, I resolved to use multiple digital music players, programmed to cycle through random combinations of recordings. I hoped this format would produce an unpredictable soundscape within the gallery, and generate a range of different sonic encounters and dynamics. Given my experience of walking through diverse soundscapes on my journey from Abbey Wood train station to TACO! gallery, as well as being exposed to the pervasive propagation of construction noise in Thamesmead, I also wanted to experiment with replicating my experience of the propagation of sound from one area into another within the gallery. I might often have begun a field recording hoping to register a single sound, but practice had demonstrated to me how rarely this was actually the case. A 'simple' attempt to record a reed in the wind, for example, became a reed, a faint bird call, a distant car horn, the echo of a crane dumping a load of metal rods, a plane flying overhead and myself sneezing. In the gallery I wanted to emphasise both the hybridity of individual recordings, as well as generate new combinations and interactions between the field recordings I had gathered.

I pursued this aim of producing an obviously constructed and hybrid soundscape, by loosely sorting my recordings into two categories: streetscape sounds from all over Thamesmead, and those from the greenspaces within Thamesmead, most notably Southmere Park. I then loaded these into two sets of three digital music players, one set largely comprising sounds from Southmere Park, which included recordings of wind, geese, horses and children playing with a small number of streetscape sounds, and the other set containing predominantly sounds recorded on the street, snatches of conversation, traffic, bursts of music, footfalls, with a just a limited number of recordings from green spaces. Both sets of recordings contained multiple instances of the construction noise which permeated Thamesmead during my time there. I also included a few very loosely composed pieces based on these field recordings on the digital music players. All the digital music players were

programmed to infinitely and randomly shuffle through their sets of recordings. This meant the players might do anything ranging from repeating the same sound straight after playing it, to never playing a clip at all, as well as an infinite variety of outcomes in between these two extremes. In order to experiment with dynamics of sonic propagation the two sets of three players were placed at opposite ends of the gallery where they played recordings into the space via two suspended circles of car speakers; the green space sounds in the smaller circle, and the streets sounds in the larger one. This created two divergent yet interacting sonic niches within the space. I used car speakers to broadcast the soundscape as a reference to the predominance of this mode of transport within Thamesmead and the consequent influence car stereos had on the soundscape. These were attached to the ceiling using suspension wires, a material chosen for its association with construction and engineering, and they were left slightly unfinished with the wires affixing the speakers to the floor left unclipped and dangling. See Photo 1 and 2.

Photo 1. *Under Construction (speaker detail). Credit: Tom Lennon*

Photo 2. Under Construction (speaker detail). Credit: Tom Lennon

The two circles of car speakers were joined in the space by two reel-to-reel tape machines which played two differently pitched drones through an extended tape loop threaded through suspended tape reels (For full installation documentation see Photo 3 and Photo 4). These droning loops provided a continuous aural presence in the gallery, as well as a sonic link between the two circular sculptures of car speakers. They also contributed the subtle sounds caused by the revolutions of the reels, the brush of the tape as it caught the reel edges, and the hum of the machines themselves. The intention of the sculptural form of the work was to convey a sense of ongoing complexity, unpredictability and incompleteness. The physical components of the installation hung from the ceiling, with wires exposed and dangling, while the use of magnetic tape added a further component of fragility, mutability and unpredictability as it traced a looping trajectory through the gallery, slowly wearing, stretching, fraying and aging over the course of the exhibition. The rotation of the suspended tape reels added visual movement to the space, as each rotation caused the suspension wires to quiver in response, the vibrations and brushing this produced adding another aural layer within the room. While the wearing of the magnetic tape brought with it almost imperceptible variations to the soundscape, as the tape frayed and wore over the 12 weeks of the show, the degradation introduced new silences, hisses and distortions into the loops. A short video documenting the installation is here**.**

Photo 3. *Under Construction (partial view).*
Credit: Tom Lennon.

Photo 4. *Under Construction (complete view). Credit: Tom Lennon.*

In the first iteration of this configuration the soundscape the installation produced was far from what I had hoped for. As all my digital music players were set to infinitely shuffle it meant there were always six different field recordings playing at the same time. While I had hoped this would produce a dynamic soundscape, the result was almost the opposite. In place of my hoped for shifting soundscape came a cacophonous ensemble; a dense wall of noise which was overwhelming and confusing in its diversity of sounds, but also surprisingly monotonous. With six sounds playing constantly, the soundscape was too dense to move within the gallery, so crowded with different sounds it was difficult to identify the different layers, sonic relations and dynamics at play.

This led me to create a whole suite of silent tracks of different lengths, typically between 30 seconds and two minutes, which I added to all the digital music players. Initially I had about a quarter of the total files for each player as silences, however I was constantly adding more silences into the digital players so that in the end silent tracks accounted for about a third of the total files on each player. This decision dramatically changed the soundscape produced by the installation. It began to move in the gallery, as some digital music players fell silent in one part of the gallery, others began in another part. Thus, different rhythms of sounding and silence began to be produced

by the installation, with the density, volume, layers and location of sounds ebbing and flowing. The soundscapes generated might transition from a busy amalgam of people, trains, birds and music, to loud dominating construction noise, to just a single player broadcasting a distant birdcall. More than any particular sound it was silence which transformed this soundscape into not only something which might be experienced as dynamic and processual, but also as a construction capable of staging discernible sonic encounters. The silences enabled different types of interaction between sounds to be heard, and foregrounded the diversity of these encounters in ways the dense wall of sound iteration did not. The silences I introduced to the soundscape also provided space for sounds outside the gallery to be heard within the installation, enabling an additional generative layer into the space.

A recording of the installation can be found here.

The critical contribution of the silent tracks to the final form of the installation's soundscape prompted me to add one further sonic figure to my speculative conceptual tool box, that of 'Not-Sounding'.

Not-Sounding: Listening to the impact of this simple change in my installation's configuration prompted me to more deeply consider the constitutive role of not sounding within a soundscape and the ways in which quietness and silence might be approached as active and generative activities. In the case of my installation my decisions to ensure the digital players did not always sound 'made room' for the soundscape of *Under Construction* to be experienced as at times dense and energetic, at others sparse, delicate and subtle. This configuration created aural space for quieter sonic details to, at times, be heard, for the soundscape to move throughout the gallery, and for sounds from outside the room to be heard within it. I have chosen to use the term 'Not-Sounding' as opposed to silence for this figure as a way of emphasising the agency involved in decisions to remain silent. As a sonic figure Not-Sounding underlines how quietness might be understood as, for example, an active attempt to hold open a sounding space for another. As such it can be used to examine both the immediate and ongoing effects of such a decision. In the context of my installation, programming some digital music players not to sound provided the immediate effect of making the quieter sounds of the installation more audible, and in doing so generated the possibility of other aural relations. Visitors to the gallery, for example, could hear and experience their own sounds within the space, the sporadic quietness also made possible a sonic relation between sounds outside the gallery and those within. Not-Sounding also provides an important link with field recording itself, with so many

47

of my recordings produced out of my decisions not to sound. As such it might be used to conceptualise the implications and effects of stillness, of stoppages, where these acts emerge as being as fully productive, or consequential as their opposites.

The field of field recording

As a work based on field recording *Under Construction* is contextualised by a wide-range of compositions drawing on this process. These range from works published by the labels *Touch*, *Gruenrekorder*, *Impulsive Habitat*, *12k*, *Unfathomless* and, my own label, *Flaming Pines,* among many others. Some of the more relevant examples include Budhaditya Chattopadhyay's *Landscape in Metamorphosis* (2008), Simon Scott's *Below Sea Level* (2015), *Ribbons of Rust* by Mark Vernon (2019), *Mergariam* by Enrico Conliglio and Nicola Di Croce (2019) *Millenium Mills* by Aino Tytti (2016) and *crawlspace* (2022) by Eamon Sprod and David Prescott-Steed, all of which draw on field recording to create compositions which aim to to convey a particular subjective experience of or encounter with a location. *Kits Beach Soundwalk* (1996) by Hildegard Westerkamp is also a key reference due to her direct and narrated manipulation of her mixer and subsequent examinations of the different sonic and listening relationships her decisions generate.

As outlined in Cathy Lane and Angus Carlyle's collection of interviews with field recordists, *In the Field: The Art of Field Recording*, field recording as an activity emerges "at the confluence of a number of historical practices" centred on recording animal sound within natural settings, and the documentation of human activities within the context of anthropological research (2013:9). This particular history has seen a focus on practices of field recording consistent with what might be seen as a documentary tradition, whereby recordings are positioned as having the capacity to 'represent' particular locations, or practices. Alongside this focus has come a concern with removing or preventing the contamination of these recordings with sounds generated by the recordist's own body and presence (see, for example, Rawes in Lane and Carlyle 2013), and similarly avoiding otherwise unwanted sounds, such as those connoting a human presence beyond the recordist's within recordings of nature. These concerns generated a type of field recording practice centred on achieving high fidelity recordings of a given soundscape, in which the audible presence of the recordist is either avoided or removed in editing. The resulting audio has historically been positioned to varying degrees as a resource offering a transparent and objective experience of a particular location's soundscape.

The presence of this conventional conception of what field recording is, and how it should be practiced can be seen throughout in *In the Field*, with practitioners positioning themselves in relation to it. The London-based recordist Ian Rawes provides a striking example of this position in his interview, stating he sees himself as involved in "selection" only (Rawes in Lane and Carlyle 2013: 143), noting he rejects recordings if he can be heard in them (2013: 143). Peter Cusack, in contrast, says he does not consider himself a "purist" because he is willing to include his own footsteps and breath within his recordings (Cusack in Lane and Carlyle 2013:196). Cusack is, of course, not alone in this practice. I have already referenced Westerkamp's *Kits Beach Soundwalk* (1996) which can readily be understood as an early example of a recordist working with her own presence. This focus on the transparency of recording techniques, as well as the presence of the recordist has proliferated in more contemporary field recording work.

In the Field was published now 10 years ago, and it is useful to consider how not only field recording practice but the discourse surrounding field recording has changed in that time. Mark Peter Wright's *Listening After Nature* (2022), for example, devotes significant attention to critiquing the 'self-erasure' at the centre of field recording practices. He writes: "Drawing a gestural line between the recorded encounter and its elsewhere audition helps recognize that recordists do not emerge and dissolve from within the field. Rather, they enter and leave as a constant process of movement and transgression" (Wright 2022: 5). Wright is also concerned with the entanglement of field recording with what, he argues, have been positioned as "innocuous technologies of capture" (2022: 3). As such he describes his theoretical project as one which attempts a "recoding" of the foundational myths of field recording which position the "field" of field recording and natural and neutral, and the ear itself as benign (2022: 3).

In practice too we can identify marked changes, with a tendency towards the production of work which underlines the subjective, partial and active aspects of encounters with place and location. In the work of Yifeat Ziv (2020), Viv Corringham (2021), Egor Klochikhin (2020), Tom White (2018), Manja Ristic (2021), Mark Vernon (2019), Hadi Bastani and Maryam Sirvan (2022), Iain Chambers (2020), Felicity Mangan (2020), Claire Rousay (2020), Andrew Weathers (2022) Maciej Wirmański (2021) and Eamon Sprod and David Prescott- Stead (2022), to name just some active field recordists today, the act of recording is not approached with any attempt towards "objectivity" but rather in service of humourous, personal, intimate, acts of story telling. The types of sounds deemed desirable to record have also changed. Claire Rousay (2020) and Andrew Weathers (2022),

49

for example, draw in particular on domestic recordings from their homes to reflect on relationships, illness and the everyday, in works which move far from field recording's typical forms and preoccupations. While Hadi Bastani and Maryam Sirvan's recent work, *trans.placed* (2022), is an exploration of how the acoustic environment changes as we move between locations, in particular from public to private spaces.

Alongside the change in what is commonly recorded, has come a greater critical engagement in the ethics of recording. In 1999 John Levack Drever grappled with his own use of sound recordings, noting that the prevailing attitude towards field recordings among sound artists was that these were a "playful commodity" which might be used "in whatever way artists desire" (Drever 1999: 25). Drever compared this lack of engagement with the ethics of recording he identified within the sonic arts with the greater critical and ethical engagement which occurred within the sphere of photography. The artist and geographer AM Kanngieser (2023) has also engaged with the ethics of field recording in their article 'Sonic colonialities: Listening, dispossession, and the (re)making of Anglo-European nature'. Kanngieser urges geographers focusing on the practice of listening to attune themselves to the 'sonic-colonialities' at play within field recording practices via a sustained critique of two projects: Sonic Mmabolela, a field recording residency in South Africa run by Francisco Lopez, and the staging of Chris Watson's *Hrafn: Conversations with Odin* (2014) in Australia. Kanngieser is concerned here with attending to the particular ethical demands these contexts of settler colonialism place on the artists, and argues for greater critical self-reflexivity in the organisation and staging of these projects. These concerns with ethics are also a focus for Wright (2022) who is preoccupied with the implications of who is recording what, why, how and for whom. Wright is focused on explicitly addressing these questions via a rights-centred framework, asking who has the "historical right" to record, or to be silent rather than silenced (2022:3).

Field recording has also been theorised and practiced within the academic field of geography. Michael Gallagher (2015a), for example, has examined the spatial, affective and representative characteristics of field recording, putting forward the argument that it might be heard as a form of 'nonacademic geography' (2015a: 560). He also interestingly foregrounds the performativity of field recording playback, arguing that in playback field recording enacts 'a doubling or thickening of space' (2015a:561). This article, however, is unusual in its focus on performativity and playback, with most other academic work in the field of geography examining field recording and the audible as a valuable representational or investigative tool. George Revill (2014), in an article on the

acoustic spaces of landscape centred on Chris Watson's work *El Tren Fantasma,* for example, argues that the audible should be considered an important component of landscape. Writing with Jonathan Prior (Gallagher and Prior 2014), Gallagher has examined the epistemological implications of phonographic methods for human geography, while in a later article (Gallagher 2015b) he assesses his own attempts to compose an audio drift as part of a research project in Scotland (2015b), noting sound's capacity for evoking the "haunted and uncanny" qualities of locations (2015b: 467).

The relations of field recording

This theoretical context certainly influenced the focus of my work in Thamesmead. As I have discussed in this chapter, as someone who had never been to Thamesmead prior to undertaking this artistic project, I did not feel ethically or politically inclined to attempt to use my practice as a vehicle for reflecting on aspects of the landscape, or as a mechanism for achieving other forms of locational expertise. In part, my focus on sonic fluxes as a way of thinking relational diversity, was a response to this reluctance to use my practice as a medium which aimed to represent or know Thamesmead. This project was generated from the dramatic moment during which I encountered Thamesmead, but also my own positionality in relation to this moment; and the complex layers of relations this particular residency enmeshed me in. These dynamics led me back to an encounter with my own practice, and the relations it generates, obscures and interrupts. I had attempted to think with my sonic figures as an approach to relationality, but how might I use them to conceptualise the relations of my own practice?

Although it can be (and has been) obscured to greater and lesser degrees, field recording is usually a public act, or, at least, it typically takes place in locations shared with other people and other species. I do not obscure my acts of recording, and obviously carry a recording device. Consequently in Thamesmead I was sometimes approached by curious passers-by wondering what I was up to, and some of these exchanges made their way into my recordings. But there were also more subtle, less audible impacts of my practice. Some passers-by veered around me, or otherwise modified what it was they are doing or saying when they spotted me with my recording gear. Others ignored me completely. This continuum of responses to my practice of field recording extends beyond the human; other species too responded to my activities, modifying their calls, movements and behaviours. In Thamesmead I encouraged horses and swans to approach me by offering them a snack, for example. But I also continually scared away birds, squirrels and no doubt other creatures

as I recorded. These encounters, some hearable, others inaudible, I came to position as being generated by my practice; the soundings and quietenings they entail permeate my field recordings.

In attempting to better conceptualise the encounters entangled with my practice I found Francis Alÿs's work, *The Collector* (2006)*,* particularly valuable. In this work Alÿs dragged a crudely constructed magnetised tin dog on wheels through the streets of Mexico City. As he moved, the dog collected to its body metal detritus and debris from the city streets. In the video documenting these excursions with the dog other pedestrians can be seen staring, ignoring him, or simply not noticing. At one point dogs bark at him, at another a street hawker swerves around him, while later on he is forced to step out into the traffic by a group of three men taking up the road. Initially I was drawn to this work because of its idiosyncratic take on collecting itself, finding it an intriguing analogue to field recording's processes of randomly collecting sounds. But as the focus of this thesis developed, I have returned to it due to the ways it folds encounter into the work itself. Although there is a more marked absurdity and performativity to Alÿs's walks with his tin dog, this sort of performance in public space is echoed, to a degree, by the urban field recordist, dragging her gear around the streets gathering sounds of her own and other people's movements and interactions. Typically this aspect of field recording and the attention this garners is obscured not only in the recordings gathered, but in the discourse surrounding field recording as well. In contrast, in *The Collector* the encounters generated by the performance of collection constitute the work.

In my recordings taken in Thamesmead my own acts of sounding are, in some instances, predominant: my jumping and stamping on bridges, my decision to vibrate fence wires, feed horses and swans, and of course speak to passers-by. I use my body to vibrate surfaces, fences and stairwells, as I stomp and pluck. However, for the majority of my recordings it is my quietness which enables them. Within the context of my installation I put forward the sonic figure Not-Sounding as a way of thinking constitutive stillness, and explored the contribution configuring my digital music players to be silent made to the generation of a soundscape which was diverse, dynamic and moved within the gallery. But as I noted in this section, Not-Sounding is also relevant to field recording. It is by keeping quiet that I enable the activities and movements of others to be recorded. However, this is a Not-Sounding which is itself involved and complicated, often entailing a lot of inaudible acts which generate relations. Keeping quiet requires for example a particular attentiveness to stilling the sounds of my body: a consciousness of my own breathing and its volume, an awareness of the rustles of my clothes, or the slap of the soles of shoes. To achieve particular versions of quietness I don't only restrict or alter my movements, and my breathing, I

actively use my body; as a wind guard, for example, arranging the widest parts of me to shelter my mic which records in the stiller air behind me or beside me as I sit as still as possible. These physical behaviours contribute, like Alÿs's performance in The Collector, to the relations and encounters I am involved in as an artist, and the recordings I produce.

The theoretical work on field recording I have outlined falls broadly into two types: one focused on what field recordings can communicate about a location, what knowledge a soundscape grants to the listener, or might be used to convey. The second centred on how one might engage in an ethically and politically responsible way with the practice of field recording itself. In this second approach there is a call, as demonstrated in the work of Wright, Drever, and Kanngieser, for a critical relation to self, a practice of self-reflexivity, as well as a politically responsible engagement to the recording context and the subjects being recorded, be these other people or non-human species. But while this work critically examines some of the relations at play within field recording, it is not an examination of field recording itself as a relational practice.

During the period of artistic research I undertook in Thamesmead the relational components involved in my field recording activities moved from a relatively unexplored position in my practice to a more central focus of my research. I came to consider field recording not simply as a practice which gathered recordings I could draw on to conceptualise relational space, but rather as a practice which was itself folded into the very relational practices I was attempting to use sound to better think. Starting then with Massey's version of space as a doing, as an arena comprised from the fabric of interaction, I have attempted here to chart how my artistic research in Thamesmead drove an encounter between sound and relational theories of space within geography which drove a re-examination of my own practice of field recording. In attempting to use sound as a way of thinking the diverse dynamics, layers, and interactions folded into fabric of space in Thamesmead, I also began to examine my own relational doing as a field recordist in this location.

Conclusion

Drawing on the research, practices and processes involved in the production of my work *Under Construction* I have attempted in this chapter to think relationality via sonic fluxes. As part of this project I have developed the specific sonic figures of Volume, Propagation, Reverberation, Masking, Interference and Not-Sounding and probed these for dynamics which might aid a more nuanced approach to thinking the ongoing, mutable and multiple dynamics of interaction. In using

these figures in this way I have been particularly interested in their capacity to convey the complexities, hybridities, and multiplicity of relational forms. Sonic fluxes contain dynamics which are not simply one thing or another, but rather unpredictable and unfolding amalgams. I have argued that these fluxes contain dynamics of relevance to conceptualising relational forms ranging from collaboration to contestation, conflict, resistance and suppression. And furthermore, that the movements and transformations they describe offer ways of thinking how relations might change or generate effects as the result of multiple, diffuse and perhaps contradictory, dynamics.

In developing this argument I began with, and have continued to return to, the work of Massey, finding within her dynamic ways of thinking spatial constitution profound similarities with earlier acoustic models of space. With reference to other relational theorists, including Nigel Thrift and Nicky Gregson and Gillian Rose, I have discussed my attempts to think relational space sonically within a broader tradition of geographical work which has focused on developing dynamic ways of conceptualising the doing of making space collectively. I have situated my work in reference to a small but growing group of theorists drawing on the dynamics of sound for ways of thinking subjects and relations which extend far beyond the sonic, which include Christoph Cox, Salomé Voegelin, Brandon La Belle and Benjamin Tausig, and I have contrasted this work with research on sound and space which instead deploys sound in order to destabilise more traditional visual understandings of space, spatial boundaries, or the connections between spaces, such as Yi Fu Tuan, Barry Blesser and Linda-Ruth Salter, George Revill and David Harvey among others. My contribution to this body of work, as I hope is clear, has been to think with sonic fluxes as a way of conceptualising relational space in new, dynamic and nuanced ways, and to apply this way of thinking to not only the locations within which I have recorded but to field recording as a practice.

The sonic figures I have introduced here might never fit precisely a particular moment or interaction, their value is not in finding an exact fit or explanation, but in the ways they might aid our thinking about the diverse and dynamic processes involved in interaction itself. In encountering Thamesmead when I did, via TACO! gallery, I was preoccupied with all I had missed and would never know about the suburb, how it had been, how it had ended up in the moment I found it, how it might evolve in the future. Through the research and practice involved in *Under Construction* I attempted to devise a way of thinking which didn't help me discover Thamesmead, but rather offered a suggestive way of approaching the complex histories, dynamics and contemporary relations implicated in producing any encounter in time and space, whether that be a suburb in the

midst of a billion pound development, or my own attempts to record during this moment. Over the course of producing this work I came to appreciate the ways sonic relations could be drawn on to think the contributions and influences of my own actions, silences and interactions as a field recordist working in public spaces. As I recorded in Thamesmead I did not simply gather recordings I might draw upon as a tool for thinking relationality sonically, but rather my practice generated encounters both audible and inaudible within Thamesmead, which inflected my recording locations. In chapter 2 I extend this focus on sound, relationality and field recording practice within the context of Heathrow Airport turning to the sonic figures I have developed to examine the impact, influence and contestation of the noisy trajectories of the airport's landing and departing planes, and the resonances between these propagating routes across the sky, and the trajectories of my own field recording below.

