How is space made in sound? Spatial mediation, critical phenomenology and the political agency of sound

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Abstract
This paper examines some of the processes and practices that make sonic spatiality distinctive and sets out theoretical and conceptual resources that might better enable us to understand these processes. It draws on the notion of political agency in order to animate the processual making of sonic space as socio-material relationality. Developing an approach to sonic mediation compatible with a critical phenomenology of the auditory, the paper sets out four interrelated sets of sonic effects central to the making of sonic spaces. It shows how these address a politics of difference which engages affective and representational political processes.

I Introduction

This paper examines some of the processes and practices that make sonic spatiality distinctive and sets out theoretical and conceptual resources that might better enable us to understand these processes. For some time geographers have been interested in sonic spaces both from a phenomenological perspective (Tuan, 1974; Pocock, 1989; Rodaway, 1994) and in terms of affective, emotional and performative responses to sonic events, practices, locations, places, concerts, festivals, dances and sessions (Anderson, 2004; Anderson et al., 2005; Boland, 2010; De Silvey, 2010; Duffy and Waitt, 2011; Duffy et al., 2011; Gallagher and Prior, 2014; Hudson, 2006; Matless, 2005; Morton, 2005; Revill, 2004; Smith, 1997; Smith, 2000; Wood et al., 2007; Wood, 2012;

Wood and Smith, 2004). In addition to a concern with the specific qualities of sonic experience, geographers have also become interested in sound's role and influence in the practice of politics and the making of political spaces (Kanngieser, 2011; Pinkerton and Dodds, 2009; Revill, 2000a, 2000b; Waitt et al., 2014). However, little sustained attention has been paid to the processes and practices by which sound actually makes space, shaping and transforming experiences of spatiality and providing the resources and affordances for diverse

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political practice and action in the process. This is remarkable to the extent that sonic space and the experience of sonic spatiality are often contrasted with visual and Cartesian spaces and spatialities (Smith, 1994; Bull, 2000; Wood et al., 2007) and that music and sound are widely recognized within social sciences and the humanities for their historically specific political effects (Born, 2013; Corbin, 1998; M Smith, 2004; Sterne, 2003; Thompson, 2002). Given geography's ongoing concern both with phenomenologies of geographical experience (Lorimer, 2005; Simonsen, 2013; Wiley, 2005, 2006) and the relational and topological qualities of spatiality (Allen, 2013; Paassi, 2011; Martin and Secor, 2013), this seems something of an omission. All too often work within geography asserts the particularity of the sonic and its capacities to affect and enable certain forms of embodied experience and generate particular forms of political spaces, actions and engagements without systematically engaging with the socio-material processes and practices which facilitate the specificity of sonic spatiality. This paper begins the process of addressing these issues.

The paper draws on work from social and cultural theory as well as the expanding interdisciplinary field of sound studies. It explores how the fugitive, fragile temporal qualities of sound are centrally implicated in the phenomenal qualities of sonic space and spatiality. Sounds are only recognizable as such in the moment of their making, unfolding elaboration, the sensing and the memory of that moment. To this extent the question of sonic spatiality highlights the co-dependence of space and time as these are made through process, practice and experience. Thus sound provides an important and distinctive case with which to examine some of the issues raised by theorizations of relational space and its socio-material making. This in turn problematizes the mediation of space. If one accepts that space is made by and within relations then it becomes more difficult to separate objects and entities conceptually from that which mediates

between them. This requires a revised understanding of mediation able to move beyond simplistic conceptions of linking or bridging. With this in mind, the paper begins by considering the ways sonic spatiality has been explored by geographers and others. It then examines the relationality of sonic space by developing an approach to sonic mediation in sympathy with more recent phenomenologies of the auditory styled variously as post, cultural, and critical phenomenologies. Using this formulation, the paper then sets out four sets of interrelated processes, termed effects in this paper, central to the making of sonic spaces and spatialities. As part of this process the paper considers some ways in which the ontological making of sonic space is implicated in the political agency of sound where this is defined as the capacities, potentials and affordances of sound to participate and be implicated in formal, informal and cultural politics (Häkli and Kallio, 2014). The paper draws on the notion of political agency in order to begin the process of excavating and animating the processual making of sonic space as socio-material relationality which might have implications for both geographical studies of sensory experience and the politics of agentive materiality (Barad, 2007; Braun and Whatmore, 2010).

Rather than seeking to define a clearly articulated realm of sonic politics, this paper outlines a sonic political agency which is substantially distributed within practices, processes, objects and entities not necessarily or readily definable by the qualities of sound alone. Because sound is not an object or an entity in the conventional sense of the word but rather a set of processes and properties operating in and through other materials, the focus here is on agency as process rather than sound as an agent in and of itself. To this extent the situation is rather different from that found in much other work on the politics of non-agency and more than human agency concerned with more readily identifiable material agents, entities and physical processes,

plants, animals, bacteria, or the knowledge-making capacities of scientific techniques (Disch, 2010). However, the four effects of sonic agency outlined in this paper do have potentially important implications for the sort of expanded politics which seeks to include non-human and more than human agents. The paper draws on Rancière's (2004) conception of 'the distribution of the sensible' as a basis for understanding the distributed political agency of sound. For Rancière, the 'aesthetics at the core of politics':

> ...is a delimitation of spaces and times, of the visible and the invisible, of speech and noise, that simultaneously determines the place and the stakes of politics as a form of experience. Politics revolves around what is seen and what can be said about it, around who has the ability to see and the talent to speak, around the properties of spaces and the possibilities of time. (Rancière, 2004: 12–13)

Though couched in terms of 'image' and 'aesthetics', Rancière's formulation seems to imply a phenomenological politics of communicative practice focusing on the way media shape, limit and afford how and what can be thought, felt, experienced and shared. This seems particularly powerful because it brings together some key questions from cultural politics and active senses of material, ontological/experiential making with a clearly spatio-temporal sensitivity. Exploring what Rockhill (2004: 1) calls this 'politics of difference', the paper interrogates four phenomenological effects of sonic space in terms of the way sound, using Rancière's terminology, 'cuts up' and 'redistributes' the perceptual world (Rancière, 2004: 12–13; Birrell, 2008: 1–2; Yusoff, 2010).

II Geographies of sound and sonic space

Interest within geography in the spatial distribution of sound can be traced to the pioneering work of the Finnish geographer Grano, whose studies of sonic landscapes in Finland date back to 1929. Though his approach had little long-term impact within geography it has made something of a return with the growing interest in soundscape studies (Revill, 2012). Though North American music geography has engaged with the spatial distribution of musical and sonic practice since the late 1960s (Carney, 1998, 2003), a concern with the spatiality of sound and sonic processes developed more evidently with geographical studies of music and sound in the 1990s (Smith, 1994; Leyshon et al., 1995, 1998; Leyshon, 2001). As Simpson (2009: 2557–9) has suggested, much of this work implied the particularity of sonic processes but tended to work with and assert this specificity through the effects of sounds on places and locations, social groups and the body. More recent work concerned with affective and emotional geographies of sound and with the practices of listening also holds on to conception of sonic space as distinctive, resulting in both characteristic modes of experience and particular forms of politics (Wood, 2012). As Kanngieser (2011) notes, a number of geographers have claimed clear connections between sounds and the spaces they occupy (for instance Smith, 1994; Matless, 2005; Wood et al., 2007: 873). Yet in none of this work are we told how particular characteristics of sonic phenomena engage with particular spatial dynamics; to this extent and in spite of important agendas set by these studies, the processes and properties of sonic spatiality remain under-theorized by geographers.

Work within geography has also sketched out some of the important spheres in which sonic politics takes place. This also tends to imply the particularities of sonic space without ever clearly defining what particular processes are at work when sound is a factor in the making of spaces and spatialities. Though Revill (2000a: 597–598) felt able to assert that 'the phenomenal properties of sound are fundamental to the cultural politics of individual subjectivity, group

identity, nation, and citizen', he was unable to demonstrate this sonic politics beyond its substantially cultural significance (Simpson, 2009: 2558). Though their work implies the distinctive reach, touch and identifications that are forged through sound, Pinkerton and Dodds' (2009) pioneering exploration of the geopolitics of broadcasting mainly addresses longstanding concerns with media, messages and transmission rather than any intrinsically political qualities of sound. Whilst Kanngeiser (2011) raises within geography the important sonic phenomenon of 'voice' as central to developing an 'affective politics', her main concern is with voice in language expressed as utterance, dialogue and polyvocality rather than the sonic properties of voice as it extends and reaches out over time and through space. Together these studies find a place for sound as an active and vital constituent in a range of political arenas including formal and impromptu political decision-making and debate, messaging, and the formation and remaking of local, regional and national political identifications. They show that political communication, discourse and debate cannot just be assumed but is subject to the contingencies and potentials of its media of communication, creating distinctive political spaces and means of political engagement. However, the particular processes by which the socio-material properties of sound operate in and through these political spaces animating, engaging and communicating remains under-explored.

Sonic spatiality is most often figured either through conceptions of embodiment or listening practice. In terms of embodiment the formulation of a visceral politics by Waitt, Ryan and Farbotko (2014: 287), for example, draws on a range of authors including Lefebvre, Massumi and Probyn to develop a conception of embodied sound producing affective spaces that 'intensely connect or disconnect bodies within a constellation of trajectories of assemblages that make sense of a Climate Camp parade'

(Waitt et al., 2014: 287). Simpson's theorization of listening practice provides theoretical support for work such as that by Waitt et al. Simpson too is concerned with politics, but in his case this is at least partly related to the methodological and ethical implications of listening as a social science practice (see Back, 2003, 2007; Gallagher and Prior, 2014). Simpson reads the concerns of non-representational approaches to geography through work on listening by Ihde (2007 [1976]) and especially Nancy (2007) to provide a very interesting conception of the body as a resonant subject made through a relational space of processual becoming (Simpson, 2009: 2567). Useful and insightful as this work is, the focus on listening and embodiment seems ultimately less than sympathetic to an approach better able to balance social and material dimensions of relational making. That is unless sound as an object is understood substantially as a construction of listening practice. Consequently, an approach which privileges listening may fail to give due weight to the materiality of sound itself. To this extent the failure to take sound seriously, rightly highlighted by Simpson and others in earlier work on geographies of music, remains problematic.

The key to recognizing the materiality of sound as more than simply a response to affective and reflective listening practice is to conceive it as spatio-temporal event. Perhaps the first academic consideration of sonic space as a process of making can be found in the work on auditory and acoustic space by anthropologist Edmund Carpenter and media theorist Marshal McLuhan in the late 1950s (Schafer, 2007: 83), Carpenter in particular was concerned with the phenomenological properties of sonic environments. Thus his characterization of auditory space is recognizably familiar in terms of present-day relational approaches to spatiality. Writing together, Carpenter and McLuhan argue that auditory space has 'no favoured focus':

It is a sphere without fixed boundaries, space made by the thing itself, not space containing the thing. It is not pictorial space, boxed-in, but dynamic, always in flux, creating its own dimensions moment by moment. It has no fixed boundaries, it is indifferent to background. The eye focuses, pinpoints, abstracts, locating each object in physical space, against a background; the ear, however, favours sound from any direction. (Carpenter and McLuhan, 1973: 67)

Perhaps Carpenter and McLuhan's most radical insight was their assertion that, where sound is concerned, space is made and shaped by the qualities of sound itself. This phenomenology of sound as event produced through material processes was taken up within geography by the humanistic geographer Douglas Pocock, whose work to some extent drew on Grano's pioneering geographical studies of sonic spaces and landscapes. Writing in 1989, he claimed: 'Technically, sound is mechanical disturbance producing pressure waves or vibrations which we register as they are converted into nerve impulses' (Pocock, 1989: 193). Thus he argued that:

> . . . the world of sound is an event world, in contrast to that of vision which is an object world (Ong, 1971): it is a world of activities rather than artefacts, sensations rather than reflections (Schäfer, 1985). It is dynamic: something is happening for sound to exist. (Pocock, 1989: 193)

Unfortunately, Pocock did not go on to explore further the implications of sound as event in relation to his own concerns with culture and experience. However, it is clear from these and subsequent accounts that the qualities and characteristics of sound and sonic experience question conventional and cartographic conceptions of space (see Rodaway, 1994). In the context of both debates concerning relational space and Rancière's politics of the distribution of the sensible, the idea of sonic space made by the thing itself is now recognizable as a profound conceptual move.

III Sonic events and sonic mediation

Conventionally, the relationships between sound and space are thought of as mediations. Sound, for instance, is given spatial form by being broadcast over a wireless transmission system, carried by the human voice, contained within a concert hall or ricocheting around the canyon walls of city streets. In political terms too it is sonic mediation which is thought to provide political agency: the words and emotion bound up in a protest song, the authoritative tones of a political leader, the broadcasts made by state institutions or illicit recording of subversive messages all carry messages to people and invite a response. Yet the lesson of Carpenter and McLuhan's formulation that sonic space is made by the thing itself suggests that a clear separation between objects and subjects, carrier and carried, and mediation conceived as a message carrier added on to the relationships between objects may also need rethinking.

The question of sonic mediation has been raised recently by both Georgina Born (2013) and Brandon Labelle (2010) in rather different formulations of sonic space relevant to geography As an artist and writer on sound culture, Labelle's study of 'acoustic territories' provides an imaginative journey through the sonic resonances of the city. Like Born, Labelle is particularly concerned with sound's role in the production of experiences and subjectivites and with sonic fixings and unfixings of the private and the public (Labelle, 2010: xxi). For Labelle, sonic mediation concerns semiosis. Meanings created, communicated and translated through sound are associative, 'triggering associative forms of discourse and knowledge' implicating both the physical and phenomenological behaviour of sound (2010: xix). In contrast, Born's concern with sonic mediations of spatiality is systematic, sociological and engages with the physicality of sound and its technologies of storage, transmission and reproduction systems in

addition to listening practices and their social locations. Born (2013: 19–20) identifies four planes of social mediation which engage with sites of performance, imagined communities, audiences and publics, social stratifications including age gender and class and, lastly, the institutional contexts of sonic production, reproduction and transformation.