Chapter 2

Flightpaths as fuzzy lines: Contesting Heathrow's sonic propagation and reverberation
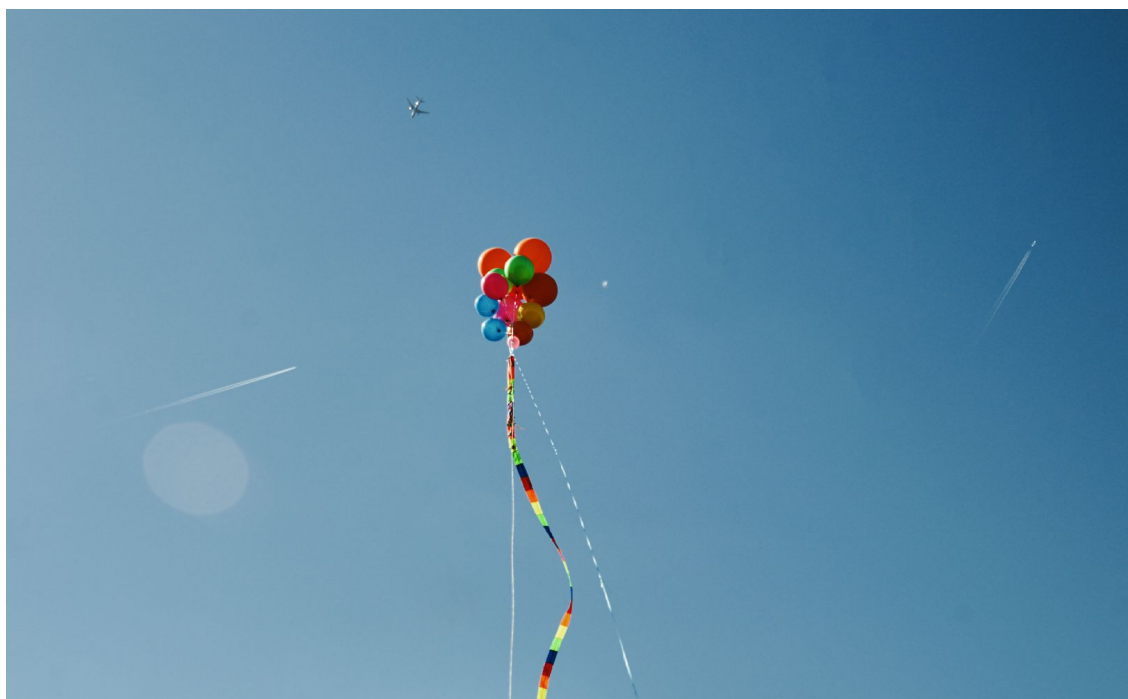
Photo 1. Raising one of the kite tail sound systems of Ascending Composition 1 (For Planes) in Ruislip, London. Credit: Suzi Corker.

In 2019 I was invited to take part in the group show, *Air Matters: Learning from Heathrow* which focused on the environmental and social impacts of Heathrow Airport, and its associated infrastructures. My work for this exhibition, called *Ascending Composition 1 (For Planes),* was centred on a simple inversion: it is usually plane noise which travels down to us, but what if I tried to play our sounds from below to planes? With this aim I constructed a speaker system designed to be raised by helium balloons, and attempted to use this air-borne device to aurally infiltrate the flight paths of Heathrow Airport by broadcasting field recordings taken in the vicinity of Heathrow itself along the routes of the airport's landing and departing planes. This chapter draws on my encounter with the flightpaths of Heathrow via field recording to discuss how a sonic approach to these routes reconfigures understandings of their dimensions and effects. It also interrogates the staging of, and, in particular, the failure of the central aim of *Ascending Composition 1* to examine the issue of aircraft noise, and its contestation, and the layers of operations which enable Heathrow itself. I deploy the sonic figures developed in chapter 1 to reconfigure conceptions of the dimensions and effects of the flightpaths, as well as of Heathrow's operations and influence more generally.

As a work which centred on aircraft noise, most of my field recording work for this project occurred in the vicinity of Heathrow's flightpaths. As I researched these routes, and recorded the aural impact of them, I became increasingly exposed to the ways in which they radically changed when approached sonically, as opposed to being visually mapped. In researching the flight paths I encountered them visually as narrow lines on a map, but as a recordist I discovered them as propagating and reverberating clouds of noise, which diffused across vast swathes of city, masking other sounds within the soundscape and interrupting, or otherwise influencing interactions both aural and otherwise. In chapter 1, I thought with the dominant and propagating sound of construction to conceptualise the complex relations entangled with the re-making of Thamesmead. In this chapter I centre aircraft noise, thinking with the dispersed and diverse aural interactions it entails to examine the constitution and influence of Heathrow Airport.

The central focus of this chapter is an exploration of how a sonic approach to Heathrow's flightpaths changes conceptions of the encounters, effects and influence of these trajectories. In developing this analysis I begin with the political and artistic context of the *Air Matters* show. I discuss the ways in which my field recording practice led to an encounter with the flightpaths themselves, the issue of aircraft noise and community efforts to contest it. I then examine how a sonic approach to the linear figure of the trajectory changes conceptions of its shape, dynamics and effects, and explore the relevance of this sonic reconfiguration to ways of thinking other types of lines, such as those of Heathrow's airspace, and the trajectory of my own practice as a field recordist. I situate this analysis in reference to artistic works which similarly generate new ways of thinking the performance, effects and constitution of lines, and theoretical work within the field of Critical Border Studies, which has radically re-configured the line of the border in relevant and instructive ways.

In chapter 1, I developed a sonic approach to relationality which drew on sonic fluxes as tools for thinking the complex interactional dynamics involved in the relational constitution of space. This approach put forward the sonic figures of Volume, Propagation, Reverberation, Masking, Interference and Not-Sounding as conceptual tools for thinking the layers, diversity and hybridity of interaction. In this chapter I focus my use of these terms on the flightpaths of Heathrow by exploring them as noisy trajectories of encounter. In doing so I am particularly focused on the capacity of sound to expand the dimensions of the flightpaths, and how this reframes the where and

57

how of the relational encounters these routes generate. These are movements which in sound are simultaneously "up there" and all around us, and which in their propagation and reverberations inflect, generate and interrupt daily rhythms and relational encounters across large parts of London.

Using sonic thought as an approach to conceptualising the dynamic interactions between trajectories brings me again to the work of Massey. As outlined in chapter 1, one way in which Massey attempts to define what space is centres the encounter of trajectories, a term she uses to encapsulate the "history, change, movement, of things themselves" (2005: 12) . For her, individuals, as well as nations, and ideas have trajectories, and space is the product of the encounter between these different phenomenon. In her book *World City* (2007), she describes London as "a field of multiple actors, trajectories, stories with their own energies – which may mingle in harmony, collide, even annihilate each other" (2007:22). In *For Space* she argues that trajectories "undoubtedly" affect each other (2005:158), via interactions she characterises as "reverberating" and "clashing" and "possessing different rhythms" (2005:156). In her essay 'Travelling Thoughts', she describes returning home as a "reimmersion" in trajectories (2000: 227). In criticising Massey's way of articulating the concept of place, Jeff Malpas contends that she, and other relational theorists including Ash Amin, understand relations "as like lines drawn on a surface" (2012:229). Certainly trajectory as a term can be readily understood as a sort of line, but my point in drawing out Massey's characterisation of trajectories is that these are not lines as they might be typically understood. These are lines which are already understood in ways which display, to return to Salomé Voegelin's work, a particularly "sonic sensibility", and as such benefit from an explicitly sonic exploration (2014: 3). In undertaking this exploration I turn to my field recording work under Heathrow's flightpaths, as well as the sonic figures I developed in chapter 1, to develop a new and explicitly sonic reconfiguration of Massey's concept of the trajectory, and the particular combination of movement and encounter this term brings together.

A flightpath is an almost painfully literal example of a trajectory which sounds, and in doing so propagates, reverberates, drowns out and masks in ways which generate immediate and dispersed encounters. My analysis of how sound reconfigures understandings of the dimensions of these routes, and the encounters and effects they generate, is the primary focus of this chapter. But the sonic approach I develop to conceptualise the trajectory of the flightpath also offers opportunities to use sonic dynamics as a tool for thinking the impact of quieter, less dramatic movements too. As I recorded beneath Heathrow's planes, I too traced a trajectory, and in doing so produced and

participated in relations, altering and inflecting the locations I moved through, even if just a little. In the final part of this chapter I build on my analysis of the flightpath and its sonic encounters for ways of examining my own far more modest trajectory as a field recordist, and the influences and impacts it might have.

Heathrow: political and artistic context

The group show *Air Matters,* for which I developed *Ascending Composition 1,* was exhibited at Waterman's Gallery in Brentford in the west of London, a location less than 10 kilometres from Heathrow's runways, from October 2019 to January 2020. It was a show explicitly focused on using art to think through some of the complexities relating to the governance of Heathrow, resistance to its operations, and the ongoing debate about the proposed expansion of the airport. The show was curated by artist and academic Nick Ferguson, who also exhibited in the show. It was primarily funded by Arts Council England. As outlined already, for *Ascending Composition 1* I took the ongoing issue of air plane noise as a starting point, and from this worked to stage an inversion: we are usually immersed in plane noise which travels from the sky down to us, so this work attempted to bring terrestrial soundscapes to the planes above London. As such I planned for the work to involve taking field recordings in London, particularly from areas impacted by Heathrow's landing and departing planes and constructing a device which could ascend into the sky to play these sounds to the planes flying above.

My attempts to use an artistic intervention as a way of underlining both the prevalence of aircraft noise and commercial aviation's dominance of the skies above London, of course, did not exist in a vacuum, either politically or artistically. Politically there exist numerous ongoing efforts to contest Heathrow's operations and expansion, from residential networks to dedicated activist or lobby groups. Of particular relevance is the organisation Heathrow Association for the Control of Aircraft Noise (HACAN), which has campaigned against a third runway at Heathrow, and more generally aims to highlight and curtail plane noise. HACAN lobbies for longer bans on night flights, daily respite for overflown communities, and steeper ascents and descents for planes to minimise noise.[8] There are numerous other groups campaigning against Heathrow, ranging from environmental organisations such Greenpeace and Friends of the Earth to local resident action groups focused on airplane noise. The website for the No 3rd Runway Coalition, an important umbrella group bringing together organisations opposed to Heathrow's expansion, lists 20 groups involved in that campaign,

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8 HACAN's campaign priorities are summarised here: **https://hacan.org.uk/?page_id=1478**

with names such as Stop Heathrow Expansion, Ealing Aircraft Noise Action Group, BashRunway3 Slough & District Against Runway 3, Plane Hell Action, Stop Heathrow Polluting Us and Wake Up Ealing among others.[9] Another important campaigning group was the off-grid eco-topian community Grow Heathrow which ran in one form or another from 2011 to 2021. This was a solar-powered land squat and community garden located on the site of Heathrow's proposed third runway, which also campaigned against the airport's expansion.

In addition to this political and community context, *Air Matters* was a group show, so artistically there was an immediate context with the other included artists. These were Nick Ferguson, who, as mentioned, was also the exhibition's curator, Matthew Flintham, Magz Hall, Hermione Spriggs & Laura Cooper, and Louise K Wilson. The works produced were highly varied in form and approach. Magz Hall's installation *Skyport* (2019) explored the history of pirate radio in the vicinity of Heathrow, and the illegality of listening to the radio channel operated by Air Traffic Control. Matthew Flintham's *Heathrow (Volumetric Airspace Structures)* (2019) focused on the dimensions of Heathrow's airspace. Nick Ferguson's *Capsule* (2019) was an enormous scale replica of a passenger jet wheel bay, which formed part of his ongoing investigations into the transportation of debris via these enclosures. Louise K. Wilson produced *Frequency* (2019) an audio work about the felt experience "between anxiety and desire" of air travel (Wilson in Air Matters: Learning from Heathrow 2019), and Hermione Spriggs and Laura Cooper authored a "sci-fi ghost story" called *The Substitute* as a response to Heathrow's attempts to achieve a 'bird free environment. This was broadcast from tannoy speakers outside Waterman's Gallery (Air Matters Learning from Heathrow 2019).

Beyond *Air Matters,* other works specifically addressing Heathrow via a critical art practice include artist and researcher Kate Corder's *Heathrow Orchard Walks* which ran from 2014 to 2016. These walks, guided by Corder, focused on the historic uses of the land Heathrow now occupies for agriculture, and involved visiting the now overgrown orchards in the area. Vicky Kerr, who originally trained as an air traffic controller, has made several works examining the relationship between air traffic controllers and pilots, including *Air Traffic Controllers - Swanwick* (2013) and *Heathrow Director* (2013). Artists critically examining the role of air travel and airports beyond Heathrow provide a further contextual layer. Angus Carlyle and Rupert Cox's A*ir Pressure* (2012), for example, centres on the activities of a farming family who live and work within the concrete and

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9 No 3rd Runway members list can be found here: **https://www.no3rdrunwaycoalition.co.uk/members**

steel infrastructure of Japan's largest airport, which, with its focus on aircraft noise and alternative uses of airport land, has important parallels with some of the concerns explored in *Air Matters*. Another relevant sonically-focused work is Steve Rowell's *Sonic Boom Archive 2006-2012*, which involved the use of an inverted noise-gate to record the sonic booms occuring above the Mojave Desert in California.

Although it is not a focus of this chapter, it is worth noting that airports themselves are also actively intervening into art production by directly commissioning works centred on aviation and air travel. Heathrow houses British artist Richard Wilson's £2.5 million *Slipstream* (2014)*,* an immense twisting aluminium sculpture which dangles from the ceiling in Terminal 2. London City Airport recently commissioned British installation artist Anne Hardy to make *Destination London* (2021), a series of photograms of flora Hardy found around the runways of the airport. Numerous other international airports have similarly commissioned big budget artistic productions which, like these two works, largely uncritically celebrate airports and air travel. A notable exception is Amsterdam's Schipol airport which brought the issue of sound pollution into their commissioning program by employing land artist Paul de Kort and H.N.S. Landscape Architects to design the Buitenschot Land Art Park which incorporated noise reflecting ridges.[10]

**Recording Heathrow's flightpaths**

My aim with *Ascending Composition 1* was to play a composition generated from field recordings taken from areas impacted by aircraft noise to planes flying overhead via an air-lifted speaker system. Thus I wanted recordings of aircraft noise, but also the sounds this noise often drowns out. Consequently this project involved both recording throughout London, and the design of speaker and playback system capable of being raised into the air. I will refer to these aspects of the project throughout the rest of the chapter, starting here with the field recording work I undertook. The vast size and complex operations staged within and beyond Heathrow's airspace mean that large parts of London are impacted by aircraft noise, so finding suitable places to record was not difficult. According to HACAN, over 700,000 Londoners are affected by noise from Heathrow's planes[11]. As the skies above Waterman's gallery form part of the final approach corridor for planes landing at Heathrow, I began recording here. Planes landing on Heathrow's Northern runway pass almost directly over the gallery, and during the airport's busiest periods it was common for them to pass

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10 Details of this work can be found here: https://www.schiphol.nl/en/schiphol-as-a-neighbour/page/landscape-design-plan-to-combat-noise-nuisance/
11 https://hacan.org.uk/?page_id=2841

overhead every few minutes. Diagram 1 shows plane routes into and out of Heathrow during its most common 'Westerly operations' mode, with the gallery marked.
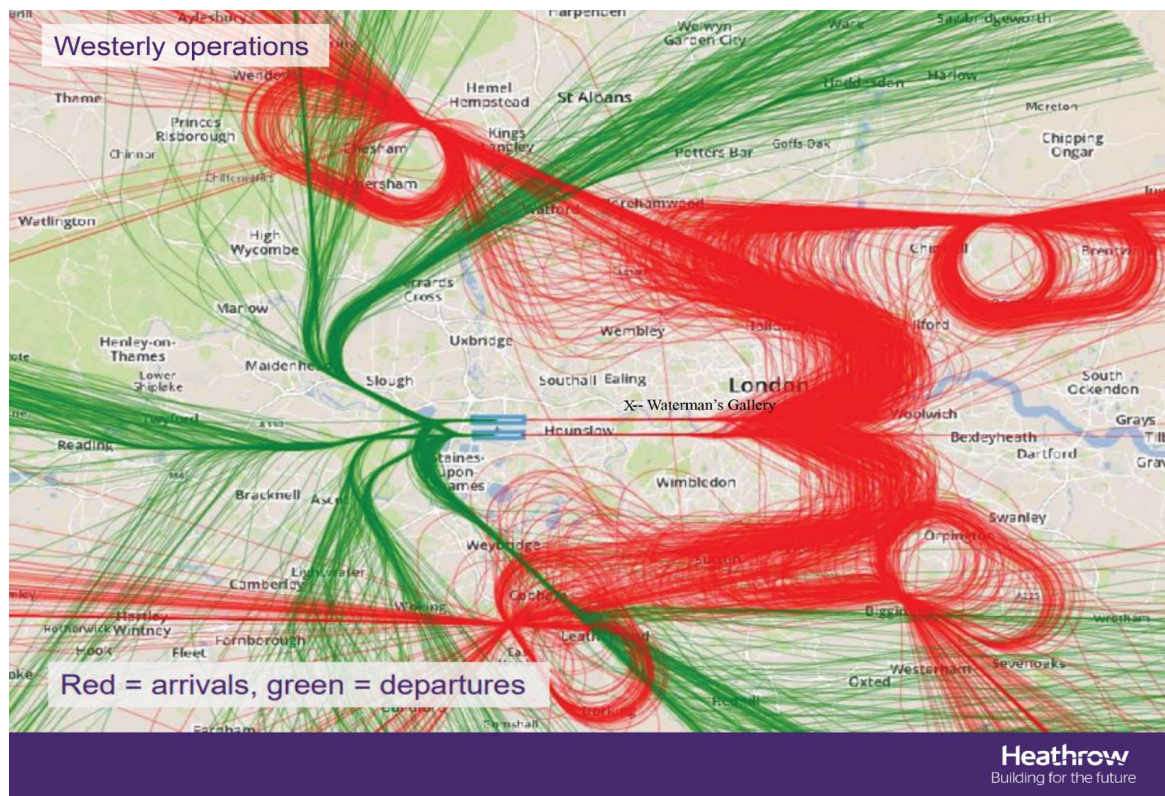
Diagram 1. *Landing and take-off paths during Westerly operations of Heathrow Airport. Green lines are take-off, red landing. (Source: Heathrow 2018).*

Waterman's Gallery borders a small park with a children's playground, as well as the River Thames, and I undertook several different types of recordings here: of people using the park for recreation, general streetscape sounds, as well as some attempts to record underwater. In doing so, I noticed how being directly under the flightpath changed the rhythm of my work, introducing pauses, and requiring me to rush. Did I want another recording dominated by aircraft noise? If not, I needed to wait for a moment when this sound faded away enough for other aspects of the soundscape to be heard clearly, then work quickly to gather the sounds I wanted, before the roar of another plane arrived. This noise infiltrated both obvious and unlikely niches. Even underwater recordings were not insulated from the sound. I remember clearly hearing the roar of the jets through my hydrophones as I tried to record fish and insects in the Thames. The regular presence of the planes introduced a cut up aspect to recording and listening in these locations. A quieter sound might be heard, then obscured by a plane, then either heard again or perhaps not. Planes rolling overhead thus almost seemed to pause parts of the regular soundscape in memory, until these parts, possibly,

62

emerged again with the fading of the plane noise. In these moments I found myself wondering what was happening that I was missing? What activities were sounding unheard beneath the masking roar of planes?

I also recorded in locations which were not so dramatically impacted by plane noise as the areas around Waterman's. As I researched the flight paths servicing Heathrow, I realised the planes above my own home in Brixton were coming in to land at the airport. Indeed I lived along the same flight path which tracked over Waterman's gallery. Consequently, I began recording on my trips to and from the gallery as this trip loosely traced the landing trajectory of Heathrow's planes. Recording along this route emphasised the degree to which aircraft noise forms part of the soundscape of London,even in areas which are not considered severely impacted. In these locations it was the more subtle sounds, a distant rustle, an intake of breath, the scuff of a shoe, a clearing of the throat, a far away bird call, which were obscured by the high noise floor to which plane noise contributed. When I turned up the gain on my recorder I could sometimes hear these sorts of more subtle sounds, but without the help of this device I could not. Recordings impacted by plane noise were, in a strange way, a bit flattened, as more nuanced characteristics of how sound moves within a location, its reverberations and echoes, the subtleties of a sound fading away, were inaudible. Quiet sounds had to be heard from close by or not at all, while sounds made from locations further away might be sporadically audible, emerging in the aural space between landing planes. As such the sonic spaces constituted by the propagation of plane noise were not only less sonically diverse, but also smaller, their depths and dimensions shrunk by the roar of engines.

And then there were other areas where aircraft noise was viscerally present. During some recording work I undertook near Hounslow, a residential suburb which borders Heathrow, this impact was particularly dramatic. When planes were overhead here I found myself unable to hear myself, never mind anything else. Conversation, for example, was impossible and had to be halted while planes passed overhead. In Hounslow, I recorded mainly in Hounslow Heath, which includes a small children's playground. Experimenting with different recording techniques I attached contact mics to a metal spinning ride in the playground, and could clearly hear plane noise vibrating this piece of equipment when the low flying jets passed overhead. I also recorded in the River Crane in this suburb, and could hear the planes clearly through by underwater microphones. These two recordings are collected here.

63

The proximity of the airport might be understood as propagating and reverberating in other ways within Hounslow too. In 'The Global Airport: Managing Space, Speed, and Security' in the edited collection *Politics at the Airport* (2008), Salter notes the ways in which airports extend far beyond their physical boundaries, being integrated into transport and critical infrastructure, government and business relations, as well into the nation itself, and across territorial frontiers (Salter 2008:9). As I listened to passing jets vibrating a metal ride within a children's playground, I reflected on the strange mix of shops and services which surrounded me. Travel hotels, cargo facilities, hire-car firms, business meeting facilities and conference centres, sat beside delicatessens, grocers, off licenses, and double-glazed homes. The influence of the airport permeated this suburb in ways extending far beyond the aural. Its reverberations might be located in this mix of shops, services and insulated housing on the ground, in the air in the form of restrictions on its use, and even into the subterranean, in, for example, the underground transport nodes of London, where several tube lines service the transit needs of the thousands of passengers and workers going to and from Heathrow each day. The sonic figure of Propagation with its emphasis on diffusion and dispersal provides a way of thinking the airport's cascading and pervasive influence; how its activities animate and inflect multiple infrastructures, and consequently the diverse forms its resounding presence might take.