Both Born and Labelle share a conception of sounds and rhythms actively producing spaces and spatialities which are relational and have multiply enfolded topological qualities operating in space/time. Where Born systematically brings together work from across the social sciences, Labelle offers a creative if eclectic take on sonic spatiality. Born's use of the term 'mediation', like Labelle's use of the term 'association', suggests a role for sound in connecting and remaking, the formation and reformation of spatial assemblages. Yet the term 'mediation' in relation to sound remains frustratingly difficult to pin down in this work; sometimes mediation is a property of sound bridging other entities and processes, sometimes sound is carried in mediation by social and technological actors. The complex ontological status of sound itself is an important part of this problem. On the one hand, as Michael Chion (1999) claims, sound can be thought of as 'a cultural object constituted via an act of attention and naming. On the other, sound is also a profoundly physical phenomenon which only exists when embodied in other material' (cited in Mermoz, 2004: 23).

Sound, unlike light, cannot travel through a vacuum and requires substantial matter, in the form of air, earth, water, organic or mineral materials to embody and give it presence (Hainge, 2013: 1). Yet sound also forms an immersive medium through which worlds are experienced. At the same time, the qualities of specific sounds shape and are shaped by worldly experience, by receptivity, hearing and listening. To this extent sound might easily be thought of as both mediated and mediating at once, given substance by other materials whilst also itself shaping and framing experience. In this respect, the fragility and ephemerality of sound are important factors. Because sounds can be thought of as events, made and experienced in the process of their activation – striking, drawing and plucking, sounding or resounding – which decay in time and die away, the perception and understanding of sound registering with and in the listener has critical importance in the making of sounds as events in time and space. Sound is thus simultaneously cause and effect, product and process, intermediary and mediated world. Thus the qualities of sound highlight the ambiguous multiple meanings of the term 'mediation' in the formation of spatialities and spatial relations in ways which are not satisfactorily addressed by Born, Labelle or other authors.

In the case of sound, mediation can never be simply a matter of variously embodied presence, transmission or translation but always concerns a relational making simultaneously involving production, transmission, reception and interpretation through and within entities and materials. Sound is at once medium – the sensuous stuff through which the world is experienced; method – processes of resonance and the practices of embodied and reflexive engagement, hearing and listening which engage the world; and modality – the structure or sensory registers through which the world is engaged, connecting entities and animating experience in its meaningfulness. An approach to sonic spatiality which starts from Carpenter and McLuhan's premise that sonic space is made by the sound itself rather than the space containing the sound needs to seek what Voegelin (2014: 2) calls the 'thinginess' of sound as co-produced within each of these three realms of medium, method and modality. This is because sound needs to be simultaneously embedded as vibration in materials, received or perceived by a 'listener' and recognized as meaningful experience in order to be thought of as sound rather than

pulse, signal or meaningless noise. There are strong resonances in this formulation with the phonomenologies of technology variously developed by Miller (1987, 2005) and Ihde (Verbeek, 2005: 112; also Ihde, 2003, 2009). A sense of sonic mediation as simultaneously medium, method and modality speaks to the complex and mutually reinforcing spatialities suggested by these formulations. Following Rancière, a sonic politics of the 'distribution of the sensible', cutting, redistributing, and by implication making and remaking experience, requires co-ordination across these three registers.

In this context Augoyard and Torgue (2005) are critical of both the idea of a 'sound object' with an independent existence separable within its own discrete space and the notion of sounds-cape as a more or less objective space containing sounds (Augoyard and Torgue, 2005: 4). The sense in which the production of sonic spaces suggests the co-dependence of media, method and modality results in a situation in which mediation can be found simultaneously in the physicality of produced sound waves, the shaping of that sound within the particular circumstances of its occurrence and in the receptivity and understanding of the listening ear. In the apparently hyper-relational world of sonic experience where sounds only seem to exist as, within and through particularly delicate and ephemeral assemblages of materials, practices and entities, mediation seems to be everywhere and nowhere. In this context and with a brief acknowledgement of both the Deleuzian concept of event and Merleau Ponty's phenomenology of perception, Augoyard and Torgue develop a notion of sonic effects in order to problematize any simplistic relationships between sounds, their causes and products. For them:

> . . . the sonic effect, sometimes measurable and generally linked to the physical characteristics of a specific context, was not reducible either objectively or subjectively. The concept of the sonic effect seemed to describe this interaction between the physical sound environment, the sound milieu of a socio-cultural community, and the 'internal soundscape' of every individual. (Augoyard and Torgue, 2005: 9)

Augoyard and Torgue admit that their use of the term 'sonic effect' is provisional and open to revision and clarification. However, their assertion that sonic effects are always contextual and cannot be reduced objectively or subjectively is useful and congruent with a range of relevant theoretical positions, for example, Ingold's argument that mediation should be thought of as an ongoing process of making rather than the passive connection of two or more discrete entities (Ingold, 2011: 14; Revill, 2013: 4). It is also sympathetic to an active co-dependence of sensing and sense-making found in Nancy's (2007: 5) work on listening and Serres' (1993, 1994; also Connor, 2002a, 2002b) work on communication, in addition to the work of Ihde and Miller. Importantly, this formulation also provides a distinctly sonic theorization for the processes of cutting and redistributing the materials and practices of sensing and sense-making which ground the sort of phenomenological politics suggested by Rancière (2004). Here Augoyard and Torgue's approach has much in common with the move by Born, Labelle and others concerned with sound studies to recast the phenomenology of sound as a critical phenomenology sensitive to the active production of meaningful spatialities in their spatio-temporal specificity. In this approach, sometimes associated with varieties of cultural or post phenomenology, active, situated and mediated conceptions of sonic sensing and reception replace substantially universalized physiological models of perception (Born, 2013; Connor, 1999, 2000; Ihde, 2003, 2009; Porcello, 1998; BR Smith, 2004; Sterne, 2003). As Jonathan Sterne says, an attempt to describe the act of hearing as if it existed outside history 'strives for a false transcendence. Even phenomenologies can change' (Sterne, 2003:

19; cf. BR Smith, 2004: 39). In this context a critical phenomenology is one which recognizes the spatio-temporal specificity of experience, the ontologically generative qualities of theorizing that experience, and the politics animated and articulated by particular distributions of the sensible.