When it comes to aircraft noise it is sleep quality which is often a headline concern for residents surrounding Heathrow, although of course there have been broader studies into the health impacts of noise exposure (see, for example: Correia, Peters, Levy, Melly and Dominici 2013). My recording experiences led me to wonder what more subtle, less quantifiable impacts this noise might be having. What influence did a conscious or unconscious regime of stop start activity or communication have, for example? What activities, like my own recording practice, were paused, curtailed, or otherwise influenced by the rhythms and presences of such a pervasive sound? And what flow on effects might these changes have had? Here I return to the sonic figure of Reverberation which I have used to think the temporal elasticity of presence, or relational effects. Even when the planes briefly cease flying over Houslow for the night how might the psychological or physiological stress of this noise reverberate in the broader lives of residents? What effects might continue long after exposure to plane noise ceases?

In total I spent about two months recording in the vicinity of flight paths across London, gathering fragments of perhaps a hundred sonic moments. These included: streetscape activities such as

talking, yelling and singing, bird calls, the scuffle of footsteps, car stereos, buskers, traffic, trains, the tube arriving, my own and other people's breathing and incidental movements, one satirical speech, a bizarre rendition of Nessun Dorma inside a train station, and, of course, plane noise itself. A suite of these recordings can be found here.

Protest soundscapes

In considering aircraft noise and its impact it is important to appreciate that the soundscapes surrounding Heathrow are not only constituted by the airport, and those living, working and visiting its surrounds, but also by resistance to aircraft noise. As I noted earlier, HACAN contests almost every aspect of Heathrow's landing regime, constantly seeking ways to dampen down its sonic impacts. These efforts by HACAN and others have had some success. One obvious example of this is that Heathrow is restricted in how many planes it can land or allow to take-off between 23:30 and 6am. The government-imposed annual limit is 5,800 take-offs and landings during this time bracket, which it is worth noting is still 14 per evening.[12] The form of night restrictions imposed on Heathrow take how noisy individual planes are into account, aiming to discourage the movement of particularly noisy planes during the restricted evening period. The airport has also made adjustments to the landing angles adopted by planes in a bid to lessen aircraft noise.[13] Furthermore, the airport has a Noise Action Plan in place which regulates which areas are flown over and for how long.[14] The Heathrow corporation dedicates significant marketing and strategic resources into its efforts to present itself as a good neighbour, and to diffuse complaints and anger about noise. It has a published Noise Strategy[15], for example, which includes a 'Quiet Night Charter'[16] and runs a complaints system regarding noise.[17] This impact of resistance to aircraft noise is, of course, not limited to Heathrow, and can be traced across the aircraft industry. Quieter engines, for example, are

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12 See: https://www.heathrow.com/company/local-community/noise/operations/night-flights
13 Landing angle adjustments are detailed here: https://www.heathrow.com/company/local-community/noise/making-heathrow-quieter/slightly_steeper-approaches
14 The Noise Action Plan is here: https://www.heathrow.com/content/dam/heathrow/web/common/documents/company/local-community/noise/making-heathrow-quiter/noise-action-plan/Noise_Action_Plan_2019-2023.pdf
15 The Noise Strategy document is here: https://www.heathrow.com/company/local-community/noise/making-heathrow-quieter/our-noise-strategy
16 This charter can be found online here: https://www.heathrow.com/content/dam/heathrow/web/common/documents/company/local-community/noise/reports-and-statistics/reports/other-reports/The%20Quiet%20Night%20Charter%202018%20Summary%20Document.pdf
17 Heathrow's complaints form can be found here: https://www.heathrow.com/company/local-community/noise/what-you-can-do/make-a-complaint-about-noise

marketed as major selling points for newer planes.[18] And, in turn, these claims of quieter engines are contested by activist groups who contend that, in fact, these engines are not as quiet as advertised.[19]

Given this focus on the impact of aircraft noise and the quest for quietness, it is perhaps unsurprising that many acts of protest against Heathrow's operations, as well as protests against other airports, involve either the production of very loud sounds or the performance or invocation of quietness. In 2015, *Plane Stupid*, a UK-based activist organisation agitating against Heathrow's expansion, organised a protest where they blasted Conservative MPs with aircraft noise at 4:30am in the morning.[20] In 2008 a broad-based coalition of activists and environmentalists called a protest against Heathrow the 'Make a Noise Carnival'.[21] Quietness is also strategically deployed in some protest actions. HACAN, for example, has staged silent protests in Heathrow's Terminal 5.[22] This use of both noise and quietness is found in other anti-airport and anti-plane noise protests and actions. In Germany, for example, there have been over 300 protests[23] against Frankfurt airport . Protesters there have used noise as a strategy staging 'deafening'[24] protests using drums, whistles and bells. They have also performed their own re-written version of the Christmas carol Silent Night to describe being awoken at 5am by plane noise.[25] The noisy sonic forms of protest these groups have chosen might be understood an attempt to disrupt the operations of the airport, via a re-staging of the sonic disruption they experience within their own daily lives. On the other side, by choosing not to sound the protesters enact an aural aspiration, that of quietness, and in doing so within the airport also contextually invoke its other: loudness and noise. Interestingly, too, both types of protest are positioned and understood as an attempt to be 'heard' within a broader social and political context.

In *Atmospheric Noise: The Indefinite Urbanism of Los Angeles* (2021) Marina Peterson writes:
"Airport noise is a condensation of forces and processes already in play, amplifying existing

18   Boeing for example made this promotional video 'Shhh... Boeing's New 737 MAX Redefines a Quiet Airplane': https://www.youtube.com/watch?v=IF6mX2M1ikQ
19   HACAN, for example, cites several studies disputing the quietness of newer engines here: https://hacan.org.uk/?p=5802
20   https://www.airportwatch.org.uk/2015/10/protesters-blast-aircraft-noise-outside-hotel-of-conservative-party-conference-at-4-30am/
21   https://www.theguardian.com/environment/2008/may/31/climatechange.transport
22   See: https://hacan.org.uk/?p=3125
23   https://www.airportwatch.org.uk/european-airports/frankfurt-airport/
24   https://www.airportwatch.org.uk/2014/11/noise-protesters-block-part-of-frankfurt-airport-for-about-an-hour/
25   https://www.spiegel.de/international/germany/protests-at-germany-s-largest-airport-new-runway-noise-enrages-frankfurt-residents-a-806029.html

dynamics even as it yields its own effects..." (2021: 6). These acts of protest can be understood as one layer of these "existing dynamics". In chapter 1, I discussed the usefulness of the sonic figure of Masking to conceptualise how ongoing activity might be rendered inaudible, and Interference to discuss the ways interaction might produce outcomes ranging from amplification to silencing. The dynamics encapsulated by these two figures find relevance here in conveying the complex relationship between plane noise itself, and these protest activities. In the encounter between their own soundings, and decisions to stay silent, activists enact sonic dynamics which aim to quieten aircraft noise, either symbolically drowning it out, or by drawing attention to the prevalence and impact of plane noise via its other: quietness. This is a layer of ongoing activity which is not audible within the everyday soundscapes of Heathrow itself. Yet the impact of these activities can be 'heard' in, for example, the restrictions on when Heathrow is allowed to land planes, as well as the airport's own noise strategies and consultations. As such these acts of protest, both those that sound and those that aim for silence, can be understood as playing a constitutive role in the auralities of the airport, and are important components of Peterson's "forces and processes already in play". These are acts of sounding, and not-sounding which contest, and to some degree curtail and quieten, the volume of Heathrow.

What is in a line?

In his book *On the Move: Mobility in the Modern Western World* (2006) Tim Cresswell explores the social and political meanings of mobility. In it he offers up "a basic signifier of mobility getting from point A to point B" as "A------------------------>B", noting that usually the content of that line between A and B remains unexplored (2006: 2). In in-flight magazines flight paths are often denoted in exactly this way: thin broken lines elegantly linking the dots of major airports. In sound however, we discover some of the content of the line of the flightpath, and a way of thinking its dispersed and diverse impacts. In attempting to intervene in the visual representation of flightpaths, activists have devised their own ways of depicting Heathrow's flightpaths which aim to convey their sonic content and dispersed propagating impact. *Airport Watch*, for example, published Diagram 2 which replaces the separate flight paths used by Heathrow in Diagram 1 with much thicker formations of varying opacities with a diffusing softened edge. These expansive shapes extend across London conveying, to some degree, the extent to which the flight paths are experienced not as a narrow line, but as a propagating trajectory of sound.
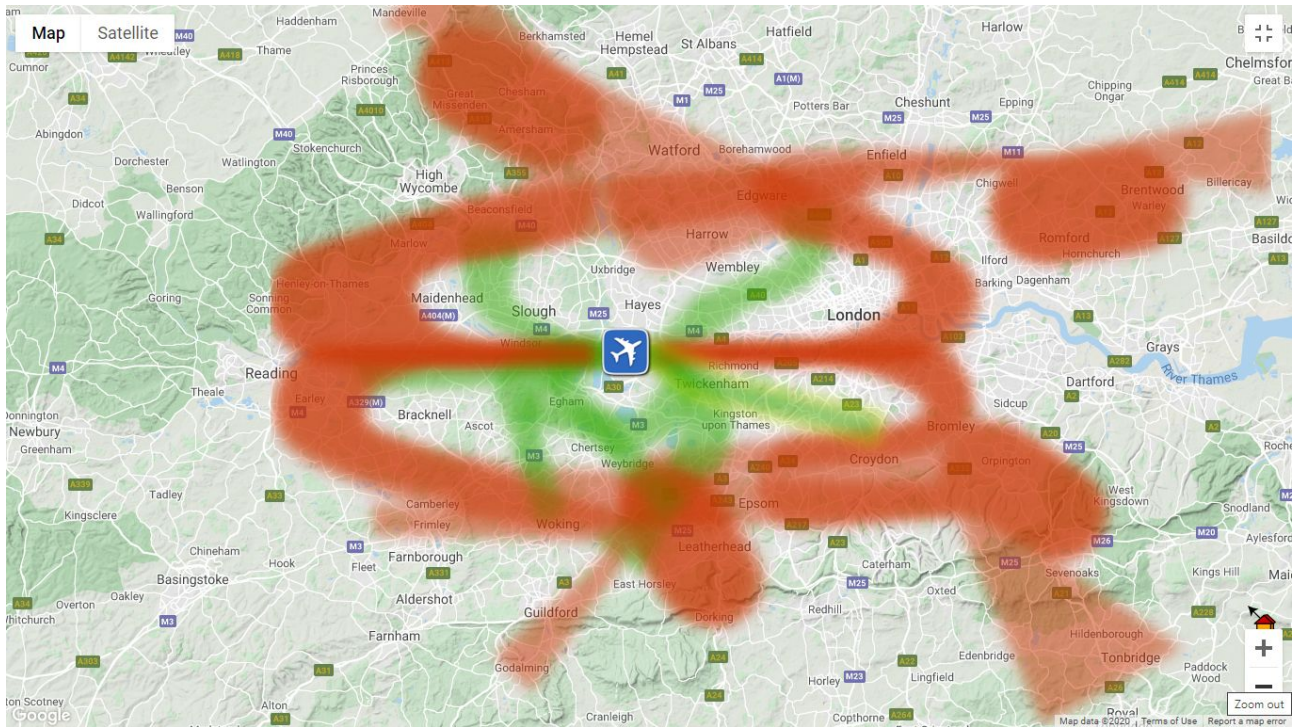
Diagram 2. *Airport Watch sample noise map for Heathrow's arriving (red) and departing (green) planes. (Source: Airport Watch https://www.airportwatch.org.uk/2014/05/heathrow-launches-new-webtrak-my-neighbourhood-website-to-show-flight-path-use-over-time-periods).*

In field recording I encountered just such a sonic reconfiguration of the trajectory of the flightpath, and its profound effects. This sonic reconfiguration changes not only the dimensions and shape of the flightpath itself, but also conceptions of where, when and how the encounters it generates might occur. In explicating her idea of the trajectory Massey often describes her own journeys, and the ways in which these trips bring her into contact with the trajectories of others. In 'Travelling Thoughts', for example, she writes of a trip from London to Milton Keynes, describing the ways in which, in her absence, London moves on without her, while with her journey and arrival in Milton Keynes she is altering space, contributing to its production, just a little (2000: 226). [26]

In this essays, Massey is primarily focused on the effects of leaving London and arriving in Milton Keynes, but the example of aircraft noise contains suggestive ways of conceptualising the effects of the journey itself. Although Massey argues in 'Travelling Thoughts' that in taking a journey, "you are not just travelling across space; you are altering it a little, moving it on, producing it" (2000: 226) her trip *between* London and Milton Keynes remains relatively unexplored in comparison to the effects of her departure and arrival. In contrast, recording along Heathrow's flightpaths offered a particularly rich context for examining the ways in which a journey might itself inflect and produce

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26   In 'Some Times of Space' (2003) she discusses taking the train between Manchester and Liverpool in similar terms.

a particular version of space. In its sonic propagation a flightpath diffuses into its surroundings, the encounters it generates are dispersed along and outward from the route itself, and might extend beyond its points of departure and arrival. The park outside Waterman's Gallery, and the playground in Hounslow, in which I recorded were profoundly different locations when planes were overhead compared to absent, and the range of encounters which were possible within these locations changed markedly too. In the three dimensional propagating and reverberating cloud of noise dispersed as the plane moves overhead, a plane trip not only facilities separations, reunions, connections and disconnections, its sound inflects and produces a particular version of the spaces it moves through by generating, curtailing or otherwise inflecting encounters along its route.

In this way sound troubles and complicates notions of where a trajectory might begin or end, and extends conceptions of where and when we might listen for its relational effects. As I recorded in the vicinity of Heathrow's flightpaths I encountered these trajectories in both predictable and unlikely locations. They extended underwater, for example, infiltrated my train trips, and impacted what sounds could be heard, and which were inaudible. In doing so they produced, obscured and curtailed relational encounters along their course. In these ways a sonic analysis, by changing the dimensions and characteristics of the trajectory of the flightpath, drives a broader reconsideration of where, and how, relations might take place. Considered sonically, a flightpath is a trajectory which might reach into our bedrooms, wake us from sleep, interrupt our conversations, and, indeed, field recordings. And these encounters may have both immediate and ongoing effects. If space is produced in an encounter between multiple trajectories, as Massey contends, then an aural register insists on a re-assessment of where these encounters might be taking place, and when, and how, we might listen for their effects.

Re-imagining lines

This sonic reconfiguration of the line of the trajectory is contextualised by artistic and theoretical work which similarly centres ways of re-imagining linear forms. In the arts there is a vast amount of work which can be explored as an investigation of the doing, traces and repercussions of trajectories of movements and acts of line making. Richard Long's *A line made by walking* (1967) is an obvious example. Long's line of flattened and worn grass offers a trace of the 'doing' of the line, which we understand in this instance to involve the repeated connection between feet and earth, as well as the effects of that doing in the form of the flattened grass. Francis Alÿs' two works involving walking with leaking paint tins ,*The Green Line* (2004), (performed in Jerusalem) and *The Leak* (1995)

(performed in Sao Paulo and later in Paris[27]), also might be understood as centring the traces left by the doing of line making. *The Green Line* in particular also foreground the repercussions of acts of line making, and trajectories of movement. This work involved Alÿs walking 24km with a leaking tin of green paint in order to trace the green line dividing Jerusalem's Israeli and Palestinian communities. This controversial act generated significant criticism and discussion, some of which is collected on Alÿs's website[28]. Eyal Weizman, for example, critiques the ways Alÿs's act reinforces the 'fiction' that dividing Jerusalem's Jewish and Arab citizens is as simple as drawing a line between them. He also emphasises the ease with which Alÿs negotiates the checkpoints along this contested border, and how different this is to the experience of Palestinians attempting to move in this contested region.[29] On a more prosaic level, the video documentation of this walk also underlines the complexity of the line itself as rendered. The thickness, ongoing presence or disappearance of Alÿs line is revealed to be unpredictable and unruly. Influenced by walking speed, the surface the paint drips on, the amount of paint left in the can, the viscosity of the paint, the weather and wind, the line produced ranges from thick and unbroken, to fragmented, to completely absent. In some places it falls on dusty roads and is absorbed quickly, in others it splatters on bitumen and looks likely to remain in place for a very long time. In its performance, reception and traces this is a work which offers nuanced and powerful ways of thinking the encounters and effects produced by moving through space.

D'Fence Cuts (2001) by Heath Bunton and Kayle Brandon also involves an investigation of some of the relations and effects of journeys.[30] This project involved the pair attempting to walk a route in Bristol which traced a circle. As per the name the duo cut through the fences they encountered which obstructed this project. Like Alÿs's *The Green Line,* the tracing of a journey is explored here as entangled with questions of access and the politics of public and private space. Bunton and Brandon are impeded by enclosures which must be confronted or otherwise negotiated, and both the traces of their activities in the destroyed fences, and the broader repercussions of these actions, speak to the inflection this journey has produced in the locations the pair traversed, and more broadly.

Within the sonic arts there is Annea Lockwood's *A Sound Map of the Hudson River* (1989), as well as her *A Sound Map of the Danube* (2008)*,* the former of which will be explored in more detail in

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27 https://francisalys.com/the-leak/
28 https://francisalys.com/the-green-line/
29 The interview with Weizman is here: https://francisalys.com/758/
30 http://irational.org/heath/d-fence/

chapter 3. In the Hudson work Lockwood uses field recordings from discrete sections of the river to evoke its entire trajectory. To be apprehended as a journey down the river, as is the intent of this work, it must be given significant amounts of time as it unfolds over more than an hour. The hints that the composition is intended as a journey is found in the long crossfades between locations, the subtly altering soundscapes, and the titling of each piece. Unlike the work of Alÿs and Bunton and Brandon, then, this work involves the construction of a fictional sonic trajectory from recordings taken by Lockwood on her separate surveying trips along the Hudson. Lockwood's trajectories of practice might here be understood as generative of an imagined journey built from her fragmented encounters with the Hudson's course.

A further artistic context involving sound, lines and trajectories of encounter can be found in Lawrence Abu Hamdan's *This whole time there were no land mines* (2017). This work examines the breach of a border line at the site of the 'shouting valley', a region of 'acoustic leak', which enables shouted communication to heard across the border between Israel and Syria.[31] In this work, Hamdan is focused on a particular moment when this site of acoustic leak was transformed into a site of actual bodily crossing. Unlike the previous works discussed, it does not aim to evoke a line, but rather to explore sound's role in the breach of one. The line of the border in this work emerges as a site of both partition and intermingling; a site of communication collectively produced on both 'sides' of the border. Here sound might be positioned as rendering porous the dividing 'line' of the border, re-constituting it in this particular location as a thick nexus of connection, communication and, ultimately, bodily crossing.

Although there are vast number of works which could be discussed as attempts to re-imagine lines, these works are important for my own project due to their emphasis on the relational doing involved in moving through space (Alÿs and Bunton and Brandon), and their investigation of how sound complicates the figure of the line (Lockwood and Hamdan). Taken together, they provide ways of thinking the complexity of attempts to render lines, such as the relations generated by these efforts, the traces these activities might leave behind, as well as the instability and fragmented construction of linear forms. Lockwood and Hamdan's works are particularly valuable as they provide examples of the radical ways in which sound changes conceptions of the line. Lockwood's tenuous version of the trajectory of Hudson comprised of slow fades between location recordings and Hamdan's border line breached sonically, and then bodily, offer ways of thinking lines as diffuse, fragmented, contested, constructed and permeable.

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31 From Hamdan's website: http://lawrenceabuhamdan.com/no-landmines

The changing shape of the border line

Perhaps unsurprisingly given their prominence and salience, the lines of national borders have been the focus of a significant body of theoretical work which has radically reconfigured the line of the border in ways of relevance to *Ascending Composition 1.* In the introduction to the Special Issue 'Critical Border Studies: Broadening And Deepening The Lines In The Sand Agenda' in the journal *Geopolitics* Noel Parker and Nick Vaughan-Williams note the ways in which new thinking on borders re-imagines them as complex, thick and multiform sites of investigation (2012: 728-729). Within this field numerous theorists, building on Etienne Balibar's argument that borders are no longer situated at the outer limit of territories but rather are "dispersed a little everywhere, wherever the movement of information, people, and things is happening and is controlled" (Balibar 2002:71), have produced research exploring borders as tactile, bodily, connective, performed and contingent . Much of this work deploys a particular symbol, figure or device as an aid to thought, hence we have Franck Billé (2017) exploring the border as skin, Mark B. Salter (2012) thinking with the idea of border as suture and Robert R. Alvarez (2012) exploring the notion of bridging as a way of approaching borders. All arguably indebted, to various degrees, to Gloria Anzaldúa's (1987) foundational re-imagining of the US-Mexico border as a wound.

Other theorists working in this field focus on the performance of the border in work which shares many concerns with the research outlined in chapter 1 by Nigel Thrift, Nicky Gregson and Gillian Rose. In this imaginary these lines are not simply manifest, but performed, and as such contingent and unstable (Parker and Vaughan-Williams 2012: 729). Anssi Paasi, for example, argues that the border is a site which emerges and exists through boundary-producing practices (Paasi 2011: 12). Robert J. Kaiser, drawing on Judith Butler, argues that borders are always open to change as they are performatively enacted (Kaiser 2012: 523). Van Houtum describes borders as "a fabricated truth" and a "verb" (2012: 50,51).

Although I am not exploring borders in this chapter, these reworkings of how a line might be thought provide a rich context for my own sonic re-imagination of the lines of the flightpath. In this theoretical work what might once have been understood as a line is stretched, thickened, made porous, revealed as contingent, tactile and in some cases expanded, or indeed exploded, and supplanted by an imaginary drawn from the body. These borders bleed, shape, touch, expand, bridge, contract, appear and disappear. In this work the figure chosen to think the border: the wound, skin, bridge and so on, grants a particular inflection to the investigations of the border line,

emphasising different aspects of its influence, effects, presence, and vulnerability. Furthermore, this work demonstrates the ways in which these re-imaginations foreground processes, procedures and relations which might have been concealed under the seeming simplicity of the border line as typically rendered. Of course, flightpaths are not national borders, although they exist in relation to them, however the context provided by the diverse conceptual approaches to lines within Critical Border Studies has aided and contextualized my own attempts to think these trajectories sonically, and my efforts to explore the implications of this approach.

Encountering Heathrow's airspace

As this project centred on the aural infiltration of Heathrow's flightpaths, an important component of the work was researching where and how I could legally air-lift my speaker system into the sky. This task evolved into a complicated encounter with the regulatory environment pertaining to Heathrow which centred on another set of lines: those of Heathrow's airspace. Initially I planned for *Ascending Composition 1* to comprise a helium-balloon lifted speaker system floating above Waterman's gallery. As has been outlined, the locations of Waterman's under the landing route for Heathrow's planes, made it a seemingly ideal location from which to stage a sonic incursion of the flight path. However, this idea was very quickly ruled impossible by Waterman's who refused to attach anything whatsoever to their building, claiming they were not allowed due to their position along the flight path. Once this option was ruled out I was forced to undertake a detailed examination of precisely what can be done where in the skies above London. This investigation broadened my encounter with Heathrow from one focused primarily on flightpaths, to an encounter with some of the many boundary lines involved in the constitution of London's airspace.

Heathrow, the world's busiest two runway airport, is protected and enabled by three different sets of airspace restrictions (Heathrow 2016). First, there is the airport's Flight Restriction Zone (FRZ) which encloses the airport itself. Heathrow's FRZ is larger than any other UK airport, and has its own piece of legislation denoting it.[32] The FRZ involves the use of both vertical and horizontal lines to establish restricted zones, and takes the form of a vertical cylinder of air, the circumference of which extends two nautical miles from the airport centre in all directions, as well as additional runway protections which extend from the earth's surface to 2000 feet. The restrictions protecting

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32 http://www.legislation.gov.uk/uksi/2016/765/part/5/chapter/4#commentary-key-374ec2bfc77d1b8509ac728be6168736

the runways extend five kilometres from each end of the runway, and 750 metres either side of each runway's centreline. In this zone almost all airspace activities not associated with the airport, including kite flying and the use of tethered balloons, are prohibited unless permission is obtained from Heathrow air traffic control or the Civil Aviation Authority.

There are two further airspace restrictions in place for Heathrow which also involve the drawing of vertical and horizontal lines in the air. These involve a vast swathe of airspace above London, referred to as the London Control Zone, or London CTR, which is all classified as Class D restricted airspace. This airspace is comprised of an Inner and Outer zone as detailed in Diagram 3. The inner zone of the London CTR which extends far beyond Heathrow's FRZ, stretches roughly from Windsor in the west to Barnes in the east, and includes the area from the surface to 2500 feet. Any aircraft wanting to enter this zone, which includes Waterman's gallery, can only do so by obtaining prior permission from the Civil Aviation Authority (Beauchamp 2014). The outer zone, which encompasses the area from White Waltham to Mitcham, also extends to 2,500 feet. This zone requires Air Traffic Control clearance to enter (Beauchamp 2014).
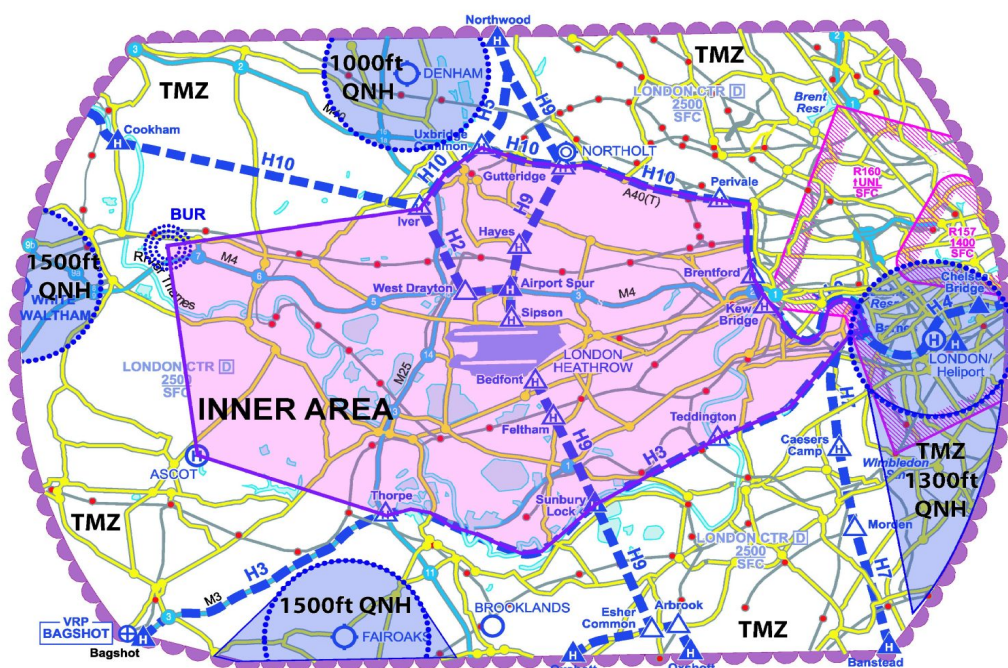
Diagram 3. The Inner and Outer areas of the London CTR. Source: NATS. https://nats.aero/ blog/2014/07/56-days-london-ctr-reclassification/

My attempt to use sound to 'reach' the flightpaths of Heathrow's planes thus produced this much broader encounter with Heathrow and its infrastructures. In doing so, I came to consider the ways in

which the airspace actually forms an integral component of the doing of the flightpaths, as well as Heathrow more generally. The airspace boundary lines set the stage, so to speak, for the performance of the lines of the flightpaths, and in so doing underpin Heathrow's status and performance. Despite having just two runways, a limitation the Heathrow has been desperate to overcome, the airport lands approximately 650 planes per day[33], with the same number departing. In 2017, before air travel was impacted by the pandemic, Heathrow registered 475,915 aircraft movements (ranking 12th globally)[34] and a little over 78 million passengers (ranking 7th globally).[35] To give a sense of the scale of this achievement, given its two runways, Heathrow placed just below Chicago's O'Hare airport in relation to passenger numbers, an airport with eight runways, and just below Paris's Charles De Gaulle airport, which has four runways, in terms of aircraft movement. Although its ranking fell dramatically during the pandemic, Heathrow returned to the top 10 airports on its 2022 passengers volumes, coming in at 8th.[36] To achieve these numbers the airport must use its runways as efficiently as possible, and Heathrow certainly does, operating year round at 99% of capacity.[37]

In addition to the airspace restrictions it benefits from, the airport also runs four holding stacks which are denoted by the red circular and oblong shaped formations in Diagram 1. The red lines forming these oblong formations describe the path traced by planes circling while they wait for landing clearance. These stacks and the London CTR are managed by the public/private corporation National Air Traffic Services (NATS) to provide a constant stream of planes into land at the airport. Although depicted in Diagram 1 in two dimensions, these stacks are in fact towering multilayered holding bays involving up to nine planes with a vertical separation of 1000 ft circling from 8,000 to 15,000ft. The stacks fall outside the CTR, adding to the airspace Heathrow dominates. It is, in part, the existence and management of these stacks combined with the restrictions in place across the London CTR which enables the airport to land one plane every 45 seconds[38] during peak operating

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33 https://www.heathrow.com/latest-news/heathrow-arrivals-whats-involved-with-landing-an-aircraft-at-the-uks-busiest-airport

34 Airports Council International 2017 '2017-aircraft-movements-annual-traffic-data' Available at: https://aci.aero/data-centre/annual-traffic-data/aircraft-movements/2017-aircraft-movements-annual-traffic-data/ (Accessed January 10 2019).

35 Airports Council International 2017 '2017-passenger-summary-annual-traffic-data' Available at https://aci.aero/data-centre/annual-traffic-data/passengers/2017-passenger-summary-annual-traffic-data/ (Accessed January 10 2019)

36 See: https://aci.aero/2023/07/19/aci-world-confirms-top-20-busiest-airports-worldwide/

37 See: https://nats.aero/blog/2014/02/explaining-time-based-separation-heathrow/

38 Heathrow has made this claim many times, including here: https://mediacentre.heathrow.com/pressrelease/detail/3949#:~:text=Heathrow's%20two%20runways%20are%20among,by%20airlines%20running%20larger%20jets.

times, and underpins its status as one of the world's leading airports, despite having just two runways.

The London CTR (detailed in Diagram 3) is a transponder mandatory zone which means each aircraft must be able to receive and respond to radioed instructions from NATS. For Heathrow's planes these instructions originate from NATS' Swanwick control centre, which together with NATS second centre in Preswick is responsible for managing all UK airspace. The Swanwick centre located on the southern coast of England, more than 100 kilometres from Heathrow, deals with all air traffic for England and Wales, and houses both civilian and military air traffic controllers who direct planes into and out of the CTR and monitor the airspace for incursions and irregularities. Just as it is forbidden to enter the CTR without permission, it is forbidden to eavesdrop on the channel used by Air Traffic Control (ATC) officers to choreograph the movements of planes into and out of the CTR. This radio channel, like the airspace itself, is legally restricted. In the UK listening to the radio bands set aside for ATC is prohibited. But while NATS activities might be rendered inaudible to the public by the legal system, the traces of their work can be heard in the particular propagation and rhythms of aircraft noise above London.

Before planes arrive above Waterman's gallery, for example, the instructions and approvals necessary for their arrival are first spoken from Swanwick, before arriving in the ear of a pilot circling in one of Heathrow's many stacks. In this cloud of dispersed ATC chatter, if we were permitted to listen to it, we find some of the 'doing' which constitutes and maintains the boundaries and dimensions of the airspace. Indeed it might be argued the airspace's dimensions arise from these processes of monitoring and instruction, To return to Carpenter and McLuhan's conception of acoustic space, outlined in chapter 1, ATC's chatter might usefully be understood as involved in a "dynamic always in flux, creating its own dimensions moment by moment" (Carpenter and McLuhan in LaBelle 2010: xxii). Without ATC's monitoring and instructions the airspace, invisible and silent, its borders both unmarked and unpoliced, ceases to exist in any immediate way. As such both the lines of the flightpaths, and the dimensions and boundaries of the airspace, can be positioned as emerging from relations both distant and proximal. In the relational arc from a spoken instruction in Swanwick to the ear of a pilot circling many miles away, and the subsequent effects of this communication in the movement of aircraft and the propagation of airplane noise, sound generates ways of thinking how these trajectories are constituted via dispersed relations, as well as the diffuse effects of these relations.

76

As Peter Adey reminds us, airports are entangled with locations, processes and operations which are dispersed in every dimension, from air traffic control, to border regimes, and broader national and international relations (2010: 80). The constitution of Heathrow's airspace is a highly consequential example of the ways in which these dispersed relations come together to produce a particular type of space, and police its borders. The production and management of this airspace has obvious aural effects, extending the parts of London exposed to plane noise, and producing the volumes, rhythms and durations of noise associated with such an intensive and expansive landing regime. It also has effects which extend beyond the aural. The management of the airspace, for example, has helped Heathrow offset its limited space on the ground, and in the process produced and maintained its status as one of the world's major airports. Interference as a sonic figure has been used in this thesis to think dynamics of both synergistic and antagonistic interactions, where the processes of interaction itself produce amplifications, quietening or even silence. In the case of Heathrow's airspace this figure might be deployed to think the relations I have sketched between the size and management of Heathrow's airspace, the performance of the airport, and the aural presence of its flightpaths as interactional synergies. In this case these relations can readily be understood as producing a literal amplification in the form of plane noise above London, but more broadly the dynamics described by Interference find relevance here as a way of conceptualising how the power and performance of Heathrow is amplified via sets of synergistic relations.

Thinking lines sonically

Ascending Composition 1 began with the lines of Heathrow's flightpaths, and their propagating noise. As it developed within its specific context it evolved into a project which explored how an aural approach to these trajectories changed their dimensions, and conceptions of the encounters these routes might generate or influence. Attempting to infiltrate these flightpaths aurally lead me to an encounter with another set of lines, those of the airspace, which I have again explored sonically, by focusing on the aural communications which produce the airspace. In doing so I have emphasised how the 'doing' of these communication is productive of the dimensions and boundaries of the airspace, and explored the relations between this emergent space and the performance of Heathrow Airport more generally. Using sound as an approach to these two types of silent and sounding lines lead me to speculate as to how sound might generate new ways of thinking the constitution, doing and infleunce of lines more generally.[39] In closing this section I use the sonic

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39 It should be noted that Ingold also explores the relationship between lines and sound. In *The Life of Lines* he even asks what a line of sound might be, arguing that sound is, like colour, a phenomenon of atmosphere, which 'breathes

figures I developed in chapter 1 to generate a framework where sonic dynamics are used to re-think the generative doing and influence of acts of line making, and trajectories of movement.

1.   A sonic frame troubles the clear edges of lines. The sonic figure of Propagation can be drawn on to emphasise the ways in which lines might inflect their surroundings, diffusing into their contexts in ways which are dispersed, and flow beyond the location of the line itself.

2.   The sonic figure of Reverberation can be used to emphasise how lines might continue to excerpt effects after their dissolution. A flightpath literally reverberates in its interactions with surfaces, infrastructures and architectures, but its effects in sleep patterns and communication rhythms, as well as overall infrastructural configuration, continues, or may continue, after this sounding ceases.

3.   Sound too might be drawn upon to conceptualise the ways in which lines can be emergent entities constituted from dispersed activities and relations. In this chapter I have described the relationship between the transmission of ATC chatter, the constitution of the airspace, and policing of its boundaries. In this example an obscured layer of sounding, the legally protected ATC radio communication, produces both an emergent boundary line, and the specific movement of planes.

4.   Sound might also offer ways of conceiving of lines as dense and layered, containing within themselves traces of their constitutive relations. Here again we can draw on the example of ACT chatter, where the specific movement of planes, and dispersal of plane noise, is produced via another layer of sounding in ATC communication.

Turning down the volume: the impact of Heathrow's airspace restrictions

I initially envisaged that *Ascending Composition 1* would take the form of balloon-raised speakers capable of very loud volumes, which blasted into the airspace as the planes passed overhead. However, this ambitious plan was derailed by both the extensive airspace restrictions just detailed, and a further legal restrictions relating to the use of kites and tethered balloons in the CTR and

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life into the line' (2015: 111). But although these ideas are evocative this exploration is focused on the relationship between written score, recital and instrument. It is not a discussion which is concerned, in the way I am here, with the shades of relationality sound might enable us to conceptualise in relation to lines.

beyond. The use of both kites and tethered balloons is addressed by chapter 4 of the Air Navigation Order 2016 which classifies them as 'relevant aircraft'.[40] 'Relevant aircraft' (which are defined as weighing less than two kilograms) are restricted from flying above 60 metres anywhere in the UK without permission from the Civil Aviation Authority. Furthermore, a tethered balloon cannot be flown within 60 metres of 'any vessel, vehicle or structure' without permission, and cannot be left unattended unless fitted with an automatic deflation device.[41] And finally another piece of legislation, the Metropolitan Police act of 1849[42] prohibits kite flying in thoroughfares where it causes 'annoyance'. These laws severely curtailed where it was feasible to raise the systems, while the weight restrictions on kites in the Air Navigation order, and the possible amplification implications of the annoyance provision in the Metropolitan Police act of 1849, put an end to my quest to deploy very loud speakers. Even setting aside the annoyance provision, powerful speakers require powerful amps and batteries and together these components become heavy very quickly. Consequently, the project became about achieving a balance between keeping the devices as light as possible so they could be legally raised in a relevant location and ensuring they possessed sufficient amplification capacity to still be heard.

Weight concerns influenced every aspect of the design and construction of these devices, from how power would be supplied, what amplifiers would be used, what digital music players, where all these components would be housed, and how the components would be attached to each other. Because of these weight concerns I decided to use long, very brightly coloured kite tails to house my systems, stitching my components into them using thread and ribbons. In the end each tail weighed about 330 grams, and required 10-15 very large balloons to get off the ground. Photo 2 and 3 show some details of the completed systems, and the balloons required to lift them. There were three systems in total, each comprised a long kite tail into which the speakers, amp, digital music players, and power supply were sewn and tied using ribbons.

For *Ascending Composition 1,* I used the same system of playback I developed for *Under Construction* with each digital player set to shuffle between silent clips, field recordings and long form drones built from simple sine tones. I decided I needed a minimum of three to achieve the mixing and layering I wanted in the soundscape, hence I constructed three separate kite-tail sound

40   https://www.legislation.gov.uk/uksi/2016/765/part/5/chapter/4/made
41   https://www.legislation.gov.uk/uksi/2016/765/part/5/chapter/4/made
42   https://www.legislation.gov.uk/ukpga/Vict/2-3/47/section/54#:~:text=Every%20person%20who%20shall
            %20fly,common%20danger%20of%20the%20passengers

systems. This set up meant that, as for *Under Construction,* the performed soundscape was never identical, but shuffled through new combinations and layers of sound and silence each time it played. A representative sample of the resulting soundscape is here. An excerpt of this soundscape was broadcast on the BBC Radio 3 show *Late Junction* under the title 'Don't you think you should find out'.[43]

Photo 2. *Ascending Composition 1 (For Planes) Installation detail. Credit: Phil Harris.*

By far the most dramatic and unplanned aspect of this work was its quietness. The weight limitations imposed on the systems very significantly impacted their overall volume. The light weight speakers, amplifiers and power supply I needed to use in order to achieve legal lift-off were only able to output very modest volumes, far below the levels I had originally hoped for. Instead of a large and weighty sound system capable of blasting sound into the restricted airspace, the loudest aspect of my devices in the end was their colour scheme. Instead of a booming statement, they rather performed as an almost whispered ensemble. Just as I have sketched a series of relationships which enable and produce Heathrow's loud and propagating aural presence, the low volumes of my own systems can also be positioned as relationally constituted. My encounter with the range and scope of legal protections in place for Heathrow and its airspace turned the volume down on these

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43   BBC Late Junction: https://www.bbc.co.uk/programmes/m0009lm1

devices. Using the sonic figure of Interference I earlier discussed the synergistic interactions involved in Heathrow's airspace as an example of constructive interference. Here is an example of the opposite type of interaction; the dynamics described by destructive interference. My attempt to aurally contest the predominance of aircraft noise was inhibited and quietened when I confronted the legal restrictions in place for kites, as well as Heathrow's airspace. These restrictions worked to curtail where these devices and their sounds could go, not only physically in the sky, but in their aural propagation as well. The dynamics of this interaction, as in destructive Interference, produced a quietening of these systems' capacity to sound.

Photo 3. *Lifting day shot with vapour trails, Ruislip Lido, London Credit: Suzi Corker*

Attempting a sonic incursion

The attempt to raise the balloon sound systems in order for them to perform their soundscape along the flight path was the major component of the final work, and photos of it were exhibited in the *Air*

Matters exhibition at Waterman's alongside the balloon systems themselves. As such the remaining discussion of this work will focus on this day.

After much investigation and discussion, *Air Matters* curator Nick Ferguson and I decided to attempt to raise the systems in a vacant allotment near Ruislip Lido. This site was chosen as it was at the very edge of London's CTR, in the vicinity of Heathrow's Bovingdon stack. Given the numbers of legal restrictions we had decided to attempt the raising in as quiet and unobtrusive location as possible, while still within the CTR, in order to minimise the possibility we would be prevented from doing so. The complexity of restrictions within inner London brought with it the possibility we could inadvertently break the law, which lead us to choose as simple a site as possible. Ruislip had clearly denoted restricted areas relating to a small local airport, but no other readily identifiable extra hazards or restricted zones. The day of the raising was September 18, 2019. We were quite lucky, as Heathrow had adopted its Easterly operations configuration which meant that planes exiting the Bovingdon stack entered the CTR quite near Ruislip, passing basically overhead our location en route to Heathrow. Three people took part in the raising: Air Matters curator Nick Ferguson, my partner Tanya Serisier and myself. Suzi Corker, a photographer, documented the exercise. Photo 4 and 5 document the lifting exercise.

Notes from lift day:
I left my home with two rolling travel cases: one full of ribbons and balloons, and another containing three kite tail sound systems. The helium was transported in 10-15 tanks, which took up a vast amount of room in the car. The drive to the location took more than two hours, and after circling around indecisively trying to choose exactly where to raise the kites, we eventually parked near a scruffy piece of green space next to Ruislip Lido. No-one appeared to be using this area, and it was quite out of the way, tucked behind the Lido's car park, which was near empty. From this point the day involved a constant struggle to fill and tie the giant balloon necks, affixing the balloons to the kites before they took to the skies, and then grappling with the wind. In the end we double tethered the kite tails to ensure they did not somehow escape into the atmosphere. So the raising involved the constant monitoring of these tethers, which became tangled with each other, foliage and branches, and trying to prevent the devices blowing into trees. I actually had only the vaguest conception of how many balloons it would take to achieve lift, so as the devices slowly edged off the ground with each attached balloon it felt like a small miracle. Ruislip is located quite near a small airport, and although we were outside of its FRZ several curious helicopters circled nearby at various points, filling us with anxiety that the police were about to land and put a stop to the whole thing. The exercise was stressful, exhilarating and faintly ridiculous. Four people, a huge pile of helium tanks, and these colourful indecipherable devices attached to balloons. Once raised the tails were susceptible to the slightest wind, which pushed them earthwards. Several of the smaller balloons deflated dramatically, while others burst for reasons difficult to discern. Remarkably just as we got the first tail off the ground a lot of planes passed overhead on the way to

Heathrow allowing us to attempt our first sonic infiltration. The systems were only hearable in snatches from the ground, I noted at one point a busker singing Cheryl Crow made its way down to me! Passers-by seemed remarkably relaxed about the exercise, I think the kite configuration, combined with the brightness of balloons and their general celebratory connotations made the whole thing appear a particularly non-threatening endeavour. At one point I decided we resembled a child's birthday picnic where just four some-what anxious adults showed up. Sept 18, 2019.

Photo 4. *Lift day documentation, Ruislip Lido, London. Credit: Suzi Corker.*

Photo 5. *Lift day documentation with plane and vapour trail intersection, Ruislip Lido, London. Credit: Suzi Corker.*

A curtailed incursion

Given their quietness, the most significant feature of our attempt to raise the balloon systems and immerse the planes above in their broadcast soundscape was its limitations and failures. When they were in the air I could only hear them sporadically. The composition they performed was often masked by the white noise of wind, nearby traffic, and of course passing planes. During the moments the broadcasts from the kite tail systems, with their recordings of trains arriving, buskers singing, traffic and conversation, did filter down to me on the ground I imagined these sounds also making their way upwards, perhaps even nearing the planes ever so quietly. This project had sought to make louder what is often quiet, to occupy with everyday terrestrial sounds the typically unreachable spaces of the skies; to envelop planes in sound in ways commensurate with the extent

to which so many Londoners' lives are immersed in plane noise, and in those terms it was a failure.

However, as the work of Benjamin Tausig has emphasised, there is value in tracing the dynamics of sounds which are constrained and falter. He writes: "Sound, like political movements, often irrupts with the hope of an explicit transformation before diffusing and distorting as it touches and is touched by the world" (2019: 4). In explicating this argument Tausig contends that sound is always running into "things", noting that this term "things" might be understood as a physical barrier, a moral sense of what sounds belong where, or even the differing auditory capacities of listeners (2019: 4-5). In my case the capacity of my balloon systems to sound "ran into" the legal infrastructures pertaining to Heathrow Airport, and this encounter profoundly changed the type of aural incursion I was able to stage in Ruislip. In this encounter my hoped for acts of sounding were curtailed by a legally and politically constituted constraint.