Drawing on Augoyard and Torgue's notion of 'sonic effects' and Rancière's politics of the distribution of the sensible, as well as debates within sound studies concerning post/cultural/critical phenomenology, the following two sections examine four distinctive effects created by the active making of sonic space. This begins the process of unpacking and foregrounding some of the manifestations of sonic political agency highlighted by authors mentioned in the previous section.

IV Complexity and trajectory

Sounds interact and mask each other high or low, loud or soft, incessant or fugitive. In spatial terms, heard sounds give embodied sensation to properties of depth, distance and proximity, suggesting feelings of clarity, delicacy and intimacy, transforming and animating the experience. Sounds envelope and reverberate deeply within bodies in ways which are specific both to their phenomenal properties and to historically constituted modes of listening, understanding and interpretation. These qualities of sound produce particular kinds of density, texture and form to sonic space at the same time as they provide sounds with the valence and mutability key to the contingency and vitality of sonic spatiality suggested by Carpenter and McLuhan. Augoyard and Torgue address the spatial complexity of sound through what they call the effect of metamorphosis. They define this as a perceptive effect generated by the unstable and changing relations between elements of a sound ensemble (Augoyard and Torgue, 2005: 73). This is derived firstly from the instability of sonic structures perceived in time;

and secondly the distinctiveness generated by specific parts of an ensemble in any given sound composition, sound world or sonic environment (Augoyard and Torgue, 2005: 74). Thus the effect of metamorphosis draws attention both to the way sounds merge and mix, creating either a background to experience or a 'sound field', or the qualities and processes that enable certain sounds to stand out and indeed merge with other distinctive rhythms, timbres and tonalities (Augoyard and Torgue, 2005: 75). Listening and perception work together with the physical properties of sound to create the distinctive effects of sonic spatiality. Jonathan Rée (2000: 31) usefully compares mixing colours to mixing sounds; he says where light waves pass through each other without being mutually affected, sound waves constantly collide and combine in space. The result is that sounds always have 'a special kind of complexity' making sounds inherently social and heterogeneous (Rée, 2000: 31–2). Thus the philosopher Roger Scruton (1997: 13) claims that, unlike vision, the entire sound world is always present in our perception: 'if no sound is too loud, I may be able to hear all the [physically audible] contents of that world'. By implication in terms of political agency this suggests that sounds always contain traces and sources of potential contest and conflict in ways not present in other media.

The implications of metamorphosis are that sonic environments need to be understood as dynamic and interdependent wholes rather than an arrangement of individual free-standing elements or objects. In this way it is possible to understand how the constant presence of all sounds in any sound world produces a heterophony expressed in the competing multiple voices of the agora or marketplace which have been foundational for thinking about the nature of democracy since classical times. The physical complexity of sound suggests that even the most tranquil of sonic spaces can be heterophonic and unruly, providing a ground for conflict and contest which is difficult to either manage

or resolve. To this extent sounds have the specific capacity to express a sense of multitude. The inherently cosmopolitan quality of sound worlds is potentially important for thinking the sort of politics expressed by Negri, Balibar and others (Braun and Whatmore, 2010: xxv).

The valence and mutability of sound in space and time provide it with the qualities of lively if often unstable political agency. This is evident in the ability of songs, shouts, cries or indeed radio or other mass media broadcasting to gather and connect, creating constituencies, audiences, assemblies and publics spatially and temporally both proximate and at a distance (Wait et al., 2014; Pinkerton and Dodds, 2009). For Labelle (2010: xvii), sounds are 'promiscuous', inherently engaging and seductive, activating a politics of difference by asking individuals and entities to both identify with and differentiate themselves from others. Critical to these political qualities of uneven engagement and differentiation are the spatio-temporal qualities of sound as event. When sounds intensify and fade they have distinguishing temporal properties including attack and decay which are constitutive of their phenomenal experience. Because sounds die away and because even as recordings they can only be held long-term as some form of memory, code of practice or initiating algorithm, each instantiation of a sound is a specific utterance, a direct realization of process and practice. Striking a note on a musical instrument, verbally expressing a thought, the products of environmental or mechanical action or the activation of recording technology makes sounds anew each time they are heard. In this way the temporality of sonic production is central for understanding sonic spatiality. For Scruton (1997), the world of sound contains events and processes such that conventional notions of spatiality and location are cast in doubt. Thus he says 'sounds may be arranged on the pitch spectrum (a one dimensional space), but no sound can move from one place [pitch] on that spectrum to another without changing in a

fundamental respect (a semitone higher for instance).' Thus when sounds move through auditory space they are transformed rather than simply translocated (Scruton, 1997: 14).

For Labelle, such a sense of sound as a spatio-temporally transformative event underlies his conception of sonic mutability. These are arcs of rhythmic movement linking two points in time:

> Auditory knowledge is a radical epistemological thrust that unfolds as a spatio-temporal event: sound opens up a field of interaction, to become a channel, a fluid, a flux of voice and urgency, a play of drama, of mutuality and sharing, to ultimately carve out a micro-geography of the moment, while always already disappearing, as a distributive and sensitive propagation. (Labelle, 2010: xvii)

Such a conception of sound seems in sympathy with the idea of rhythm as the means of connection between disparate milieus suggested by Deleuze and Guattari (1988) for whom rhythm is a quality of the difference produced by periodic repetition. Thought of as repetitive riffs formed from heterogeneous assemblages of social and material practices, artefacts and beings, such refrains are expressive and creative to the extent that they generate both difference and the spatial relations of territory in which difference is made meaningful. Communication between milieus is thus a co-ordination between heterogeneous space-times. In describing such lines of flight, refrains organize territories, register and inscribe understandings of the world and open up a 'virtual' world of possibility and becoming (Thrift and Dewsbury, 2005: 105; see Bogue, 2003: 13–31; Buchanan, 2004: 10–11; Deleuze and Guattari, 1988: 345; also McCormack, 2002; Ingold, 2011; Revill, 2013). In this way the trajectories of sound's socio-material production might be understood to encourage and afford senses of identification and embodied belonging with distinctly political capacities as they move through and open on to

places and territories whilst also marking out boundaries around individuals, groups, entities and places.

The qualities of differentiation and aggregation associated with the processual qualities of sound generate both difference and transgression through movement. Thus, like a game of 'Chinese whispers', a rumour moving through a crowd or a manifesto broadcast to the world, sonic events gather support and opposition, actors, agents and resources, new and reinforced meanings unevenly as they travel and transform. In this way sound is distinctively agentive in the sense suggested by Karen Barad and the trajectory of sonic events forging chains of difference and association through space/time is reflected in her assertion that: 'Mattering is differentiating, and which differences come to matter, matter in the iterative production of different differences' (Barad, 2007: 137, 2006). From this perspective the characteristic production of difference through sonic trajectory is key to making things matter and articulating issues of concern. In this sense sonic qualities of complexity and trajectory are fundamental to the processes of cutting and redistributing highlighted by Rancière as opening up the very possibility of politics (Rancière, 2004; Yusoff, 2010). In this way reflections, refractions, echoes, amplifications and mutings semiotize sonic difference and activate its distinctive political agency as part of sonically specific distributions of the sensible (see Revill, 2013: 339–41).