In this quietness of the balloon systems, however, there resides some important dynamics. If, as Peterson contends, airport noise itself is 'a condensation of forces and processes already in play' (Peterson 2021: 6) so too might the encounter between the quietness of my balloon systems and the noise of the circling planes above Ruislip be examined for what it makes audible about the power disparities at play in relation to Heathrow. As Diagrams 9 and 10 perhaps convey, in comparison to the flight paths traced by Heathrow's jets coming in to land, or the towering expanse of the nearby Bovingdon stack, my balloon systems aurally and physically occupied a tiny section of the skies. The lack of volume of the kite tail systems might most powerfully be considered as containing in their quietude a way of thinking the broader power differentials between residents living in the vicinity of London's flightpaths, and Heathrow itself. At the very least, the low volumes of my kite tail systems, and their curtailed journey into the sky, conveys some of the asymmetries at play in the production of London's soundscape. As discussed in chapter 1, thinking with the sonic relation of volume at its most basic asks us to consider who, or what, is permitted or enabled to be loud in a given context, or to demand silence. In this exercise these differences are profoundly illustrated. As the balloon systems ascended I imagined the dimensions of their modestly propagating aural trajectories, and the ways the edges of these might co-mingle with the far larger clouds of noise produced by the planes overhead. In the fuzzy edges of this aural encounter we might locate in the different volumes of the planes and the balloon systems, and the aural dynamics at play in these interactions a way of thinking Peterson's 'forces already in play'. My balloon sound systems both

aurally, and, it might be said politically, did not possess the volume required to be heard in this context.

Trajectories of field recording

This chapter has focused on how my field recording practice generated new conceptions of the dimensions and influence of Heathrow's flightpaths. In particular, I have discussed how these sounding trajectories propagated beyond the edges of the lines of these routes, and in doing so influenced and inflected their contexts in far reaching ways. The ways in which sound changed the shape and characteristics of the flightpaths lead me to re-approach Massey's version of relational space in order to emphasise the particular version of space these journeys produced along their routes. This approach focused on the inflection this combination of movement and sound imparts along its course, and I used the sonic figures of Propagation and Reverberation to conceptualise the dynamics of this influence. Propagation was here deployed to describe the diffuse and dispersed impact of the sounding associated with the flightpaths, while Reverberation provided ways of extending notions of the different temporalities within which we might listen for the effects of this sounding.

Over the weeks during which I made my way from Brixton, where I live, to Waterman's Gallery, loosely following the flightpaths of Heathrow's landing planes, I also moved through locations. Drawing on my recording experiences with the planes, I began to consider the ways in which my own activities might be considered reverberative, or propagating. I certainly was not as noisy as a plane, but as I encountered others as a field recordist my behaviours, equipment, soundings and silences too were impactful. Just as the plane noise intermingled, interrupted and produced ongoing moments on the ground, so did I, of course far less dramatically, with my recorder. If I was thinking about the ways in which aircraft noise acted to constitute space, what about the ways field recording too was constitutive? How might my acts of recording as I made my way to Waterman's inflect the spaces I passed through? How might I draw on the sonic figures I have devised to examine the trajectories of my own practice?

In chapter 1, I thought with the sonic figure of Not-Sounding as a way of examining the silences of my own practice. In doing so I sought to complicate the silence of the field recordist by emphasising the inaudible layers of doing which produce particular versions of quietness within recordings, be these the quietness of the recordist's body, or, perhaps, the dampening of some other

type of sound deemed undesirable within this particular context. But what about the broader encounters and relations the activity of field recording might produce or curtail, make audible or obscure? When I record in public space, I act differently to when I am not recording. I move differently, with a consciousness of the sounds of my clothing, breath, and footfalls. As I concentrate on listening, I am a quieter and less interactive commuter or pedestrian to how I usually am. I also provoke different responses in the people I encounter. As I noted in chapter 1 some people change what they are doing, veer around me, become quieter, others come up to me. I visit different locations too as a recordist. I go to places I would not normally, veering off established pathways, climbing pieces of infrastructure, spending longer or shorter in locations than I might otherwise. I startle animals in ways which prompt them to fall quiet, sound in alarm, run or fly away. I wonder about all these tiny changes, acts of noticing, quietening, sounding and movement my recording activities prompt. With my recorder I, like the planes overhead, prompt both subtle and obvious effects along the routes I walk while recording, and it is this topic which forms the basis of chapter 3.

Conclusion

This chapter has analysed the research, construction and staging of my work *Ascending Composition 1,* and the largely unsuccessful attempt to sonically infiltrate the flightpaths of Heathrow airport it involved. In doing so I have discussed how my field recording activities drove an encounter with these flightpaths which radically changed my conceptions of their dimensions and effects. Exploring the flightpath in reference to Massey's concept of the trajectory, I developed an explicitly sonic reconfiguration of this term, and discussed the implications of this reconfiguration for notions of where, how and when we might listen for relational encounters and effects. I have turned to the sonic figure of Propagation to emphasise how relational effects can be diffuse and dispersed and Reverberation to extend temporal conceptions of when the effects of encounters might occur. Building on this, I have sought to apply this sonic approach to thinking the linear form of the trajectory to the lines of Heathrow's airspace, and speculated as to its relevance for concepualising the impact and influence of the trajectories of my own field recording practice.

The sonic approach to lines developed in this chapter offers a range of new approaches to thinking lines. These approaches emphasise the possibility of lines as diffuse entities, which inflect their surroundings in characteristic ways. Or conversely, they can be drawn on to conceptualise lines as emergent entities constituted in dispersed activities and relations. I have drawn on sonic dynamics

to discuss lines as layered entities, in ways which allow for the possibility that some lines might be generated out of multiple audible and inaudibile layers of doing. And finally I have discussed the reverberation of lines and acts of line making, turning to sound for ways of conceptualising how lines which no longer exist might exert ongoing effects.

Finally, I have turned to sound to examine both forms of community resistance to Heathrow Airport, and plane noise in particular, and as a way of approaching the specific failures of *Ascending Composition 1.* In outlining the silent and sounding forms of protest against Heathrow I have turned to the sonic figures of Volume, Not-Sounding and Interference for ways of conceptualising the intentions, impacts and limitations of these efforts to contest and curtail Heathrow's operations. As such, I have positioned these forms of protest as a consequential layer of doing within Peterson's characterisation of airport noise as "a condensation of forces and processes already in play" (2021: 6).

In tracing the failures of *Ascending Composition 1,* I have focused on how this work was quietened in its encounter with the legal protections surrounding Heathrow's airspace and operations. In doing so, I have used the sonic figure of Interference in tandem with Tausig's insights regarding sound's usefulness in examining processes of limitation, curtailment and failure to examine the dynamics which produced this outcome. A destructive form of interference describes an interactional dynamic which produces a quietening or even silence where there was sound. I have argued that this dynamic aptly encapsulates how my plans for this work as a booming incursion underpinned by powerful sound systems were transformed in their encounter with Heathrow's legal protections, and the quietening of these systems which resulted.

This chapter began with the trajectories of flightpaths, and ended with those of my field recording practice. As I traced the noisy trajectories of Heathrow's planes, I began to fold the sonic approach to trajectories I had been developing back into the frame of my own practice. Just as the lines of the flightpaths above me propagated and reverberated, so too did the trajectory of my own recording practice. This period of artistic research left me with a greatly enhanced conception of the ways the sounding, silence, movement and activities of my recording practice might inflect or even produce aspects of my recording context in important and characteristic ways. In chapter 3 I extend my sonic approach to thinking trajectories by focusing on my own practice.

Chapter 3

Trajectories of practice: Recomposing the transect via field recording

A train trip from London's Euston Station to Coventry. From the station I walk through part of the town passing shops, what I think is a conference centre, under and over freeways, around the back of an estate. At first I can't see the river at all, but then I spot it, little more than 90 centimetres wide, so still it is silent. Walking down the weedy embankment I look along the course of river, and spot the grill where it moves underground. This is the River Sherbourne, Coventry's tiny culverted river. I turn around and begin my day of walking which, I hope will take me to the river's source.

–   *Notes from sonic transect work, Coventry, 2021.*

In 2020 I was commissioned to make a work for the sonic component of the Coventry Biennial, which was to be held in 2021 under the theme *Listening to the Anthropocene*. For this work I focused on the tiny culverted River Sherbourne in Coventry, using a protocol I had worked with previously, called a transect, to structure my recording locations along the course of the river. Using this transect protocol I produced the work *Hawkes End ---> River Sowe Junction: A sonic transect of the (sometimes absent) River Sherbourne* (2021), a 53 minute long composition generated from my attempts to walk and record along this tiny river's course. In chapter 2, I developed a sonic approach to the flightpaths of Heathrow which emphasised these trajectories as propagating, diffuse and reverberant. In this chapter I extend this sonic approach to trajectories by examining the encounters generated, interrupted and inflected by my activities along the River Sherbourne. Thus, this chapter continues my investigations of field recording as a relational practice, and extends my attempts to conceptualise the influence acts of field recording exert in the contexts in which they unfold.

In focusing on a case study which brings field recording to the transect protocol this chapter also traces the effects of this encounter. A transect is a devised path followed for the purposes of survey and data collection, which is used within geography and the biological sciences to, for example, chart spatial changes across particular areas. It is a protocol which is conventionally positioned as a detached and neutral tool used to gather data, which can be used to generate new knowledges about a particular context. In examining how field recording changes this tool, I build on chapter 2's attempts to think lines sonically to examine how field recording practice recasts the dimensions and boundaries of the line of the transect, and in doing so transforms the types of knowledges it produces. As such, I contend that the transect emerges within field recording practice as a propagating and porous relational trajectory of encounter.

89

This chapter thus puts forwards new ways of thinking and using the transect, and provides a thorough analysis of this protocol's reconstitution in creative practice. I have been the first person to use a transect within a creative field recording practice, and this chapter continues my efforts to explore the constellations of meanings and tensions the relation between field recording and the transect line might generate. In developing this analysis, I begin by introducing the transect and the ways it is described and positioned within scientific literature. I then discuss sonic approaches to the transect, and outline my previous practice in this field, before examining the research and activities I undertook within Coventry to produce *Hawkes End ---> River Sowe Junction*.

In discussing *Hawkes End ---> River Sowe Junction,* I focus on the particular instances of sounding and quietening the protocol generated within its context and speculate on how these instances might be drawn on to conceptualise the particular influence of field recording within public space more generally. I then examine how field recording changes the line of the transect, and discuss the significance of this in reference to theoretical work within the field of Critical Cartography, which has produced a profound transformation in understandings of the the cartographic line. Focusing on the specific methods and mobilities at play within my transect protocol, I then compare and contrast the work I made in Coventry and Annea Lockwood's important composition*: A Sound Map of the Hudson River,* which also uses a staged recording practice to evoke the course of a river. The final part of this chapter discusses the field recording transect in reference to Tim Ingold's conception of point-to-point and continuous lines, and the counterposed experiences and knowledges he associates with these lines. I focus here on the special status Ingold grants to walking in his analysis, and trace how his conception of walking as generative of experiences of connection and belonging is replicated within practices of soundwalking. I conclude by exploring how the field recording transect might disrupt and trouble dominant constructions of soundwalking, as well as practices of surveying.

What is a transect? Lines and ways of knowing

The term transect is used to describe a protocol of data collection along a pre-determined route. This protocol is used widely within geography and the biological sciences to chart spatial changes along a particular trajectory, as well as to register encounters with specific target species or phenomenon. Transects can be done on foot, by air, or by boat. The process involved entails devising a route, and recording phenomenon, such as species encounters, or habitat types along it. Kimberly E. Medly, Mark J. McDonnell and Steward T. A. Pickett, for example, use transects to

trace changes in landscape and human activities from New York City to to northwestern Connecticut in their article 'Forest-Landscape Structure along an Urban-To-Rural Gradient' (1994). Xi Jun Yu and Cho Nam Ng use a transect as the basis for a detailed examination of urban sprawl in Guangzhou, China (2007) in their article 'Spatial and temporal dynamics of urban sprawl along two urban–rural transects: A case study of Guangzhou, China' published in *Landscape and Urban Planning*. A transect is also used by Mark J. McDonnell, S.T.A. Pickett, P. Groffman, P. Bohlen, R.V. Pouyat, W.C. Zipperer, R.W. Parmellee, M.M. Carreiro, and K. Medley (1997) in their article 'Ecosystem processes along an urban-to-rural gradient' which examines the impact of urban development on forest ecosystems'. These examples, of course, represent just a tiny fraction of the sort of transect studies which have been undertaken by geographers, scientists and others. They serve to introduce some relevant contexts in which the protocol has been deployed, and provide a sense of the types of knowledges associated with the tool.

In the article 'Guidelines for Line Transect Sampling of Biological Populations' published in *The Journal of Wildlife Management* Anderson, Laake, Crain and Burnham offer several diagrams documenting the different shapes and forms the line of the transect can take. I have reproduced two of these in Diagram 1 to give an idea of the physical form of the transect (1979: 76). As can be seen the trajectories traced by transects can take the form of a line ruled or drawn across a particular terrain, or they can be straight or curved, or any other shape. Transects might be drawn in ways which arbitrarily carve across the landscape, or follow existing pathways or roads.
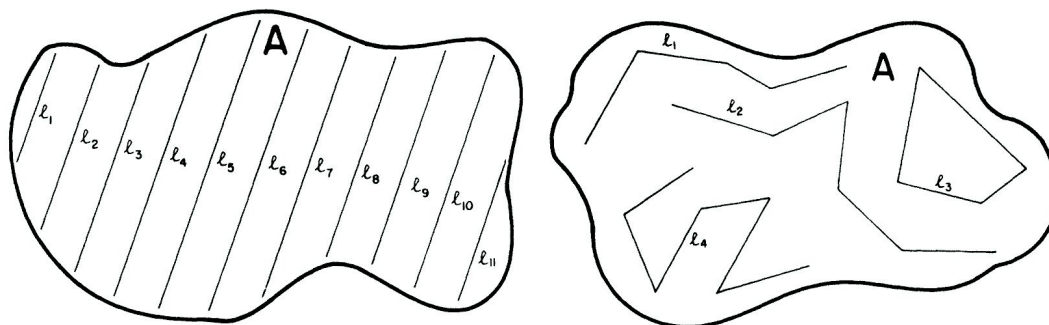
Diagram 1. *Examples of transect lines. Source: Anderson, Laake, Crain and Burnham 1979: 76.*

As defined in scientific literature, the transect involves a very simple set of procedures. In their book *Distance Sampling,* Len Thomas, Stephen T. Buckland, Kenneth P. Burnham, David R. Anderson, Jeffrey L. Laake, David L. Borchers and Samantha Strindberg describe the procedures involved in undertaking a transect is as follows: "The observer(s) perform a standardized survey

along a series of lines or points, searching for objects of interest..." (2002: 545). As a method of generating knowledge, the transect involves a number of assumptions. In their book *Distance Sampling: Estimating Abundance of Biological Populations* (1993) Stephen Buckland, David Anderson, Kenneth P. Burnham and Jeffrey L. Laake, identify these as assumptions as:

1. That objects can be detected with certainty.

2. That objects do not move.

3. That measurements are exact.

(1993: 30-35; see also Buckland, Rexstad, Laake, Strindberg, Hedley, Bishop, Marques and Burnham 2010: 6).

Typically the methods of data collection associated with the transect are counting, measuring or other forms of sampling or surveying. As such these protocols centre particular 'objective' ways of knowing. The data obtained via these practices might then be transformed via the use of equations or other procedures into broader knowledge sets. For example, total species counts, or instances of particular habitat mixes registered via the transect, are extrapolated from to estimate overall species numbers across a region, or habitat mixes within a particular territory (Buckland, Anderson, Burnham, and Laake 1993: 104). The transect can thus be understood as producing knowledges which extend far beyond the edges of the line itself. It might be conceptualised as offering a particular distillation, or slice, of its context, which can, if measured accurately, and used correctly, be transformed, by the use of equations or other procedures, into much broader knowledges. In this formulation the transect emerges as a line which 'knows', or offers a set of procedures for knowing, its particular context.

Sonic transects

Transects are typically visual surveys. However, they can also be acoustic ones. When it is used, acoustic transect sampling is most commonly deployed to estimate things like whale and bird populations, based on the frequency of recorded calls (see, for example: Norris, Dunleavy, Yack and Ferguson 2017 and Torres, Barreiros and de Araújo 2019). There is also a well established practice of using acoustic transects for estimating bat populations (Perks and Goodenough 2022). There are, however, very few examples of it being used to document and analyse broader soundscapes, rather than specific calls. Almo Farina in his book *Principals, Patterns, Methods and Applications* (2014) outlines using a sonic transect to examine the use of foreground and background sound as navigational landmarks by organisms within a rural landscape in northern Italy. Unusually this transect forms part of a broader sound map focused on examining the role the role sonic landmarks,

as opposed to visual cues, might play in fixing the home range of different animals (2014: 12). It is one of the few examples I could find of a transect being used to chart characteristics of a soundscape, rather than register specific animal calls.

I have been working with sonic transects in an artistic context since 2015, and was the first person to use this protocol in the context of a creative field recording practice. I began using transects as a way of structuring field recording locations, and examining sonic niches and flows. I came to this idea after beginning (but never completing) an undergraduate degree in biology, which introduced me to the tool. As I was already an active field recordist, I immediately began thinking about its potential within this context. In 2016 I made three sonic transects for the radio program *Framework⁴⁴,* and in 2017 I released a work called *From a wind turbine to vultures (and back),* which was generated from my use of a transect to structure my recording locations as I hiked up and down a very small mountain in Spain. This work involved both field recordings of the soundscape, and my active participation in it.

My active aural presence in this work was not my original intention, but rather prompted by the absolutely monotonous soundscape I encountered in this location. Consequently, I resolved to investigate what sounds I could make along this trajectory, rather than relying upon what I could record around me. Thus as I made my way up and down this mountain I vibrated fences and signs, dropped pebbles into a large hole, and recorded myself moving through the terrain. The sorts of knowledges generated by this transect centred more on what sounds I might be able to produce at different points up and down the mountain, rather than offering an experience of either the overall, or specific soundscape at any given point. It was my movement, my body, my gestures and, of course, my decisions about what and when to record which were productive of this document.

Hawkes End ----> River Sowe junction is the second major transect work I have made. In 'Walking Transects to Explore Soundscapes as Digital Humanities Research and Creative Practice', John Barber, citing my own work, discussed the sonic transect technique as both a resource for digital humanities research and a creative practice. He argues: "I contend that walking a transect and exploring a soundscape provides a focus on sound, listening and exploration that creates not only new phenomena to observe, research, interpret, and report, but more importantly, a relation with sound(s) and sense of place, which in turn, can help me understand the significance of human actions and activities in the recording site." (Barber 2020: 1). I would dispute the second part of

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44 This program can be accessed here: https://frameworkradio.net/tag/kate-carr/

Barber's argument here, I am not convinced any act of field recording inherently or automatically produces greater understandings of human activities, or a sense of 'place' which itself is a complex and contested term to begin with (see, for example: Massey 1994, Amin 2004, Malpas 2012). As

Lisbeth Lipari (2014), Kate Lacey (2013), Jennifer Lynn Stoever (2016) and David Harvey (2006), among others, remind us listening does not automatically produce understanding, or knowledge, but is relational and contextual. As such, the meanings we attach to particular sounds are entangled with identity, Stoever (2016), for example, explores how race influences what meanings we attach to what we hear; and of course other aspects of identity too influence how we understand and experience the sounds which reach our ears. Furthermore, within any given context listening can be influenced by a multitude of factors including mishearing, audibility and psychological state (Harvey 2006). As such, processes of listening might, or might not, generate a sense of place, or understandings of human activity depending of who is listening to what, and when and how this listening unfolds.

Barber's first formulation of the transect as creating new phenomena, however, comes much closer to my own use and analysis of this protocol. In discussing making *Hawkes End ---> River Sowe* in the following section I focus on the encounters the transect generated. In doing, so I explore the aural content of *Hawkes End ---> River Sowe* as co-constituted, and listen for the influence of field recording within this work.

Making the work

Hawkes End ---> River Sowe Junction was commissioned for *Listening to the Anthropocene*, part of the third Coventry Biennial which ran from October 2021 to January 2022. The curator of the show was artist and academic Michael Pigott. *Listening to the Anthropocene* was one sub-stream of the Biennial, which was titled *Hyper-Possible* and curated by Ryan Hughes. It included newly commissioned or existing works by Sarah Badr, Department of Energy, Lamin Fofana, AM Kanngieser, KMRU, Rie Nakajima, Ben Rivers, Simon Scott, Jana Winderen and myself, and was installed in the Coventry Cathedral. Each work was broadcast in the cathedral according to a pre-advertised schedule throughout the course of the exhibition.

This work began with my discovery that the River Sherbourne existed, and that it was, along part of its course, an underground, or culverted, river. For a few years I had been interested in undertaking a field recording project which focused on underground rivers. When I was approached to make a

work for the Coventry Biennial, particularly under the theme of "Listening to the Anthropocence", I immediately thought of this as a possible focus, and after learning Coventry had its own culverted river, I very quickly decided this would be the focus of my work. Having previously worked with the transect as a protocol, I was enthusiastic about using it in this context due to the varied locations the Sherbourne appeared to travel through, and as a way of conveying the river's absence from the soundscape when it was underground. Such a project also appealed to me because of the ways it would inevitably be read and understood in reference to Annea Lockwood's important field recording projects on the Hudson and Danube rivers. I felt there was something quite interesting about attempting to record a tiny river which was only sporadically present. As such, much of my initial research for this project centred on learning the route of the river, and deciding on a specific transect protocol.

The River Sherbourne is approximately 13 kilometres long, emerging in ponds and streams near Hawkes End, and eventually merging with the River Sowe. Over the course of its 13km route it passes through a very diverse range of locations, from farmlands, woodlands and parks, to industrial estates and schools. It passes underground through the town centre of Coventry, re-emerging near student accommodation and car yards on the other side of the city, then flowing alongside a major freeway, before it joins the River Sowe. I built a map of the route of the river using google maps in Diagram 2.

From studying the river's course, I was aware I would not simply be able to walk its route, as it passed through many different versions of private land: residential, commercial and educational. Consequently, the transect protocol I adopted was to record every 500 metres while I was walking the course of the river, and if I was forced off this route to record immediately at the point I was able to rejoin the river. In the city of Coventry where the river is underground, I needed to source a map of its route, which I did by joining several several Facebook environmental and community groups in Coventry. A member of Coventry Action for Neighbourhoods, Paul Maddocks, kindly sent me the map he had sourced from Coventry City Council of the river's course through the city which I used, and have reproduced, with permission, in Diagram 3. When the river was underground I recorded at a slightly increased frequency of every 300 metres in order to gather traces of the different city sounds in this compact area. I measured this distance somewhat loosely by using an approximate walking pace, consequently recording after walking around five to eight minutes, depending on how often I was stopping and starting.

My research on the River Sherbourne introduced me to the existing campaigns, regeneration efforts and activism in Coventry focused on restoring the river. Some of these community campaigns centred on improving access to the river, while others efforts focused on a more general celebration of the river, and calls for regeneration work to occur along its course. Since I completed the work a new festival centred on the river has taken place in June 2023, and new projects focused on restoring parts of the river to its historic course have been announced.[45]
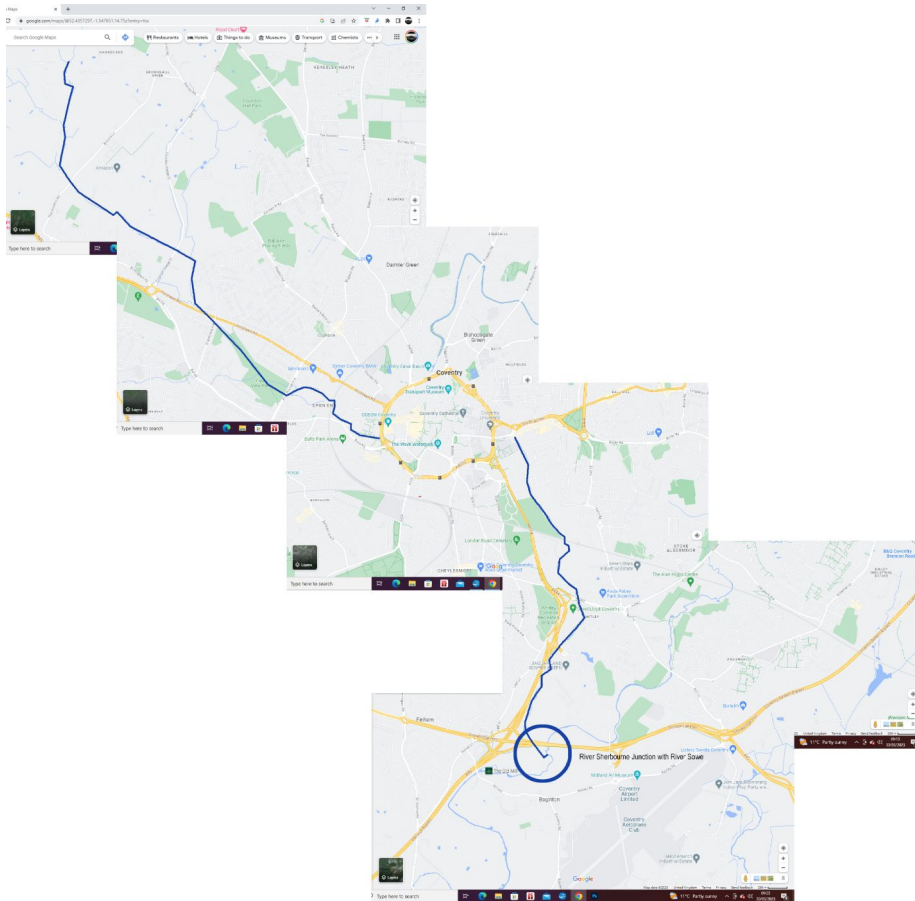
Diagram 2. Google maps collage I produced of the Sherbourne's course.

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45 https://www.bbc.co.uk/news/uk-england-coventry-warwickshire-66677102

Diagram 3. *Underground map of River Sherbourne through the city of Coventry Source: Coventry City Council.*

It took me four trips to Coventry to record along the entire route of the river. As expected, I found it impossible to walk the whole course of the river due to its inaccessibility as it flowed through private property. Photos 1 to 14 document some of the recording environments I encountered.

Photo 1. *Closest point to source of River Sherbourne. Credit: Kate Carr.*

Photo 2. *Transect recording site River Sherbourne. Credit: Kate Carr.*

Photo 3. *Grill where River Sherbourne moves underground. Credit: Kate Carr.*

Photo 4. *Transect recording site River Sherbourne. Credit: Kate Carr.*

Photo 5. *Transect recording site River Sherbourne. Credit: Kate Carr.*

Photo 6. *Transect recording site River Sherbourne. Credit: Kate Carr.*

Photo 7. *Transect recording site River Sherbourne. Credit: Kate Carr.*

Photo 8. *Transect recording site River Sherbourne (Railway bridge and recycling plant). Credit: Kate Carr.*

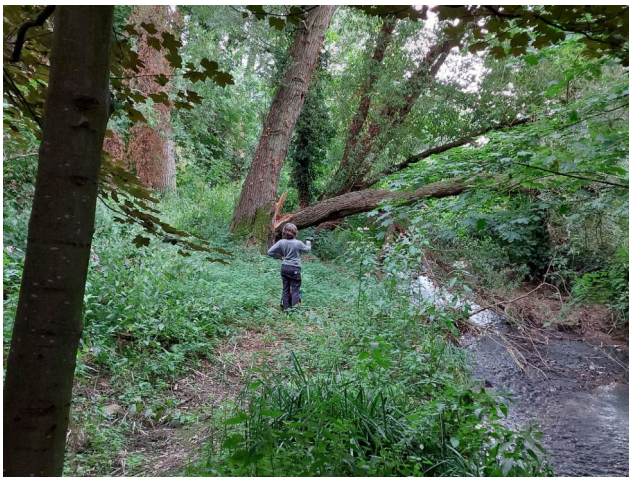**Photo 9.** *Transect recording site River Sherbourne. Credit: Kate Carr.*

Photo 10. *Transect recording site River Sherbourne. Credit: Kate Carr.*

Photo 11. *Transect recording site River Sherbourne. Credit: Kate Carr.*

Photo 12. *Transect recording site River Sherbourne. Credit: Kate Carr.*

Photo 13. *Transect recording site River Sherbourne. Credit: Tanya Serisier.*

Photo 14. *Transect recording site River Sherbourne. Junction with River Sowe. Credit: Tanya Serisier.*

As labeled, the final image Photo 14 is right before the junction with the River Sowe. Photo 3 is the grill which funnels the Sherbourne underground to flow underneath the city of Coventry, and Photo 1 is the closest point I could get to the source of the River Sherbourne at Hawkes End.

Field notes transect day 1.

Today I recorded from the grill taking the Sherbourne underground at the edge of the city of Coventry to the Tesco Express grocery store at Grayswood Avenue. For the most part I was able to walk along the riverbank, but was forced off it around Spon End where the river ran behind some shops. This section which I would guess at being around 4-5km long saw the river pass between residential estates, a school, an industrial zone, a retail outlet estate, and Lake View Park where it

was shunted behind a fence near the Tesco, and then underneath Grayswood Avenue. Sonically this route varied greatly from quiet residential sounds, to industrial welding, the clunks and bangs of delivery trucks loading, and the park containing a mix of birdsong but also markers of the nearness of residents and their activities. There was some quite loud hammering in one case! As for the Sherbourne itself, it varied from totally inaudible due to the very slow pace it was flowing, to lively burbling, and at the grill a rushing white noise. At the Tesco it was very difficult to hear due to the heavy traffic above the pipe outlet where the river emerged from under Grayswood Avenue.

Field notes transect day 2.

I reached the source of the Sherbourne today, finding it located inside a 'car recovery' business. Unexpectedly, I encountered a group of horse riders upon arriving in this location, which I recorded. The closest I could get to the source of the river was a pipe where it passes under the Washbrook Lane and the enters the car recovery property where the ponds which constitute the source of the Sherbourne are located. Today's recordings moved from Tesco to Hawkes End, and this route, compared to the previous one, was a lot more rural. From the Tesco it passed through woodlands, a lot of fields, some with horses, and also a large park where children were paddling in it. Not all of these green spaces were marked as formal parks on google maps, but seemed to be an important location for dog walkers and families which were somehow cohered and connected by the Sherbourne itself. As I recorded in one green space I inadvertently blocked the way of a dog walker. As I neared the source of the Sherbourne it suddenly morphed from its rather idyllic burbling river form into basically a concrete gutter, passing under driveways, and along back gardens in ways which were at times inaccessible to me. At one point I could hear it behind a hedge, but not see it. In another instance it appeared as a water feature out the front of a large and expensive manor, where several gardeners were pruning along its banks. Again, its sounds were extremely varied. It was not often completely masked by other sounds as these locations had much less traffic noise, but was at times either so sluggish and inactive, or so tiny it could not be heard.

Field notes transect day 3

Today I went from the grill where the River Sherbourne moves underground (where I began recording on day 1) through the city itself, using a map of the river's underground route given to me by Paul Maddocks of Coventry Action for Neighbourhoods. I finished recording at a very overgrown and isolated location along the river bank opposite the corporate office of Jaguar and Land Rover. (I could not see this office through all the overgrowth, so this marker was taken from Google Maps). Tracing the river's route through the city was quite difficult, and imprecise. I took in

the end I think three recordings in different locations along its route which I had marked out before as "bubble tea out front of West Orchard shopping centre", "Pool Meadow bus station", "Coventry University off Gosford St near roundabout". One recording was taken in a mall where hosing and a busker can be heard, while the bus station was just a wall of traffic noise. The river emerges above ground to exit the city alongside a development of student housing in an open drain, which is fenced and set below street level. It was quite covered over by plants, but I could at one point hear a duck quacking in there as I recorded. From here it passed behind some car repair type shops, and was inaccessible, but I found it again in a vacant allotment opposite residential flats. It then passed along Charterhouse Field, where some Travellers were living, and which bordered a school, before passing under a railway bridge. In this area there was more unkept woodland, with informal dirt trails, and no people. I was able to walk alongside the river along a dirt track next to a fence as it flowed under the main trainline into Coventry and behind a large and loud recycling facility. From here it was a matter of using these dirt tracks to trace the river's course, however many of these were quite overgrown, and in very isolated areas. I saw no other people on all of the recording sections utilising the dirt tracks through woodland. Several times the river passed underneath roads into cement tunnels, in deserted locations filled with weeds, and rubbish. There was quite a lot of graffiti on the concrete structures supporting the overhead roads. The final section of this took place where the Sherbourne flows alongside the A444 freeway. This part was almost completely overgrown in parts, and again totally deserted. With just a roaring freeway on one side and walking through completely isolated weedy woodlands, I felt I could not proceed safely without getting someone to come with me. Part of this feeling of a lack of safely was because I simply did not know this area, I didn't know if I would get lost, or the trail would simply end in a difficult way, but the other part relates to a consciousness of my particular vulnerability as a woman recording in extremely isolated locations. I felt fearful about running into someone in this location, given my inability to call for help or attract any attention at all should I need it. I decided to turn back, and this marked the end of this recording trip.

Sonically this section was really varied, hotted up cars, birdsong, school children playing, trains passing overhead near the recycling plant, which can also be heard fizzing and rustling away. The Sherbourne was mostly audible and quite fast flowing in this part, at one point passing rapidly down a sharply sloping section creating the white noise of falling water.

Field notes transect day 4.

My partner Tanya agreed to come with me on this final part of the trip both to take some photos, which had now been requested by the Biennial, and also because of my safety concerns. This was the most difficult and bizarre part of the recording trip, with brambles, stinging nettles and other weedy plants almost completely blocking a very faint path between the Sherbourne and the A444 freeway. The disjuncture between the river itself, which in this location appeared in one of its most picturesque forms, (see, for example: Photo 13) and the loud sounds of the freeway a few metres away was very marked. At one point the path was so impassable with brambles Tanya and I had to walk along the freeway before re-joining the course of the river at a huge roundabout where the A45 meets the A444. Here the Sherbourne flowed past a packaging company before passing once again underneath the freeway in a drain to join the River Sowe. I walked through the drain, and attempted to find the junction, even taking my shoes off to wade at one point. However after this I noticed a Danger No Entry sign demarcating what appeared to be a contaminated site near the junction. The final recording then marking the River Sherbourne's confluence with the River Sowe was taken underneath the freeways just prior to this junction (Photo 14). In the other recordings taken along this route the Sherbourne is quite quiet and difficult to hear amid the loud freeway sounds.

A transect from fragments

From these four trips, I composed *Hawkes End ---> River Sowe Junction: A sonic transect of the (sometimes absent) River Sherbourne.* To construct the transect I simply crossfaded between the different recording takes to make a continuous piece of audio. In each location I typically took only one, but at most two recordings, of between two and five minutes. In all but one location I recorded only with the onboard mics on my handheld device, the exception being at the grill as the Sherbourne moves underground, where in addition to recording the white noise of the rushing water, I used contact mics to record the friction of the water with the grills, and myself banged these metal bars as a form of fanfare marking its move underground.[46] I typically stopped at each recording site for less than 10 minutes, so I didn't have a huge amount of recorded material to choose from in putting the piece together. There were a lot of different recording sites however, and none of these were omitted, so the piece was very long at 53 minutes, and can be heard here.

What's in a transect?

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46   I did this initially to mark this location in the recording for myself listening back, but I ended up keeping it in the final composition.

My initial aim in recording the Sherbourne in this way was to explore the different sonic environments it flows through, as well as the river's particular aural presences and absences in these locations. One striking aspect of the Sherbourne is the sheer diversity of locations it connects and the arrays of activities which can be heard while traversing its course. In this composition, the river can be heard moving through environments ranging from woodlands and parks, to industrial estates, residential areas, the town centre and a school. These locations can clearly be heard as involving very different activities, infrastructures, machines, modes of transportation and combinations of people and animals. The sound of the river can also be heard in many different guises, a faint burbling, a lively tinkle, a rushing stream, the white noise of water falling, to name just some. In quite a few sections the Sherbourne can be heard only when other sounds quieten. Along the freeway for example, or as it flows beside the recycling plant, it can be discerned if you listen very carefully, or if there is a break in traffic, or in the activities at the plant, but it would be easy to miss it.

In chapter 1 of this thesis, I developed a way of using sound as an approach to thinking the diversity of encounters involved in the relational constitution of space. I proposed too particular sonic figures, ranging from Reverberation to Propagation and Volume and Masking, as ways of conceptualising possible relational dynamics. In the case of the River Sherbourne, the particular sonic relations staged as it flows along its course offer ways of thinking this river's marginalised and undervalued, indeed underground, status. The undervaluing of the Sherbourne might be thought via its quietness, for example, and the ways in which the sound of the river struggle to be heard amid the loudness of traffic, and industrial activities. The profound human influence on the river's course and health might also be heard, or listened for, by using the sonic figure of Masking, which describes the dynamics when the Sherbourne can only be heard in the spaces between the many louder human-produced sounds. The dynamics described by Masking might also be drawn upon to celebrate, or at least mark, the unlikely perseverance of the Sherbourne too. This tiny river is a persistent aural presence in this document, albeit at times a particularly quiet and fragile one.

A closer consideration of what this work conveys about the Sherbourne might focus on the more subtle influences of the river's presence. Again, the sonic figure of Propagation can be drawn on to think the dynamic ways in which the river's influence flows beyond the course of the river itself. The Sherbourne's role in constituting, cohering and connecting a number of both formal and informal green spaces in Coventry might be audible in the types of activities we hear along its course: the dogs and dog walkers, children, horses and horse riders who we hear using these

woodlands and parks. It is also audible in the birdsong which permeates significant parts of this work, as well as in the bees visiting the plants growing along its banks, and in the relative absence of traffic noise at different points too. In these green spaces, the connections between them, and their varied usages by people and non-human species, the river's influence, like the sounds it makes, can be seen to propagate and inflect its context.

Just as sonic dynamics can be drawn on to thicken and complicate conceptions of where we might listen for the influence of the Sherbourne, the practice of field recording thickens and complicates the line of the transect. This composition is not the straightforward documentation of where my survey line intersected with the trajectories of other people, other activities, other species. Rather, it comprises the recordings of acts of sounding from both near and far. The hammering I recorded in Lake View Park was not a visible activity to me. The sonic traces of this task form part of my recording of this location, but it occurred some distance away. Similarly, I never visited the recycling plant, or saw the train which passes overhead nearby, although these sounds dominate my recordings of the River Sherbourne at this point. The owner of Willow the dog was sonically present some time before I accidentally blocked his way. This porosity, or openness, of the survey line of field recording might be understood as an inversion of the propagating trajectory of Heathrow's planes discussed in chapter 2. Here the fuzzy edges of line similarly complicate conceptions of what an encounter might entail, but also work to trouble any simple notion of the dimensions of the survey site. My version of the course of the Sherbourne was constituted, in part, from sounding acts which travelled from locations far from the river itself.

This work also provides opportunities to reflect on my own influence as I recorded along the route of the Sherbourne. The protocol of the transect I chose, with its stipulation I record every 500 metres, and when I returned to the river's route if I was forced off it, placed me in moments I might otherwise have avoided, or chosen not to record. As such, the protocol generated both obvious and subtle interactions. I can be heard, for example, at the beginning of this piece standing aside to give way on the road to a group of horse riders, where one rider thanks me, and I comment on the sound of the horses. I can also be heard interacting with the owner of Willow the dog. I can be heard, although it would not be readily identified as such, sounding the grill funneling the Sherbourne underground. In all of these moments, my presence, my decision to record as per the transect protocol, prompt moments of sounding and interaction. In these locations my presence as a field recordist, and the inflection it imparts within my recording locations, is audible in the recordings

themselves.

There are other, more nuanced, interactions generated too. This can most strikingly be heard in the sudden pause in the conversation between two pedestrians at about 7min:25sec into the composition. I distinctly remember recording this as I heard these two approaching from quite a distance, their chatter at first arriving in snatches, and then more discernibly as a discussion about broadband, before falling silent just as one says to another: "So when I ring to say:" But this sentence is not completed as at this point these two spot me and my recorder and stop talking. Did they continue? Did they end up discussing something completely different? Obviously I will never know, but in that halted moment, that decision not to sound in the presence of my recorder, there is a way of thinking how field recording might exert its relational effects in quieter, but no less important ways. In ways too which can be understood as propagating and reverberating beyond the line of the transect, and the temporality of that interrupted conversation. These effects of my recording activities might be traced in the form of a conversation forever halted and forgotten, for example, or perhaps, to speculate further, in a new topic sparked, or a new route taken.

The conversation between these two pedestrians halted quite suddenly, but as a response to my field recording activities it prompted me to consider the less noticeable acts of sounding or decisions not to sound my field recording work has generated or influenced. The conversations which never began for example, or stuttered out? The birds which called because they were alarmed by seeing me or hearing me? Or didn't call for the same reason? As Massey reminds us in 'Travelling Thoughts', a journey is not simply travelling across space, but an act which produces space, alters it (2000:226). In field recording along my transect line, I have sought to use the sonic figures Volume, Propagation and Reverb to examine the complex ways my activities produced and inflected the contexts in which they unfolded. In doing so I have emphasised how field recording not only gathers traces of dispersed encounters, but produces encounters which might have dispersed or reverberative effects.

Earlier in this chapter, I positioned the transect as a line which 'knows' or offers a set of procedures for knowing. In practice, however, I have come to formulate a very different way of thinking the knowledges, and ways of knowing, this line might generate by exploring the transect as a propagating trajectory of encounter. In undertaking this analysis I have argued that sound and the practice of field recording reinvents the transect as a thick and co-constituted nexus; a radically different device to the conventional tool of empirical survey I introduced at the beginning of this

106

chapter. Thus, the field recording transect has been explored as a protocol productive of audible and inaudible encounters which may or may not have ongoing effects. This version of the protocol has been used to think how the practice of field recording inflects and produces space, rather than either documenting or discovering it.

Changing Lines: critical cartography

This analysis of how field recording practice might reconfigure the transect as typically constituted, is enhanced by contextualising it in reference to artistic and theoretical research within critical cartography. Here theoretical and artistic interventions have driven a thorough reappraisal and transformation of the 'neutral' knowledges historically associated with the cartographic line, in favour of conceptions of maps, and processes of mapping, as emergent and authored. In doing so, theorists, including J. Brian Harley (1988), Jeremy W. Crampton (2001), Rob Kitchin and Martin Dodge (2007), John Pickles (2004) and Denis Wood (1992, 2001), have radically recast some of the foundational assumptions of what cartography is and does. Alongside this critical theoretical work, artists from diverse traditions have re-imagined, re-staged and intervened into cartography (see Cosgrove 2006; O'Rourke 2016). According to Denis Wood, writing in the article 'MapArt', these artistic interventions have also playfully and powerfully rejected the purported neutrality of maps. Woods writes: "The irresistible tug maps exert on artists arises from the map's mask of neutral objectivity, from its mask of unauthored dispassion. Artists either strip this mask off the map, or fail to put one on" (Wood 2006: 5).

Like the cartographic line, the line of the transect sits at the centre of a whole set of practices related to the ways we come to measure, know and control space. As Michel Foucault famously noted in his interview with the editors of *Hérodote,* the rise of the ability to systematically measure, investigate and examine space enabled the deployment of strategies of power related to the control of territories and the organisation of domains (2007: 75-77). Transect surveys are closely linked to the production of maps, with both types of line historically, and, in the case of the transect, currently, positioned as empirical tools which generate ways of knowing and communicating the 'realities' of space itself. Thus, the reconfiguration of the cartographic line I have outlined offers an instructive example of how both theory and artistic practice have transformed understandings of both what a line might be, and the knowledges it can be used to generate.

As Kitchin and Dodge outline in their article 'Rethinking maps' (2007) the cartographic line, and its historic relationship with what were positioned as a set of secure, fixed and natural types of

107

knowledges, has gone through a radical transformation. As part of this transformation the discipline of cartography, once positioned as intent on "theorizing how best to represent spatial data" (Kitchen and Dodge 2007:331), is now understood to involve a set of practices deeply embedded in the maintenance and renewal of particular forms and usages of power, such as those relating to state sovereignty and control (Kitchen and Dodge 2007:331). Crampton, for example, argues in his article 'Maps as social constructions: power, communication and visualization' (2001) that maps form part of a general "discourse of power, which both enables and abridges possibilities for people to act" (2001: 236); and, as such, should be understood as a "communication system" embedded "in a field of power relations" (2001: 235).

This challenge to what Kitchin and Dodge refer to as the 'foundational ontology' of cartography that the world can be objectively and truthfully mapped (2007: 333,335) has generated new ways of conceptualising what cartography is and entails. Thus, for Pickles, maps should not be understood as representing territory, but rather as producing it. (2004: 146). In a special issue of the journal *Cartographic Perspectives,* the artist kanarinka asks: "Is it possible to think of a map not as a presentation of reality but as a tool to produce reality?" (2006:25). The map, she argues, does not represent anything that is actual and determined, "but instead offers a field of potential space, an array of potential uses of the actual" (2006: 25). As such, it might be positioned as a 'recipe', or a set of instructions which are not fully determined but enacted and performed (2006:25). Similarly, Kitchen and Dodge argue maps might be understood as practices which emerge in process, and hence are constantly in a state of becoming, of the moment; transitory, fleeting, contingent, relational and context-dependent (2007: 335, 340). The implications of this work for the cartographic line are profound. Like the maps it produced, this line, once understood as empirical and objective, emerges in this theoretical work as performed, generative, contingent and relational.