V Acousmatism and touch at a distance

The evanescent qualities of sound raise two further important qualities of sonic spatiality; these are, respectively, the sonic effects of acousmatism and touch at a distance. Where the political agency of sound is concerned, these relate to the ability of sound in the form of, for example, the human voice or other sounds to rouse, shape and focus emotional impulse and action towards particular political ends within constituencies, groups and individuals. As those geographers concerned with embodied and affective politics suggest, sounds have the power to engage us directly and emotionally, encouraging deep and personal experiences of shared feeling (Waitt et al., 2014). At the same time sound in the form of voice acts as a marker of political authority when publics are addressed directly and when members of the polity speak out, discuss, participate and protest (Kanngieser, 2011).

The quality of acousmatism is associated with the difficulties intrinsic to locating the specific source or point of production for sound and therefore problematizes the origins and therefore authority of sound. As originally formulated by Pierre Schaeffer and adopted by Michael Chion, the term 'acousmatic' describes 'the noise which we hear without seeing what is causing it' (Chion, 1999; Dollar, 2006: 60–61). Origins for the term lie in the history of philosophy. The Acousmatics were the disciples of Pythagoras, who followed his teachings for five years without being able to see him as he spoke, concealed by a curtain. Thus the term has a special association with the properties of voice, speech, dialogue, conversation and, by implication, trust and authority. Augoyard and Torgue (2005: 130–1) understand acousmatic sonic environments through the sonic effect of 'ubiquity'. They define ubiquity as the paradoxical perception of a sound that we cannot locate, but which we know intuitively has a localized source for its production. This sonic effect, they argue, is particularly apparent in reverberant locations built of hard materials, such as squares, streets, underground parking garages, halls and corridors. In these kinds of places where there is an increase in the relative number and intensity of reflected sounds to direct sounds, a single momentary sound can create a multitude of reflections and delocalized echoes. Such effects are also characteristic of, for instance, bird and animal calls or insect noise

in rural and natural environments such as woodland and open country where sonic permeability cannot be matched to available visual stimuli. Such an effect might also be thought of in terms of sonic complexity discussed earlier where messages become refracted and transformed within the auditory spaces of heterogeneous voices and conversations which express different constituencies and interests. This might result in both 'echo chambers' reflecting and intensifying a shared message back within a smaller group of like-minded individuals and 'sounding boards' transforming and disseminating, refracting and distorting a message such that it escapes any clear sense of purpose and origin.

The capacity of each individual sonic utterance to detach from its source and gain some form of autonomy can be understood, as Labelle suggests (2010: xix), in terms of repeated chains of delocalization, combination, fusion, blending, emergence, partial decoupling and detachment rather than simply the productive capacity of a single originary source. In this way sounds as process engage, transform and gain an apparent autonomy from that which is spatially and temporally previous. The Lacanian cultural theorist and musicologist Mladen Dollar (2006) discusses the property of acousmatic detachment in relation to the way voices are produced as sonic utterance. He says the voice both belongs to the body yet, emanating from the orifice of the mouth, appears to be disconnected from it. Its point of production and connection with the body (the larynx) is both hidden from us at the same time that the speaking subject seems to address us directly in sound. It is of the body, speaks for the body but is simultaneously detached, merely a resonance resounding and echoing from somewhere deep within. Such a formulation highlights the essentially distanciating experience of sound as a heard event in space and time. In this respect sounds exhibit similar properties whether human voice, mechanical noise, musical instrument or natural sound. As an event, sound leaves the point of its production; it both belongs to its unseen origins and takes on a life of its own. The implication of this for sonic spatiality and sonic political agency is that sonic space is always to some extent inherently fetishized in the sense that it disguises its own making and is always, to some extent, other in the sense that sonic events are always processes of differentiation, cutting and redistribution. In this way sonic space has a distinctive capacity to interrogate is own origins whilst ironically gaining considerable political agency from the sense of authenticity it carries with it as the utterance of a speaking subject. It is at this point that sound approaches some of the conditions outlined by Bennett in her 'vital materialism' as the basis of 'thing-power'. Here Bennett quotes W.J.T. Mitchell (2005: 156–7), who notes that 'objects are the way things appear to a subject . . . Things, on the other hand . . . [signal] the moment when the object becomes the Other'. Bennett (2010a: 37) suggests that thing-power emerges at the moment of independence from subjectivity, and it would certainly seem legitimate to find such a moment for sound in the acousmatic effect of its production. Yet when thought of in terms of its relational mediation simultaneously as medium, method and modality, sound fails to qualify as what Bennett might term an actant. Sound remains tied to subjectivity through the processes of listening and understanding even in the instant of its active materiality.

Counterpart to the capacity of sound to leave its original source and become its own thing is the widely recognized capacity for sound to shape sonic experience in the form of what Murray Schafer calls 'touch at a distance'. Touch at a distance is the capacity of sounds to affect listeners in deep, profound and long-lasting ways, often with an extensive spatio-temporal reach. This is an important dimension of sonic political agency in terms of broadcast messaging and speechmaking. As Hendy (2013: xiv) says,

Schafer's notion 'captures perfectly the way that sound travels further than the length of an arm but arrives in someone's ear as a tangible thing, triggering a real emotional response'. In this sense hearing shares with touch some of the haptic capacity for apparently direct and uninhibited engagement with others and otherness. As Schafer (1994: 11) puts it:

> Touch is the most personal of the senses. Hearing and touch meet where the lower frequencies of audible sound pass over to tactile vibrations (at about 20 hertz). Hearing is a way of touching at a distance and the intimacy of the first sense is fused with sociability whenever people gather together to hear something special.

Drawing on Schafer's formulation, Hendy (2013: xiv–xv) suggests that the 'touch' of sound is foundational to the ways it shapes experience socially, culturally and experientially. Schafer usefully identifies the point of intersection between sound and touch in the physicality of vibration acting in and upon the body. In this way he supplies a basis in physical process for the accounts of embodied and affective sound discussed earlier. However, as Hendy goes on to outline, the intersection of touch and sound is both more profound and more extensive than that of a simply physical bodily encounter. Once heard, sounds can sometimes seem to resonate in consciousness, dominating thought processes, apparently masking other thoughts and feelings whilst directing consciousness in what Ihde calls the 'auditory imagination' (Ihde, 2007 [1976]: 131–6). To this extent sound plays a powerful role in the politics of national and group memory (Revill, 2000a). As Serres shows, touch plays an important role in the recognition of self-presence and the identification of similarity and difference. And Nancy argues that the touch of sound, alternately conceived as either the interior experience of resonating embodied sound or indeed as the inner voice of consciousness, has a distinctive place in negotiating

relationships between self and world. In this way loud or incessant sounds can provide unwanted spatial focus whilst welcome and familiar enveloping sound may provide intensely reassuring and pleasurable senses of 'losing oneself' in another world. Thus the property of touch at a distance grounded in both the visceral physicality of vibration and the lucidity of memory and imagination affords the most intimate and direct calls for political action and affiliation. As such, this form of sonic agency may be understood as animating the sort of affective and embodied politics described by Waitt et al. (2014). Most importantly, it plays a central role in a politics of recognition key to the admission of individuals and groups into the political process (Häkli and Kallio, 2014: 185–8; Honneth, 1995; Taylor, 1994).