This theoretical and artistic work provides a rich context for conceptualising the transformations I argue the practice of field recording has produced in the transect. In analysing my use of the transect, I have focused on the encounters and relations it generates within the practice of field recording. This emphasis disrupts understandings of the transect as an objective, detached or neutral tool, and replaces this with a version of the protocol which is iterative, relational, contextual and generative. The term 'recipe', offered by kanarinka, is particularly suggestive for my transect practice, emphasising the tool as a set of instructions which produce just one possible set of recordings. This term has prompted new ways of approaching future iterations of my transect practice. My Sherbourne work was only able to include one version of a transect of this river. If I

had adopted a protocol where I recorded at different intervals, for example, this transect would have changed. If I had driven along the river, or cycled. If I had recorded only at night. If I had asked a group of people to record the transect. All of these shifts in the protocol would produce different transects, and different iterations of the Sherbourne. I do not have the scope in this thesis to explore all of these issues, but this encounter between my transect practice and critical cartogaphy has led me to plan future work which can explore multiple iterations of the same transect. Some of these plans focus on transects produced by different people, or in group settings, others involve iterations of the same transect recorded by myself at different times, or employing different forms of mobility.

Lockwood's lines

The most directly relevant works to my Sherbourne transect are Annea Lockwood's two river soundmaps: *A Sound Map of the Hudson River* (1989), and *A Sound Map of the Danube* (2008), both of which trace the trajectories of these rivers using sound. About half way through the production of my Sherbourne transect the artistic director of the Coventry Biennial, Ryan Hughes, asked me to send a description of the work I was making. This is an excerpt of what I wrote:

"*The River Sherbourne is not only small, but in some places very difficult to find. It winds behind factories, moves underground at Coventry, before emerging again as a narrow and illusive drain. In many places it is totally inaccessible due to roads, buildings or other forms of private property. I spent several weeks walking the course of the river, recording it as it traversed schools, fields, factories and roads. In doing so I often thought of the contrast between my own experience and Annea Lockwood's renowned sonic works tracing rivers, in which they emerge with a certain majesty, highly present and active in the soundscape. This work turns to sound to chart an overlooked and almost absent river, indeed one entirely absent in the sections where it has been relocated underground. Even when above ground the Sherbourne is quiet, at times in detectable within the soundscape. It is in many ways a river struggling to be heard. In some sections it exists as a highly polluted, slow running drain, at other points a delicately tinkling waterway replete with birds and insects, while in Coventry itself it is absent and underground.*" - 2021 artwork description from email to Ryan Hughes.*

I've included this paragraph of writing as it encapsulates some of the initial ways I conceived of the relationship between my project on the Sherbourne and Annea Lockwood's river soundmaps, which centred on the obvious contrast between the size and stature of the rivers. As the project developed, however, this focus shifted. I became increasing interested in the contrasting methods Lockwood used to my own, in particular, the different mobilities, protocols and practices. When I began my Sherbourne project, I was most familiar with Lockwood's Hudson work, and I continued to focus on it throughout the course of producing it. Hence, I will discuss it rather than the Danube work in detail below. It is important to note in starting that Lockwood's *A Sound Map of the Hudson River*

(1989) was not conceived of as a transect, or described by her as such. However, this installation and the album derived from it was comprised of recordings from 15 locations along the 315 mile course of the Hudson, beginning with the river's source in the Adirondacks and ending with it emptying into the Atlantic Ocean. It is a work, then, which attempts to trace, or at least invoke, the course of the river, through a practice of composing with field recordings taken at staged locations along this trajectory. A protocol which I readily recognised as consistent with a transect, and of great relevance to my own practice and thinking.

In making the work Lockwood recorded over a period of eight months. As Denise Von Glahn and Mark Sciuchetti note in their article 'A New or Another Sound Map: Annea Lockwood and Mark Sciuchetti Listen to the Hudson River', the composed work does not represent Lockwood's own experience of the river. She did not walk the length of the Hudson, or visit each recording location in order from source to mouth. Rather she recorded the segments of her trajectory asynchronously (Von Glahn and Sciuchetti 2019). Having spent time exploring the river via hiking to determine promising locations for recording, she drove to each location separately to record, using an analogue tape recorder (Lockwood in Osteri 2001).

Lockwood produced a continuous sound work of over an hour in length (1:11 mins) from the recordings taken on these separate trips. The work was originally intended as an installation, and when exhibited in this way it includes a map of the river with each of the 15 recording locations marked. A clock enables the visitor to note which section of the river the audio piece is currently exploring, so the listener is always able to orient themselves to a location along the river. The discrete location recordings are heavily weighted towards the natural world, and, in particular, the range of sounds performed by water which reoccurs in many sonic forms throughout the work as relatively close recordings of bubbling, rushing, white noise, hiss, gurgling, quiet lapping and so on. The piece also includes wider takes registering the river amid bird song, boat horns, a train, grasses and wind, but Lockwood herself is never heard within it.

In composing *A Sound Map of the Hudson River* Lockwood opted to crossfade between her discrete location recordings, a practice which sees these locations aurally overlap and blur. I also used this technique. I discussed in chapter 2 Cresswell's argument that in denoting the movement from point A to point B as A ------------------------>B, the content of that line between A and B often remains unexplored (Cresswell 2006: 2). Earlier in this chapter when examining my own work on the Sherbourne I attempted to fill in some of doing which produces this crossfade, by discussing my

walking, recording protocols and separate trips to Coventry. I also want to explore this issue in relation to Lockwood's Hudson work as a way of highlighting the movement and activities which produced her aural journey down the river in the piece itself.

In *Listening after Nature,* Mark Peter Wright discusses a field recording as "an index of the process of its own making" (2022: 150), a conception which resonates with many of the ways I have attempted to analyse and discuss my practice in the previous two chapters. It is in this vein, too, that I have attempted to think Lockwood's Hudson, and the field recording transect more generally, by being attentive to the activities which produce it; the acts of encounter, sounding and silence it is entangled with. In Lockwood's *A Sound Map of the Hudson River,* the crossfade evokes a movement along the course of the river, from one site to the next. However, when thought in terms of the making of the work, this crossfade is produced out of multiple journeys, and entails significant spatial and temporal movements, involving potentially tens of miles, as well as jumps both forward and back in time. Although evoking a movement down the river, Lockwood's work is not produced out of such a movement, but constructed from a series of preliminary surveying journeys and hikes, and subsequent recording trips to discrete sites along the river. The crossfade transitions which produce the work as one which is experienced as a continuous journey along the course of the Hudson, are revealed in this analysis then as moments involving an inaudible fragmentation of the river's course. Cresswell's line of dashes connecting A and B, denoted in this work as a crossfade, can thus be positioned as a complex fiction produced both by this technique of crossfading, and the unmarked and inaudible journeys which enable it.

This is not intended as a criticism of Lockwood's *A Sound Map of the Hudson River;* I have attempted to argue in this thesis that all field recordings involve fictions, omissions, obscurations and fragmentations. What I aim to emphasise in highlighting this aspect of Lockwood's Hudson piece is the layers of activity involved in her production of this version of the river's course; that indeed her version of the Hudson is entangled with many journeys. Approaching Lockwood's work in this way emphasised to me the ways in which my own sonic transect practice was also a fiction, involving temporal and spatial jumps and impossibilities.

My version of the Sherbourne's route comprised recordings taken over four walks, and a month in time, and a lot of activities and relations which enabled this work cannot be heard within it. My walking along the river between recording sites, for example, is not heard. My safety concerns and the ways these led to Tanya's presence accompanying me on the last section of this walk are not

audible, nor is she, but it was her presence which enabled me to complete the entire final section of the transect. The fact this is four walks, not just one continuous journey, also cannot be heard. The walking I did when I was forced off the course of the Sherbourne cannot be heard, nor can my trips from London to Coventry. All of these activities are part of the index of making this transect, inaudible and unmarked as they are.

Like Lockwood's version of the Hudson, my Sherbourne transect also presents a sonic fiction. It is the sonic evocation of an impossible journey. Neither I, nor anyone else, can walk the course of the Sherbourne in the way it is rendered due to its inaccessibility at multiple points along its course. The line of my transect, and my version of the Sherbourne produced from this survey line, was entangled with, indeed generated from multiple journeys, just as Lockwood's version of the Hudson was. Both works involve layers of inaudible activities and presences.

The second aspect of Lockwood's work, and her articulation of it, which I have found particularly useful for conceptualising the ambiguities and complexities of my transect practice is her positioning of rivers as both live and fragmented locations. In an interview with *Science Friday*, she stated: "No river in my experience has an overall characteristic about which you could identify. Ah, that's the Danube, or that's the Hudson, or that's the Housatonic. Every single site on a river has its own characteristic. So I regard rivers as live phenomena which actively create their sound by the way they work with the materials of their banks, and restructure their banks, and change their banks. Not to mention the bed of the river changing constantly. So every single site has its own sound."[47] Lockwood's recording protocol might be seen as entirely in keeping with this version of what a river is, with her emphasis on quite close recordings of the active movement of water, and the way in which she has produced the work out of specific location recordings, rather than, for example, an attempt to move with the river as it flows. This emphasis on the specificity of each site along a river, and Lockwood's rejection of the idea a river might have any sort of overall aural characteristics, offers a very different version of knowledge production to that I have described as attached to the transect where fragmented survey sites are drawn on to generate broader knowledge sets. In Lockwood's rendering, the Hudson is not knowable as a whole, but only via this experience of specific live sites. As such, her work powerfully gestures towards the 'liveness' of the river in ways which resist claims to 'know' it, or represent it.

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47 This interview can be found here: https://www.sciencefriday.com/segments/sound-map-river/#segment-transcript

In my Sherbourne work I was focused on different relationships and activities which cohered along the river's course. I too produced my work by recording fragments of the Sherbourne's course and Lockwood's ideas about specificity and liveness are equally relevant to the this tiny river, as to the Hudson. The Sherbourne also worked with the materials it encountered, with each site I recorded in offering a distinct sonic environment. But where I would perhaps locate a difference between the work I have produced and Lockwood's Hudson is in the temporal specificity evoked by the two pieces. I listen to Lockwood's version of the Hudson and think I might visit those locations, and find them sounding just how she did. There is nothing that marks the recordings as a specific, unrepeatable moment, even the train arriving; it might come again at the same time on a different day. In my Sherbourne work I think there is less of a sense that the river could be returned to and found sounding the same way. This temporal specificity is not audible at every site, but by including specific conversations, my encounters with the horse riders, Willow's owner, even the fragment of music I left in around Spon End (22min:50sec) amid the sounds of welding, mark a temporal specificity in this work in ways which differ to Lockwood's *A Sound Map of the Hudson River*. This sense of temporal specificity was produced, at least in part by the transect protocol itself. Lockwood chose her locations and went to them after, presumably, deciding they were promising, desirable or otherwise important, recording sites. In contrast, the transect protocol I adopted required me to record every 500 metres, and whenever I returned to the Sherbourne after being forced off its course. Of course there were still choices available to me of how to record, when precisely to press record and when to stop recording. But my arena of choice was narrowed by the protocol when compared to my usual practice.

I am not attempting to argue here that the transect offers a more objective version of a river than a choice-centred protocol, but rather to use protocol to emphasise this arena of choice. What prompts the decision to record in the first instance remains poorly examined, and poorly articulated, within field recording. As I have attempted to highlight, there are many different versions of this piece I could have produced depending on what protocol I adopted. But I certainly would also have produced a very different work had I hiked the river first and decided what sites I wanted to record. Given the focus on restoring and revaluing the river I encountered within Coventry, I wonder what pressures I might have felt to present a more idealised and aspirational version of the river's course, with perhaps less traffic and industrial activity? Or perhaps I would have felt it desirable politically to only record in the noisier, more human-impacted parts of the river's course as a way of underling its degraded and undervalued status? In considering this, I have been prompted to reflect on my other field recording activities, and why I record when I do. What value system, set of priorities,

ideas of desirability, aesthetic and political preferences are layered, almost always inaudibly, into this decision? And how might I make these layers more transparent within my practice?

Lockwood's description of rivers as 'live phenomenon', which actively produce their sound via relationships between the flow of water, the river banks and the riverbed is a particularly rich articulation of processes of constitution. In thinking with this conception of rivers while I undertook my own project on the Sherbourne, I was struck by the ways the transect too might be thought of a 'live phenomenon'. Wasn't my use of this protocol actively producing a particular version of the river in the ways it brought me as a recordist into relations with the soundings, journeys and activities of other people, other species, in particular moments and locations along the Sherbourne's course?

I have used this close analysis of Lockwood's *A Sound Map of the Hudson,* and the contrast it offers to my River Sherbourne transect, to generate new ways of approaching my transect practice. In doing so, I have sought to foreground the unmarked journeys which produced both of these works, and their entanglement with the fictional trajectories of movement rendered in them. I have linked Lockwood's fragmented recording practice to her conception of the particularity and unknowable wholeness of rivers, contrasting this version of knowledge creation to that typically associated with the transect. I have also explored how the transect as a recording protocol foregrounds the under-explored issue of choice within field recording, and the complexities folded into the decision to record. And finally I have recast Lockwood's idea of rivers as live phenomenon as a particularly rich way of thinking the transect itself, using this formulation to emphasise the co-constitution at play within the field recording transect.

Walking, soundwalking and surveying

I have emphasised throughout this chapter that my transect was a walked survey which involved acts of field recording, and a focus on listening. This combination of activities is shared with practices of soundwalking which similarly combine a focus on both listening and walking, and, in some cases, also involve technologies of field recording.[48] However, with its roots in acoustic ecology, soundwalking and the knowledges it is positioned as generating are very different to those associated with the transect and its associated practices of surveying. As I have already discussed, the transect has been understood as a detached and neutral line involved in the generation of

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48   Tim Shaw and John Bowers use mics and headphones in their soundwalking project *Ambulation* which broadcasts the sounds gathered by the mics during the walk to participants in real time. In a similar vein, Dennis Van Tilburg has developed an augmented sound walk using parabolic microphones and headphones in *Musique Parabolique,*

empirical knowledge. In contrast, soundwalking is positioned as a "direct" engagement with the soundscape (Truax in Behrendt 2018: 249) which is productive of a range of complex outcomes including a shared acoustic awareness, personal connections to place, and community building (see Westerkamp 2007; Westerkamp in Behrendt 2018: 249).

In this final section, I investigate the different knowledges associated with the transect, compared to soundwalking, with a particular reference to Tim Ingold's formulations of point-to-point and continuous lines. In doing so, I examine Ingold counterposition between the connected and engaged walker and the detached and disconnected surveyor, and the different processes of knowledge creation he attaches to these activities. I then discuss how aspects of Ingold's understandings of walking are echoed and amplified within soundwalking, and examine how conceptions of walking as entangled with connection and belonging exclude other types of walking and listening experiences. I conclude by examining how my experience with the field recording transect in Coventry complicates formulations of both the detached surveyor and the connected walker.

Ingold's lines: mobility and meaning
In *Lines: A Brief History* (2007), and his subsequent book *The Life of Lines* (2015), Tim Ingold develops a series of arguments which link types of lines to particular ways of inhabiting and knowing the world. In developing this argument Ingold focuses on two types of lines: the continuous, or unbroken line, and the point-to-point, assembled or dotted line. He argues that these two linear configurations, continuous and point-to-point lines, are generative of counterposed ways of building knowledges about the world.

Ingold's overall project is concerned with restoring dynamic ways of thinking lines. He argues that modernity has "shorn" the line "of the movements which gave rise to it" (2007: 75), and contends that lines were once associated with dynamism, activity and growth, but today are rendered as static (2007: 2). Consequently, he often favourably contrasts linear practices of the past with more contemporary configurations. For Ingold, this disavowal of the dynamism of lines is represented by the replacement of a dynamic continuous line with a point-to-point version. For example, he argues that contemporary life has replaced the continuous wayfaring line of travel with the point-to-point line associated with "destination-oriented transport" (2007: 75). In mapping, he argues the improvised and gestural drawn sketch (a continuous line) has been supplanted by the point-to-point route-plan (2007: 75). In these examples the continuous line stands in for particular spontaneous and connected ways of living and building the world, while the point-to-point line is not only

considered pre-composed and static, but also as representing a series of disconnections. This counterposition is exemplified by Ingold's assertion that the continuous line is associated with an 'inhabitant', while a point-to-point line is a line of 'occupation' (2007:81). Ingold directly addresses the transect, and the type of knowledge it is positioned as producing, and it is this aspect of his work I will focus on here.

The survey line of the transect is, for Ingold, a type of point-to-point, or assembled, line (2007:75). Like the point-to-point line of "destination-oriented transport" the survey line is unfavourably contrasted to the improvised and ongoing nature of the continuous line of wayfaring. For Ingold, the wayfarer "participates from within in the very process of the world's continual coming into being" (Ingold 2007: 81). As such, the wayfarer "knows as he (sic) goes" (Ingold in Ingold 2007: 89). In contrast, the surveyor is passively transported along a pre-determined route, and remains detached from the participatory mode of building knowledge Ingold associates with the wayfarer.

The mobility of walking is critical to Ingold's distinction between the transect, and practices of surveying, and his idea of wayfaring. Put simply, the wayfarer walks while the surveyor does not. Indeed, Ingold is so enamoured with walking that he decides to call the wayfaring line itself a 'walk'. Thus, he, at times, refers to the continuous line as a *walk,* while the point-to-point line he calls an *assembly*. (2007: 75 original emphasis). "This distinction between the *walk* and the *assembly* is the key to my argument...," he writes (2007: 75 original emphasis). Walking is thus positioned as a specific way of knowing and participating in the world, a knowing which is "itself a path of movement" (Ingold 2007:89) which is counterposed to surveying.

On the basis of this construction of both walking, and surveying, Ingold argues that transects produce very different types of knowledge to those generated by walking and wayfaring. In his essay 'Against Space: place, movement, knowledge' (2011), he discusses a particular transect in Russia which involved the collection of soil and water samples across a vast region. The scientists in this example were airlifted by helicopter between the data points on their transect line, where they collected and passed data 'upwards' to a lab (Ingold 2011:153). This type of survey, Ingold contends, participates in a particular epistemology which he refers to as 'vertically integrated' knowledge (2011:153) in contrast to the "alongly" integrated knowledge (the knowing as he goes) of the inhabitant (2011:154). Returning to his example of helicopter-riding scientists, Ingold argues that just as the pencil must be lowered to produce the dots of the point-to-point line, the scientists in his example are dropped into their survey sites (Ingold 2011:153). He writes: "In effect, these air-

borne trips, re-enact at full scale the drawing of the dotted line on the map" (2011:153). This method of data collection can, consequently, only be focused on what is collected, rather than its context, or the processes which lead to what is collected coming to be there in the first place (Ingold 2011:153).

In counterposing the point-to-point surveyed line to the continuous line of a 'walk', Ingold has a difficult time dealing with a surveyor who walks. In his essay 'Against space', as has already been discussed, he avoids this problem by using an example where a helicopter transports scientists. However, in *Lines: A Short History* (2007) he attempts to grapple with walking within the context of surveying. He writes: "In effect the surveyor's walk (if indeed he *does* walk, rather than take a vehicle) is broken up and reduced to the geographical counterpart of the dotted line. Just as in drawing the dotted line the pencil tip has to be carried across from one point to the next, so to obtain his data the surveyor has to be transported from site to site" (original emphasis 2007: 88-89). Again we are presented with the surveyor as akin to a pencil being lowered to create a dotted line. However, in this example the surveyor's walking is reluctantly acknowledged, only to be immediately doubted, and quickly replaced with a scenario where this individual is "transported" by unknown means. This passage emphasises the critical role of walking in Ingold's framework, and its entanglement with specific knowledges and experiences he contends are counterposed to surveying. When he attempts to deal with a surveyor who walks he must establish this as a 'broken up' and 'reduced' kind of walk because otherwise his model cannot hold.

Ingold's thinking thus enmeshes two lines, continuous and point-to-point, with particular forms of mobility and methods of knowledge production. The result of this is that, in a rather idiosyncratic way he, in essence, re-presents, in his formulation of the point-to-point line, the classic scientific rendering of the transect as a detached and neutral tool which is used to generate objective measurements. While in the figure of the walking wayfarer the mobility of walking itself stands in for ways of knowing, encountering and building the world.

The walk of the soundwalk

This entanglement I have demonstrated in Ingold's work between walking and specific types of embedded, spontaneous, dynamic and, I am tempted to say, authentic ways of living and knowing is also at play within conceptions of soundwalking. As typically understood, a soundwalk is an activity which brings together a focus on listening, the soundscape and walking (McCartney 2014: 212). Although, as McCartney (2014) and Behrendt (2018) note, the term soundwalk can apply to

a very diverse set of practices ranging from silent listening walks and guided audio tours to Christina Kubisch's electricity walks, its 'classic' form, as John Levack Drever outlines, involves "a group focusing on listening while being lead in silence through an everyday environment" (Drever 2011:1). With this 'classic form' having its roots in acoustic ecology, soundwalking as a practice can be seen to invest heavily in the relationship between walking, listening and notions of connectedness, belonging, ecological awareness and an appreciation of a 'good' acoustic environment. As such, the soundwalk is often positioned as offering a very near universal experience of walking and listening which is generative of a connection to place, self and others. Westerkamp, for example, writes "This simple activity of walking, listening and soundmaking, invariably has the effect of not only re-grounding people in their community but also inspiring them about it, about creating a more balanced life between the global attraction of the computer and the local contract and touch with live human beings and reality." (Westerkamp in Behrendt 2018: 249).

Furthermore, Westerkamp argues that soundwalking can drive "improvements" in our acoustic environment (2007:49). By helping participants connect more deeply with the physical environment, the soundwalk, in this formulation, generates a shared motivation to improve these environments acoustically, and a shared conception of what such an 'improvement' might entail. Thus, composer Barry Truax describes soundwalks as "the most direct aural involvement possible with a soundscape" (Truax in Behrendt 2018: 249). While Drever, in his article 'Silent Soundwalking: an urban pedestrian soundscape methodology', links these two aspects of soundwalks as both personally transformative, and sonically educative. He argues soundwalking is "a subtle, transformative, personal, sensitive practice, whilst simultaneously being a highly social analytical sound audit and ritualistic auditory experience" (2008: 3).

This conception of soundwalking, if anything, amplifies Ingold's ideas about walking. In combining listening and walking, soundwalking is very clearly being positioned as generative of connectedness, of particular ways of living, and of universal sorts of embedded and embodied knowledge. Soundwalking here is about community, well being and personal knowledge, as well as aural sensitivity, processes of sonic taste-making and even, in Westerkamp's formulations, a turning away from the global in favour of the local. Although contemporary practices of soundwalking involve a range of approaches and emphases (see, for example: Butler 2006, Shaw and Bowers 2020), these associations between listening and walking, and belonging, connectedness and community-building proliferate in surprising ways across many diverse versions of the practice.

Paola Cossermelli Messina, for example, as part of the series *Soundwalking While POC* discusses how personal safety concerns prevented her as a child walking around her home in Sao Paulo, Brazil, in the article 'Soundwalking on the edges: sound safety and privilege in Sao Paulo, Brazil'. This article discusses her experience of revisiting her childhood home for a series of two recorded soundwalks: one in the vicinity of her childhood home, and a second walk which takes place nearby. In discussing these two walks, Messina describes the area around her childhood home as disconcertingly quiet, with few humans present. She attributes this quietness to the numerous visible surveillance cameras in this relatively privileged part of Sao Paulo.

In order to present a contrast to this very quiet walk, Messina notes she then decided to undertake a second recorded soundwalk. This one passes through a bustling neighbourhood known for its queer venues, an identity Messina shares. She writes: "as a walker and listener, it is clear the second soundwalk presented a wealth of opportunities to engage as a sonic citizen, while the first – as it was in the past – remained complicated by fear, vigilance, and a vacuum of human activity" (2019:6). In Messina's two examples walking and listening have clearly generated very different experiences and contextual meanings. However, she does not elaborate on this striking contrast. Instead, for the remainder of the article she discusses the possibilities for connection, self acceptance and belonging soundwalking in the queer neighbourhood offered. In doing so she asks if she would have been less fearful and embraced more of her identity as a queer person sooner if she had walked in this area more often in her youth (2019:6).

Messina's analysis underlines the importance of identity to experiences of soundwalking, her identity as a queer person is crucial to her experience of the second walk, and the questions it prompts her to ask. But in a more nuanced way it also demonstrates the ongoing entanglement between soundwalking and associations of connection and belonging. When this sense of belonging and connection did not eventuate in one location for Messina, she takes another soundwalk and largely focuses her discussion on this location. Yet, despite it not being her focus, her recounting of her quieter, less 'successful' soundwalk, and the feelings of fear and alienation she associated with it, is a valuable example of how soundwalking can generate diverse contextual meanings and knowledges.

Walking the line of the field recording transect

Like the soundwalk, my field recording transect was centred on both walking and listening. However, unlike the soundwalk, a transect is not positioned as an activity which is either simple or a "direct engagement" with its context. Instead of promoting a sense of belonging, surveying is associated with ideas of neutrality, objectivity and detachment. Furthermore, as Ingold's work makes clear, surveying along a transect is not coded as natural, spontaneous or part of a lived or embodied practice, but rather pre-determined, artificial and highly choreographed. In this final section of this chapter I discuss these intriguing similarities and differences between the field recording transect and the soundwalk to analyse and challenge dominant constructions of both surveying and soundwalking.

In making *Hawkes End ---> River Sowe Junction* I walked in many different contexts: I walked along my transect line as I followed the River Sherbourne's course; I also walked off my transect line when I was forced to by private property and other physical barriers. I walked to the transect line after alighting from the train in Coventry, and I walked back to train station from my transect line at the end of the day. The contexts I walked in changed markedly, as I have discussed. I walked in parks, along suburban streets, through the city centre of Coventry, through farms, alongside manors, in isolated woodlands, and even through one or two large drains. As such the mobility of walking is critical to the form of this work. I would have made a very different composition, and rendered a very different version of the Sherbourne's course if I had driven, for example, or even cycled, or jogged. I would have recorded in different areas, some being inaccessible to bikes or cars. I would have recorded at different times too, as these mobilities would have seen me arrive at my recording locations more quickly than walking. I would have spoken to or otherwise encountered different people, and had different engagements with non-human species. As such, the mobility of walking is absolutely generative of the work I produced.

However, it is important to acknowledge that walking is not experienced universally, but is entangled with many other aspects of identity, and therefore generative of many different experiences and knowledges. Just as I would have made a different version of the transect if I had employed a different mobility, I would also have made a different work if I had a different identity. I am an able-bodied person, for example, and walking long distances is not something I find difficult or painful. The knowledges I associate with walking the Sherbourne's course would be very different if I was disabled in a way which made walking more difficult for me. I am also white and, as such, experience walking in public spaces through the prism of this privilege in ways which

profoundly differ from the experiences of people of colour. And I have already discussed how my gender inflected my experience of conducting a walked survey in ways which halted one of my transect walks. The transect I produced is thus enmeshed in my particular experience of walking.

The methodology of the transect also inflected the work I produced. As I have discussed, this protocol led to me recording in places I otherwise would not have, and in doing so generated or otherwise inflected encounters with human and non-human species along its course. Just as the transect changed my experience of field recording, however, so too has field recording transformed the transect. In this chapter, I have crafted a very different version of this protocol compared to that put forward by Thomas *et al.* and Ingold. Through my practice, I have developed a version of the transect which focuses on its relational production, and turned to sonic fluxes to examine my own influence along the trajectory of the protocol in ways which blur the boundaries of the transect line itself. This version of the transect stands counterposed to understandings of it as detached and neutral. Instead, I have insisted upon the sonic transect as tool which demonstrates the relational co-constitution at play within field recording, and, potentially, within broader surveying practices.

Ingold has characterised the surveyors walk as "reduced to the geographical counterpart of the dotted line" in an attempt to establish this surveyed version of walking as one which fragments the line of survey. As I have discussed, for Ingold, this fragmentation of the survey line is generative of the particular forms of detached or disconnected experiences and knowledges he associates with surveying in contrast to walking. But my experience of undertaking a field recording transect along the Sherbourne offer very different knowledges to those put forward by Ingold. I think it is clear I am not convinced by Ingold's efforts to construct a special form of walking for surveyors, nor do I agree with his argument that a fragmentation of the survey line itself, however this might occur, automatically produces detached, disconnected or decontextualised knowledges.

In producing this field recording transect, I was forced off the line of the transect at many different points. These included: when I encountered private property which included the river bank, when I was unable to accurately trace the river's precise culverted route underneath Coventry due to the layout of the streets and buildings, and by my safety concerns in an area of isolated woodland. Rather than producing a disconnection, or a decontextualisation however, these instances offer knowledges about the river's route, and about the ways it has been controlled and curtailed within the township of Coventry and beyond. Furthermore, my stoppage, and consequent fragmentation of the survey line, due to safety concerns offers ways of understanding surveying as a lived and

embodied experience, which is not detached from either its context, or the identity of the surveyor. For me this stoppage, which I deliberated on for quite some time, is an example of the particular awareness and caution living as a woman in a world of gender-based violence has instilled in me. I am not detached from this lived experience according to whether I am walking on the survey line, or off it. As such, these fragmentations of the transect line contain important contextual knowledges about both the River Sherbourne, and the embodied experience of making of this work.

Given my focus on Ingold, it is important to acknowledge that he does complicate his own initial formulations of surveying. Despite using the transect as a paradigmatic example of the detached line of survey, he notes towards the end of his essay 'Against Space: place, movement, knowledge' that his version of scientific enquiry is "somewhat idealised", corresponding to the "official view" of what is supposed to happen (2011: 154). This prompts him to incorporate his helicopter-riding scientists into practices of wayfaring. Thus he writes: "For scientists are people too, and inhabit the world as the rest of us do" (2011: 155). In *Lines; A Short History* he reaches a similar impasse conceding: "To do his job even the surveyor has to get around, and must perforce allow his eyes to wander over the landscape..." (2007:102). It is very difficult to see how his initial formulation of the role and relevance of point-to-point lines to contemporary knowledge generation survives this manoeuvre, but this is not my task here. It is enough to emphasise that when Ingold puts his conceptual apparatus to work to examine specific practices of surveying he adjusts his characterisations of it and concludes that surveying too is productive of lived knowledges in the same ways that wayfaring is.

However, I do not seek to follow Ingold in simply folding surveying into what he would describe as an experience of wayfaring. Although I have discussed how my experience of walking the transect line was a lived and embodied experience, I also believe the positioning and knowledges associated with surveying provide a useful contrast to practices of soundwalking. I do not position, for example, my experiences of walking and listening along the course of the River Sherbourne as productive of the types of connections I have argued are associated with soundwalking. I met very few people while field recording along this route. I certainly listened to and recorded many different sounds, but I did not emerge from this experience with a greater sense of belonging within the many different contexts the River Sherbourne connects. As I have outlined my experience of walking and recording along this route was as varied as the route itself. At times it was sunny, bucolic and cheerful, at others isolated, full of stinging nettles and scary. Sometimes it was a combination of these things. My listening too was very varied. Sometimes I listened with a sense of curiosity or

wonder, but at certain points, as I have discussed, my listening was charged with a sense of vulnerability.

My experiences of walking, listening and field recording along the course of the River Sherbourne were thus mutable and hybrid, and generated different knowledges in different contexts. To return to the sonic relations which have been a focus of this thesis, the field recording transect as a practice encounters both surveying and soundwalking in ways which interfere with, disrupt and unsettle the typical formulations of these practices. In chapter 1 I discussed how Interference as a type of sonic interaction makes some parts of a signal louder, and others quieter. In exploring the encounter between the field recording transect and formulations of soundwalking and surveying I have sought to amplify some of the obscured assumptions entangled with these practices. In the case of soundwalking, I have used the field recording transect to question the association between walking and listening and ideas of connection and belonging at play within this practice. In confronting surveying via the field recording transect, I have focused on the relational production of the sounds I recorded on my survey line, in ways which resist characteristation of surveying as neutral, objective and detached. In the sonic dynamic described by the term Interference the most dramatic effects can occur when two similar, but not identical, soundwaves come together. In this encounter between the field recording transect, surveying and soundwalking it has similarly been in the interplay between the striking similarities in these practices and the profound differences in how they are understood which has produced new ways of approaching and complicating these activities.

Conclusion

In this chapter I have examined my use of a field recording transect to produce the work *Hawkes End ---> River Sowe Junction.* Building on the analysis I began to develop in chapter 2, I have examined the encounters generated by my field recording practice in the context of this protocol, and turned to the sonic figures of Propagation and Reverberation for ways of thinking the particular contexutal effects of field recording. In doing so I have focused on how my field recording in Coventry produced interrupted or altered or silenced acts of sounding.

As part of my analysis, I have examined how field recording changes the shape and dimensions of the line of the transect, in ways which trouble this protocol's typical positioning as neutral and objective. I have argued that the field recording transect emerges as a relational and fuzzy edged line which is involved in sonic encounters across a range of distances and temporalities. In doing so,

I have situated this discussion in reference to theoretical contributions with the field of critical cartography, which have similarly rejected notions of the cartographic line as either empirical or objective, and produced radical new understandings of this line as relational and generative.

Hawkes End ---> River Sowe Junction is a work which was conceived in relation to Annea Lockwood's foundational work *A Sound Map of the Hudson River.* In this chapter I have discussed how my understandings of the similarities and differences between what I was doing and Lockwood's composition began to shift and change as I worked with my transect protocol. As such, I analysed the influence of the different mobilities involved in these two works, and discussed how the transect narrows the range of choices available to the recordist. I also examined Lockwood's conception of specificity and dynamism of rivers for ways of thinking the liveness and doing of the transect itself.

Finally, I have analysed my field recording transect in reference to Tim Ingold's counterposition between the detached point-to-point line of surveying and the continuous and connected line of wayfaring. In doing so, I have discussed Ingold's characterisation of the transect as detached and decontextualised, and emphasised how his analysis depends, in part, upon the special status he grants to walking as generative of connected and embedded knowledges. I have argued that practices of soundwalking position walking in a similar way to Ingold. Returning to my experience of undertaking a walked field recording transect, I have foregrounded both the striking similarities between my activities and soundwalking and the profoundly different knowledges and experiences these activities are associated with. The field recording transect is neither a detached survey or a connected or embedded walk. Instead it is something in-between. I have argued in this chapter that it is a fuzzy edged line built from many journeys, and diverse experiences of walking, listening, recording and surveying. It is this very in-betweeness which constitutes the value of the field recording transect. In the interplay between the field recording transect and soundwalking's similarities and differences some of the obscured assumptions at play in constructions of both surveying and soundwalking are amplified and questioned.

Conclusion

This thesis has explored sonic fluxes for ways of thinking the diversity and complexity of relational encounters. In undertaking this project, I began with the sounds I encountered as a field recording artist in Thamesmead. Bombarded with construction noise in my recordings, I started to explore the sonic interactions staged by this noise for ways of thinking some of the broader relational dynamics at play within this suburb. This lead me to focus on the volume of this sound, its propagation, and the ways it obscured other sounds within the soundscape. As Marina Peterson has suggested, in relation to aircraft noise, in thinking in this way I was positioning the prevalence of this sound as "a condensation of forces and processes already in play" (Peterson 2021: 6), while also listening for the ongoing effects of its presence.

This conceptual approach led me to develop the specific sonic figures of Volume, Propagation, Reverberation, Masking, Interference and Not-Sounding, which I have refered to throughout this thesis. In developing and deploying these figures I have focused on their capacity to convey the complexities, hybridities, and multiplicity of relational forms. In doing so, I have argued that the value of these sonic figures, and the fluxes they describe, is located in the ways they suggest dynamics which are not simply one thing or another, but rather unfolding amalgams. Their usefulness is thus located in how they complicate conceptions of relational forms, and open up ways of thinking how such forms might shift and change.

My motivation in embarking on this thesis was my desire to construct ways of thinking the multiplicity of relations entangled with my artistic work. In Thamesmead, for example, I was searching for ways of thinking the complex moment in which I encountered this suburb, and the constellation of relations involved in it. As I have discussed throughout this thesis, my field recording practice has led to relations with many different people, different organisations, different locations, and at times different species. Although I did not clearly comprehend the direction this thesis would take when I began, it has developed two intertwined emphases. It began with my desire to think the complexity of relations in my recording locations, and it ended with a focus on thinking the relations generated by field recording itself.

As I have sought to make clear, the sonic figures I have put forward in this thesis are intended as a tool box, which can be added to, or discarded as is helpful. Their purpose is not to model precise relational dynamics, but to generate expansive and flexible ways of thinking such dynamics. In

using them my aim has been to craft a more nuanced approach to thinking the ongoing, mutable and multiple dynamics of interaction. Using sound to think relational encounters emphasises the hybridity and unpredictability of interaction, and its effects, and opens up ways of thinking relations as comprised of layers of dynamics which might be counterposed, reinforcing, or a combination thereof. This style of thought brings temporality to conceptions of relational forms, suggesting ways the effects of interaction might shift and morph over time, or generate delayed, or ongoing effects.

Voegelin argues that a sonic sensibility reveals "what this world is made of" (2014: 3), a proposition which shares a lot with Cox's suggestion that "sonic thought follows the flows of matter and energy that constitute the real, producing concepts that are themselves instances of the syntheses by which the real articulates itself" (2017:107). The version of sonic thought I have practiced in this thesis attempts to move with the dynamic fluxes of sound to conceptualise how we make space together. Thus, I have focused on the propagating presence of sound, and the myriad of relations this propagation stages. Such a way of thinking space, and its constitutive relational flux, can only ever be revelatory as an allusive gesture. The value of this approach is not in finding an exact fit or explanation, but in how it might generate new ways of thinking the dynamism and mutability of interaction.

In developing this argument, I began with, and have continued to return to, the work of Doreen Massey, finding within her dynamic ways of thinking spatial constitution a profoundly 'sonic sensibility' (Voegelin 2014). I have argued that Massey's relational sphere, filled with multiple trajectories and simultaneous stories immersed in reverberative, annihilating, clashing and dissonant encounters (see Massey 2007: 22; 2005: 71;156; 2000: 227), is a way of thinking space which already has a strikingly sonic inflection (Revill 2016: 6). My work in this thesis has sought to extend and amplify this way of thinking space, and to apply it specifically to the spaces of field recording practice.

In exploring the implications of this way of thinking, I have applied it to the noisy trajectories of Heathrow's flightpaths, and the quieter trajectory of my own field recording practice. In doing so, I have positioned Heathrow's flightpaths as propagating trajectories, with diffuse and reverberating impacts. I have sought to comprehend the influence of my own practice in similar ways. Thus, I have focused on instances of recording which have generated, interrupted or otherwise inflected encounters in my recording locations, and examined these instances for their immediate and

126

potentially ongoing, or reverberative, impacts. I have discussed how sound changes where we might listen for an encounter, and its relational effects, by blurring and extending the limits of these sounding (and recording) paths of movement. And I have speculated on how this way of thinking trajectories might have relevance for conceptions of the impact and influence of other paths of movement, or line making practices.

I examined how field recording practice changed the specific line of the field recording transect. In doing so, I emphasised the encounters generated by field recording practice in the context of this protocol, and turned to the sonic figures of Propagation and Reveberation for ways of thinking the particular contexutal effects of field recording. As part of my analysis, I have examined how field recording changes the shape and dimensions of the line of the transect, in ways which trouble this protocol's typical positioning as neutral and objective. I argued that the field recording transect emerges as a relational and fuzzy edged line which is involved in sonic encounters across a range of distances and temporalities. As such, I have put forward a new conception of this tool as constituted in creative practice, which positions it as relational and generative.

In this thesis sound has simultaneously existed as a material which I have recorded, and a modality of thought. My recordings have been explored at length for what sounds and sonic dynamics they include. But I have also sought to demonstrate how sound has shaped my understandings of the activities and relations which produced or enabled these recordings. Thus, I have explored field recording as a relational practice, and discussed the ways in which my own recording is entangled with my identity, as a person who is white, a woman, queer and able-bodied. I have examined the ways my decisions to record inflected and shaped the locations in which this recording took place, focussing, in ,particular on the relations my recording generated, interrupted or otherwise influenced. In this analysis, I have crafted a version of the field recordist as a propagating and reverberating presence, involved in relations of amplification and quietening.

This work is of most obviously of relevance to practitioners and researchers involved in field recording, and related fields within sound studies. It offers a contribution to existing work within geography which is grappling with ways of thinking relational space with dynamism and nuance, which is also of relevance to theorists working across diverse fields of enquiry ranging from border studies to critical cartography, but also those examining social and political movements and their

dynamics. It also has specific relevance to researchers and practitioners involved in public facing art or research practices, who are attempting to think through the relations entangled with their work.

This approach has changed the way I think about my practice, and the type of practice I am doing. I have undertaken a new transect commission, for example, this year, which attempts to chart my movement from one side of London to the other. In undertaking this work I have broadened the scope of my recordings to include the mobilities which took me to my recording locations. I have now taught the transect protocol to several groups of post-graduate students too, and in doing so have been able to examine more fully the entanglement between the protocol, mobility and identity in this work. My performance work, which has not been a focus of this thesis has changed too, incorporating more of the actions and experiments I undertake within my recording work, rather than simply the recordings themselves.

While bringing this thesis to a conclusion I re-visited Thamesmead, now a very different suburb to the one I first encountered. TACO! has recently moved premises to a purpose-built location within one of the newly built estates in this suburb, and the Elizabeth Line has now opened, meaning my trip was far quicker than it had been during my studio residency. Construction, however, continues in many parts of this area. In walking to TACO! I passed some hoardings obscuring the building work occurring behind them. Printed on these hoardings were photos of *Under Construction* (as well as other TACO! exhibitions)*,* along with advertising for Peabody, and a declaration that what was happening here involved: "Making space for nature" (See Photos 1,2 and 3)*.*

Photo 1. *TACO! hoardings, Thamesmead. Credit: Kate Carr.*

Photo 2. *Peabody hoardings, Thamesmead. Credit: Kate Carr.*

Photo 3. *Peabody hoardings, Thamesmead. Credit: Kate Carr.*

I also re-visited Waterman's Gallery, finding the children's playground where I had previously recorded gone as part of a re-development of the waterfront in this location. Heathrow Airport was in its Easterly operations mode that day, which meant there were less planes than usual above, although they were still an audible presence. In 2020, the climate justice charity Plan B successfully mounted a legal challenge preventing Heathrow Airport from building a third runway on the grounds of its environmental impact.[49] Later that year, however, the Supreme Court overturned this decision[50], and Heathrow Airport has recently announced the runway is, once again, a top priority.[51] The River Sherbourne has also experienced changes, with new plans to restore part of the river to its historic route, as part of a wetland regeneration scheme.[52]

These spaces, and the relations they entail, have changed. My own relations, and those of my practice, to these locations have changed too. This is most vividly illustrated in the case of Thamesmead, with its construction hoardings featuring photos of *Under Construction.* My attempt to conceptualise the role and influence of my practice in the complex relations at play within and between Thamesmead, TACO!, Peabody and broader London was the original spur to the thinking in this thesis. As I have discussed, the strategic use of artists and artistic work has formed a significant part of Peabody's strategies for re-making this suburb in ways which have had, and will continue to have, positive, negative and, no doubt, many other mixed and complex effects. Although I would not have conceived it as clearly as this when I began the project, *Under Construction* was then, and even more explicitly now, as displayed on construction hoardings, a part of the ongoing relations which are producing the re-making of this suburb. Today, tomorrow, and together we are always involved in making space. I have turned to sound in this thesis to think the complexities and nuances of this making.

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49 https://www.theguardian.com/environment/2020/feb/27/heathrow-third-runway-ruled-illegal-over-climate-change
50 https://www.bbc.co.uk/news/business-55322340
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Links to practice based elements referred to in text

Chapter 1
Close recording of Southmere Lake with bangs of construction
https://soundcloud.com/katecarr/water-lapping/s-T603xLQcUZ0?

Thamesmead Field Recordings Playlist
https://soundcloud.com/katecarr/sets/thamesmead-field-recordings/s-Xhik5IBuy9D?

Video documentation of Under Construction
https://vimeo.com/325304681

Under Construction Installation Recording
https://soundcloud.com/katecarr/under-construction-installation-recording-11-mins/s-yIuYuu3rZ3q?

Chapter 2
Hounslow Field Recordings
https://soundcloud.com/katecarr/sets/hounslow-recordings/s-tJQ13L1JtCB?

Ascending Composition 1 (For Planes) Field Recordings
https://soundcloud.com/katecarr/sets/airmatters-recordings/s-YIU0KRGgK3F?

Ascending Composition 1 (For Planes) Representative Soundscape
https://soundcloud.com/katecarr/airmatters-soundscape-kate-carr

Chapter 3
Hawkes End ---> River Sowe Junction: A sonic transect of the (sometimes absent) River
Sherbourne
https://soundcloud.com/katecarr/hawkes-end-river-sowe-junction-a-sonic-transect-of-the-sometimes-absent-river-sherbourne/s-eHAYK22Tbun