Where the acousmatic properties of sound create spatio-temporal distance and problematize any simple senses of causality or making, 'touch at a distance' enfolds sound intimately with embodied processes, making and remaking senses of self and other. In this context it is perhaps no surprise that Peters (1999) traces the problematic politics of voice as communicative practice back to a contrast between the authenticity of a carefully bounded private one-to-one dialogue and the heterogeneous 'democratic' spatiality of broadcast dissemination. In broadcasting, for example, Peters argues that neither shared meanings nor the identity and understandings of speakers and listeners can ever be satisfactorily established. Broadcasting can only ever hope and assume that an audience will receive, recognize and understand the intended message of any particular verbal address. In this context understanding the spatial properties of sound figured as voice is key to understanding longstanding debates concerning communication, freedom of speech and democratic participation (Couldry, 2010; Habermas, 1984; Peters, 2005). An idealized sense of shared democratic understanding through voice is familiar from Habermas's

concept of 'the ideal speech situation'. However, the acousmatic qualities of voice do not guarantee certainty in communication; the iterative and turn-taking qualities of conversation which seem to guarantee dialogue also work to undermine certainty. As Peters (1999: 264–5) says, there is no ultimate guarantee that in conversation one utterance directly provokes an apparently corresponding return. Participants may simply be speaking past each other, 'speaking into the air'. For Peters (1999: 269–70), it is sound's capacity to encourage a sense of touch at a distance which helps compensate for this uncertainty in political debate mediated by technologies of broad or indeed narrow casting. In this context Peters (1999: 260) provocatively suggests a model for sonic democracy lying well beyond human experience, found amongst the sociability of dolphins. He shows how the democratic implications of dolphin physiology and the behaviour of sound in water might produce polyvocal messages resonating both synchronically and diachronically across the vastness of the ocean and through a multiplicity of dolphin populations, each participating in the conversation on their own terms and in their own time. Following this sonic model, Peters (1999: 260) imagines a situation where 'dialogue and dissemination would be indistinguishable' and the power structures, inequalities and inhibitions associated with these modalities might be transcended (see also Voegelin, 2014)

VI Conclusion

As the previous two sections have shown, the sonic effects of complexity, trajectory, acousmatism and touch at a distance begin to expand and elaborate on some of the ways spaces are made in sound. In situating and expanding on Carpenter's conception of 'space made by the thing itself not space containing the thing', the paper has traced some of the processes, practices and relationality which inform the making of sonic spaces. Drawing on Rancière's

conception of the distribution of the sensible as foundational for politics, the paper has shown how this spatiality of cutting, redistributing, making and remaking, which is itself embedded in processes of reflection, refraction, echo, recognition, amplification and muting, animates an ontologically productive politics of difference. Though Rancière calls this a politics of aesthetics, this paper suggests the implications are more powerful and wider ranging than this label indicates. Rancière arguably provides the base for a phenomenological politics of communicative practice focusing on the way media shape, limit and afford how and what can be thought, felt, experienced and shared. Clearly the focus of the paper has been on the making of sonic space, and there is still much work to do in relation to the political agency of sound. The paper has been able to suggest some of the ways in which complexity and heterogeneity give sonic space a liveliness which makes it inherently contested and conflictual. It has also introduced the ways in which the trajectory of sonic events gathers materials and entities across time and space, rendering sonic space transgressive and unruly. The sonic effects of acousmatism and touch at a distance alternately reinforce and undermine the senses of reach, immediacy, recognition and authenticity key to the role of voice in the practice and theory of democratic processes.

The temporality of its making and the way sound resides within and inhabits other materials give sounds a particular fragility as phenomena in the world. This paper has argued that it is not enough to understand the spatiality of sound through conceptions of mediation figured solely as a link or bridge between discrete entities, or that locate sonic spatiality only in listening practices, or indeed those simply privileging either the body or material vitality. Starting from Carpenter and McLuhan's premise, we need to seek the 'thinginess' of sound as co-produced by the act or processes of making, the materials which carry and transmit, and the

means of receiving, sensing and making sense. Sound is made within the contingent interplay of each of these realms simultaneously. Examining the way space is made in sound draws attention to the multiple processes of mediation which shape and inform the sonic. Without all parts of the process of mediation being present sound is merely, for example, physical vibration, transmitted signal or background noise, and it is only when figured in its spatial extension and complexity that the political agency of sound manifest in, for example, contest, transgression, and reach is mobilized.

This paper has explored sonic political agency distributed through a wide range of materials, entities, practices and assemblages. Some of these, such as speechmaking, protesting and parliaments, are closely associated with the formal and widely accepted sense in which the term 'political' is used, whilst some properties of sonic political agency, processes such as differentiation, identification, othering and recognition, can be thought of as building blocks for cultural as well as more formal political processes. In this context, Rancière's phenomenological/experiential politics is useful in terms of processes operating within the spheres of both cultural and formal politics. Rather than thinking of sonic political agency as an agent, or collection of objects in and of themselves, perhaps it might be useful to draw on the work of Augoyard and Torgue and think of it as a set of phenomenological effects. To this extent there is some common ground with Latour's conception of actant as neither subject nor object but as 'intervener' (Bennett, 2010b: 9; Latour, 2004: 75). However, given the critique of conventional senses of mediation earlier in this paper, perhaps more appropriate might be Stenger's (2010: 5) characterization of non-human agency as that 'forcing thought rather than as products of thought'. The notion of forcing which emphasizes process over object suggests a phenomenological conception of shaping, affording, enabling and constraining

consistent with the approach to sound developed in this paper. Unpacking the processes by which sound co-produces political effects in materials and entities, it is worth returning to Barad's (2007, 2006) play on the word 'matter' (see also Latour, 2004), at once physical process and matter of concern; figured this way, matter is simultaneously social and material. Though the particularly hyper-relational nature of sound might be exceptional it does suggest that matter as it is made sensible through experience might be best understood in terms of materials and processes operating through the intersection of different registers and circulations. To recognize this is to work with conceptions of ontological making better able to balance the co-dependence of material processes and experiential practices. Drawing on the lessons of critical phenomenology by considering the socio-material relationality of sonic making by thinking of mediation as multiple registers which situate and shape existence and experience can simultaneously help open up the black boxes of both affective and representational political processes.

References

Allen J (2013) Topological twists: Power's shifting geographies. *Dialogues in Human Geography* 1(3): 283–298.

Anderson B (2004) Recorded music and practices of remembering. *Social and Cultural Geography* 5(1): 3–20.

Anderson B, Morton F and Revill G (2005) Practices of music and sound. *Social and Cultural Geography* 6(5): 639–644.

Augoyard J-F and Torgue H (2005) *Sonic Experience: A Guide to Everyday Sounds*. Montreal/Kingston: McGill-Queen's University Press.

Back L (2003) Deep listening: Researching music and the cartographies of sound. In: Blunt A, Gruffudd P, May J, Ogborn M and Pinder D (eds) *Cultural Geography in Practice*. London: Arnold, 272–285.

Back L (2007) *The Art of Listening*. Oxford: Berg.

Barad K (2006) Posthumanist performativity: Towards an understanding of how matter comes to matter. In: Orr

D, Lopez McAlister L, Kahl E and Earle K (eds) *Belief, Bodies, and Beings: Feminist Reflections on Embodiment*. Lanham MD: Rowman and Littlefield.

Barad K (2007) *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*. Durham NC: Duke University Press.

Bennett J (2010a) Thing-power. In: Braun B and Whatmore SJ (eds) *Political Matter: Technoscience, Democracy and Public Life*. Minneapolis: University of Minnesota Press.

Bennett J (2010b) *Vibrant Matter: A Political Ecology of Things*. Durham, NC: Duke University Press.

Birrell R (2008) Jacques Rancière and the (re)distribution of the sensible: Five lessons in artistic research. *Art & Research: A Journal of Ideas, Contexts and Method* 2(1): 1–2.

Bogue R (2003) *Deleuze on Music, Painting and the Arts*. London: Routledge.

Boland P (2010) Sonic geography, place and race in the formation of local identity: Liverpool and Scousers. *Geografiska Annaler: Series B, Human Geography* 92(1): 1–22.

Born G (2013) Introduction. In: Born G (ed.) *Music, Sound and Space: Transformations of Public and Private Experience*. Cambridge: Cambridge University Press.

Braun B and Whatmore SJ (eds) (2010) *Political Matter: Technoscience, Democracy and Public Life*. Minneapolis: University of Minnesota Press.

Buchanan I (2004) Introduction. In: Buchanan I and Swiboda M (eds) *Deleuze and Music*. Edinburgh: Edinburgh University Press, 1–19.

Bull M (2000) *Sounding out the City: Personal Stereos and the Management of Everyday Life*. Oxford: Berg.

Carney GO (1998) Music geography. *Journal of Cultural Geography* 10(2): 1–10.

Carney GO (ed.) (2003) *The Sounds of People and Places: A Geography of American Music from Country to Classical and Blues to Bop*. Lanham, MD: Rowman & Littlefield.

Carpenter H and McLuhan M (1973) Auditory space. In: Carpenter E and McLuhan M (eds) *Explorations in Communication*. Boston: Beacon Press, 65–70.

Chion M (1999) *The Voice in Cinema*. New York: Columbia University Press.

Connor S (1999) CP: or, a few don'ts by a cultural phenomenologist. *Parallax* 5(2): 17–31.

Connor S (2000) Making an issue of cultural phenomenology. *Critical Quarterly* 42(1): 2–6.

Connor S (2002a) Michel Serres and the shapes of thought. At: http://www.stevenconnor.com/topologies/ (accessed 29 January 2015).

Connor S (2002b) Michel Serres's milieux. At: http://www.stevenconnor.com/milieux/ (accessed 29 January 2015).

Corbin A (1998) *Village Bells: Sound and Meaning in the19th-Century French Countryside*. New York: Columbia University Press.

Couldry N (2010) *Why Voice Matters: Culture and Politics after Neoliberalism*. London: SAGE.

De Silvey C (2010) Memory in motion: Soundings from Milltown, Montana. *Social and Cultural Geography* 11(5): 491–510.

Deleuze G and Guattari F (1988) *A Thousand Plateaus: Capitalism and Schizophrenia* London: Athlone Press.

Disch L (2010) *Faitiche*-izing the people: What representative democracy might learn from science studies. In: Braun B and Whatmore SJ (eds) *Political Matter: Technoscience, Democracy and Public Life*. Minneapolis: University of Minnesota Press.

Dollar M (2006) *A Voice and Nothing More*. Cambridge, MA: MIT Press.

Duffy M and Waitt G (2011) Sound diaries: A method for listening to place. *Aeither: The Journal of Media Geography* 7: 119–136.

Duffy M, Waitt G, Gorman-Murray and Gibson C (2011) Bodily rhythms: Corporeal capacities to engage with festival spaces. *Emotion, Space and Society* 4(1): 17–24.

Gallagher M and Prior J (2014) Sonic geographies: Exploring phonographic methods. *Progress in Human Geography* 38(2): 267–284.

Habermas J (1984) *The Theory of Communicative Action: Reason and the Rationalization of Society*. Cambridge: Polity.

Hainge G (2013) *Noise Matters: Towards an Ontology of Noise*. London: Bloomsbury Academic.

Häkli J and Kallio KP (2014) Subject, action and polis: Theorizing political agency. *Progress in Human Geography* 38(2): 181–200.

Hendy D (2013) *Noise: A Human History of Sound and Listening*. London: Profile Books.

Honneth A (1995) *The Struggle for Recognition: The Moral Grammar of Social Conflicts*. Cambridge: Polity.

Hudson R (2006) Regions and place: Music, identity and place. *Progress in Human Geography* 30(5): 626–634.

Ihde D (2003) If phenomenology is an albatross is postphenomenology possible? In: Ihde D and Selinger E (eds)

Chasing Technoscience: Matrix of Materiality. Bloomington: Indiana University Press, 117–130.

Ihde D (2007 [1976]) *Listening and Voice: A Phenomenology of Sound*. Athens, OH: Ohio University Press.

Ihde D (2009) *Postphenomenology and Technoscience: The Peking Lectures*. Albany, NY: SUNY Press.

Ingold T (2011) *Being Alive: Essays on Movement, Knowledge and Description*. London: Routledge.

Kanngieser A (2011) A sonic geography of voice: Towards an affective politics. *Progress in Human Geography* 36(3): 336–353.

Labelle B (2010) *Acoustic Territories: Sound Culture and Everyday Life*. London: Continuum.

Latour B (2004) *Politics of Nature: How to Bring the Sciences into Democracy*. Cambridge, MA: Harvard University Press.

Leyshon A (2001) Time–space (and digital) compression: Software formats, musical networks, and the reorganisation of the music industry. *Environment and Planning A* 33(1): 49–77.

Leyshon A, Matless D and Revill G (1995) The Place of Music. *Transactions of the Institute of British Geographers* 20(4): 423–433.

Leyshon A, Matless D and Revill G (1998) *The Place of Music*. London: Guilford/Longman.

Lorimer H (2005) Cultural geography: The busyness of being 'more-than-representational'. *Progress in Human Geography* 29(1): 83–94.

Martin L and Secor AJ (2013) Towards a post-mathematical topology. *Progress in Human Geography* 38(3): 420–438.

Matless D (2005) Sonic geography in a nature region. *Social and Cultural Geography* 6(5): 742–766.

McCormack DP (2002) A paper with an interest in rhythm. *Geoforum* 33(4): 469–485.

Mermoz G (2004) Istanbul sound diary. *Soundscape: The Journal of Acoustic Ecology* 5(1): 23–25.

Miller D (1987) *Material Culture and Mass Consumption*. Oxford: Blackwell.

Miller D (ed.) (2005) *Materiality*. Durham, NC: Duke University Press.

Mitchell WJT (2005) *What Do Pictures Want? The Lives and Loves of Images*. Chicago: University of Chicago Press.

Morton F (2005) Performing ethnography: Irish traditional music sessions and new methodological spaces. *Social and Cultural Geography* 6(5): 661–676.

Nancy J-L (2007) *Listening*. New York: Fordham University Press.

Paassi A (2011) Geography, space and the re-emergence of topological thinking. *Dialogues in Human Geography* 1(3): 299–303.

Peters JD (1999) *Speaking into the Air: A History of the Idea of Communication*. Chicago: University of Chicago Press.

Peters JD (2005) *Courting the Abyss: Free Speech and the Liberal Tradition*. Chicago: University of Chicago Press.

Pinkerton A and Dodds K (2009) Radio geopolitics: Broadcasting, listening and the struggle for acoustic spaces. *Progress in Human Geography* 33(1): 10–27.

Pocock D (1989) Sound and the geographer. *Geography* 74(3): 193–200.

Porcello T (1998) 'Tails out': Social phenomenology and the ethnographic representation of technology in music-making. *Ethnomusicology* 42(3): 485–510.

Rancière J (2004) *The Politics of Aesthetics*. London: Continuum.

Rée J (2000) *I See a Voice: A Philosophical History*. London: Flamingo.

Revill G (2000a) Music and the politics of sound. *Environment and Planning D, Society and Space* 18(5): 597–613.

Revill G (2000b) English pastoral: Music, landscape, history and politics. In: Cook I, Crouch D, Naylor S and Ryan J (eds) *Cultural Turns/Geographical Turns*. London: Longman.

Revill G (2004) Performing French folk music: Dance, authenticity and nonrepresentational theory. *Cultural Geographies* 11(2): 199–209.

Revill G (2012) Landscape music and the cartography of sound. In: Howard P, Thompson I and Waterson E (eds) *Routledge Companion to Landscape Studies*. London: Routledge.

Revill G (2013) El tren fantasma: Arcs of sound and the acoustic spaces of landscape. *Transactions of the Institute of British Geographers* 39(3): 333–344.

Rockhill G (2004) Translators introduction: Jacques Rancière's politics of perception. In: Rancière J, *The Politics of Aesthetics*. London: Continuum, 1–6.

Rodaway P (1994) *Sensuous Geographies: Body, Sense and Place*. London: Routledge.

Schafer RM (1994) *The Soundscape: Our Sonic Environment and the Tuning of the World*. Rochester, VT: Destiny Books.

Schafer RM (2007) Acoustic space. *Circuit: musiques contemporaines* 17(3): 83–86. Available at: http://id.erudit.org/iderudit/017594ar (accessed 29 January 2015).

Scruton R (1997) *The Aesthetics of Music*. Oxford: Oxford University Press.

Serres M (1993) *Angels: A Modern Myth*. Paris: Flammarion.

Serres M (1994) *Atlas*. Paris: Juilliard.

Simonsen K (2013) In quest of a new humanism: Embodiment, experience and phenomenology as critical geography. *Progress in Human Geography* 35(1): 10–26.

Simpson P (2009) 'Falling on deaf ears': A postphenomenology of sonorous presence. *Environment and Planning A* 41(11): 2556–2575.

Smith BR (2004). Listening to the wild blue yonder: The challenges of acoustic ecology. In: Erlmann V (ed.) *Hearing Cultures: Essays on Sound, Listening and Modernity*. Oxford: Berg, 21–41.

Smith M (2004) *Hearing History: A Reader*. Athens, GA: University of Georgia Press.

Smith SJ (1994) Soundscape. *Area* 26(3): 232–240.

Smith SJ (1997) Beyond geography's visible worlds: A cultural politics of music. *Progress in Human Geography* 21(4): 502–529.

Smith SJ (2000) Performing the (sound)world. *Environment and Planning D – Society and Space* 18(5): 615–637.

Stengers I (2010) Including nonhumans in political theory: Things forcing thought. In: Braun B and Whatmore SJ (eds) *Political Matter: Technoscience, Democracy and Public Life*. Minneapolis: University of Minnesota Press.

Sterne J (2003) *The Audible Past: Cultural Origins of Sound Reproduction*. Durham, NC: Duke University Press.

Taylor C (1994) The politics of recognition. In: Gutmann A (ed.) *Multiculturalism: Examining the Politics of Recognition*. Princeton, NJ: Princeton University Press, 25–73.

Thompson E (2002) *The Soundscape of Modernity: An Investigation of Architectural Acoustics and Listening in Early Twentieth Century North America*. Cambridge, MA: MIT Press.

Thrift N and Dewsbury JD (2005) 'Genesis eternal': After Paul Klee. In: Buchanan I and Lambert G (eds) *Deleuze and Space*. Edinburgh: Edinburgh University Press, 89–108.

Tuan Y-F (1974) *Topophilia: A Study of Environmental Perception, Attitudes, and Values*. Englewood Cliffs, NJ: Prentice Hall.

Verbeek P-P (2005) *What Things Do: Philosophical Reflections on Technology, Agency and Design*. Philadelphia: University of Pennsylvania Press.

Voegelin S (2014) *Sonic Possible Worlds: Hearing the Continuum of Sound*. London: Bloomsbury.

Waitt G, Ryan E and Farbotko C (2014) A visceral politics of sound. *Antipode* 46(1): 283–300.

Wood N (2012) Playing with 'Scottishness': Musical performance, non-representational thinking and the 'doings' of national identity. *Cultural Geographies* 19(2): 195–215.

Wood N and Smith SJ (2004) Instrumental routes to emotional geographies. *Social and Cultural Geography* 5(4): 533–547.

Wood N, Duffy M and Smith S J (2007) The art of doing (geographies of) music. *Environment and Planning D– Society and Space* 25(5): 867–889.

Wylie J (2005) A single day's walking: Narrating self and landscape on the South West Coast Path. *Transactions of the Institute of British Geographers NS* 30(2): 234–47.

Wylie J (2006) Depths and folds: On landscape and the gazing subject. *Environment and Planning D: Society and Space* 24(4): 519–535.

Yusoff K (2010) Biopolitical economies and the political aesthetics of climate change. *Theory, Culture & Society* 27(2–3): 73–90.