Of Unsound Mind and Body Immersive Experience in Headphone Theater

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This chapter explores the use of binaural sound technologies in audio theatre, examining the nature of immersive listening and audio theatre's staging of the listener's perceptual systems. This experience of sonic immersion implicates the body in various ways, with sound connecting the body to the world and triggering intersensorial perception. Exploring binaural sound mediation and examining the relationship of sound, space and the listener's 'resonant body', this chapter interrogates the experience of the listener in Complicite's *The Encounter (2016)*, and Glen Neath and David Rosenberg's *Fiction* (2015) and *Séance* (2017). Whilst Simon McBurney at the beginning of *The Encounter* reminds the audience that the 'whole thing is completely artificial', the use of binaural sound technologies in audio theatre productions exposes the listener to the mediated sounds of actual environments, immersing them in sound that is both real and virtual, there and not there, live and mediated, actual and abstract. This chapter will suggest that audio theatre facilitates a form of self-aware immersion that draws the audience's attention to their own multimodal perception, with particular emphasis on the often less-prominent interoceptive and proprioceptive systems. Sonic immersion as facilitated by audio theatre such as *The Encounter*, provides an experience of contemplative immersion and for self-reflection from the inside-out, forcing consideration of one's bodily ownership, body boundaries, and internal space.

The recent spate of headphone-based theatre in the UK over the last five years is indicative of a broader field of theatre that is placing the auditory experience at the heart of both its form and content. This elevation of the auditory may reflect what other theorists in the newly formed field of Sound Studies have described as the 'sonic turn' (Drobnick 2004: 10) and the 'turn to listening' (Home-Cook, 2015: 8), which "has done much to challenge the hegemony of the spectatorial gaze, by refocusing our attention on the phenomenon of sound and perception" (Home-Cook, 2015: 8). The term 'audio theatre' is used here not to over-simplify a particular form of theatre but to refer to a body of recent work is part of a trajectory of practice that has embraced this 'turn to listening'. This body of work relies on audio technologies as fundamental to the form and content of the performance; whilst acknowledging that all performance may have a sonic dimension, and that as an adjective, the term audio can relate to the production and reception of sound more generally, the term audio is used here in its relation to the electronic mediation of sound and its recording, transmission and reproduction.

Audio theatre has the potential to scrutinize the sensorial hierarchy and, through an emphasis on the auditory and somatosensory systems, subvert the dominant sensorial regime. Michael Bull and Les Back explain, "In the hierarchy of he senses, the epistemological status of hearing has come a poor second to that of vision…The dominance of the visual has often meant that the experience of the other senses… has been filtered through a visualist framework" (2005: 1-2). They further suggest, "The

reduction of knowledge to the visual has placed serious limitations on our ability to grasp the meanings attached to much social behaviour, be it contemporary, historical or comparative" (2005: 2). This perspective epitomizes what might be thought of as an 'anti-ocular turn' in continental philosophy and critical theory. Following Martin Heidegger's critique of the ocularcentrism of Western thought, in which "that which is to be grasped by the eye makes itself normative in knowing" (1977: 166), the anti-ocular turn involves a move towards listening and acoustic metaphors. Jean-Luc Nancy's *Listening* (2007) may be considered a critical moment of the anti-ocular turn in critical theory, though as Adrienne Janus suggests, to even use the term 'theory' at all, already positions one within the ocular-centric discourse that Jean-Luc Nancy and others would like to turn against (2011: 182).

Nancy suggests the body's 'sonority' and asks "What does it mean for a being to be immersed entirely in listening, formed by listening or in listening, listening with all his being?" (2007: 4). This question will explored in relation to audio theatre later in this chapter. Nancy's work responds to a call in the 1960s and 70s for a 'turn to listening' by philosophers and composers such Don Ihde and Murray Shafer, which would now seem well established. Jonathan Sterne in his chapter *Sonic Imaginations* (Sterne, 2012) introduces 'sound studies' as a name for interdisciplinary studies in the human sciences that takes sound as its point of departure: "By analysing both sonic practices and the discourses and institutions that describe them, it redescribes what sound does in the human world, and what humans do in the sonic world" (Sterne, 2012: 2). The sonic turn has manifest across theatre practice, with productions focusing more on sonic experience, and in theoretical discourse and critical analysis, as sound studies and theatre studies begin to overlap. Sound studies has until recently been what Patrick Finelli calls a 'minor grace note in the composition of theatre studies' (2012: 465), but with texts such as Ross Brown's *Sound: A Reader in Theatre Practice* (2009), Lynne Kendrick and David Roesner's *Theatre Noise: The Sound of Performance* (2011), Roesner's *Composed Theatre: Aesthetics, Practices, Processes (2012)* George Home-Cooke's *Theatre and Aural Attention* (2015), and Lynne Kendrick's soon to be released (at the time of writing) *Theatre and Aurality* (2017), it is a rapidly growing field.

The examples of audio theatre addressed here challenge the engagement not of the spectator, but of the audience: the *Oxford English Dictionary* notes that the term audience was "first used abstractly to denote the individual activity of hearing" (in Radway, 1988: 359). Janice Radway explains "to 'give audience' was to 'give ear' or attention to what had been spoken by another" (Radway, 1988: 359). While the term 'spectator' suggests one who watches, an audience is one who gives their aural attention. To 'give attention' is of course not passive; to 'give ear' implies an action, it is something that requires doing. As George Home-Cook explains, "listening is, in every sense, an *act*: listening is not only something that we do, but is inherently *theatrical*. As a specialized mode of *attention,* listening both manipulates and is manipulated by the phenomemon of sound" (2015: p. 9). The audience member is always already both recipient and participant, both manipulated by and manipulating the aural landscape in which they are immersed. Audio theatre uses technologies of sound production and transmission to stage sonic perception and to provide a space in which to contemplate the listening experience.

Within the wider field of audio theatre, a number of headphone theatre productions are using the specific capacity of binaural audio technologies to facilitate sonic immersion in auditory space. Building on a history of binaural sound usage in audio-walks, such as produced by Janet Cardiff since 1991, contemporary headphone theatre creates experiences of listening to binaural sound in contexts that range from traditional theatres, to everyday spaces, to staged outdoor performances, to complete darkness. Binaural sound typically involves using a dummy head with a microphone in each ear to record sound, which when played back through headphones, creates an immersive 3D experience not unlike stepping into another pair of ears. Binaural recording is a century old technique that is experiencing a revival in audio theatre and developing commercial prominence as a key feature of virtual reality (VR). Binaural sound is to hearing what VR is to seeing; binaural sound enhances the experience of presence, of 'being there' that is the basis of VR design. Early experiments in the application of stereo and binaural technologies focused on the capacity of such technologies to facilitate access to remote events, enabling audiences an experience of 'being there' for physically distant sonic events.

As early as 1881, Clement Ader, a French engineer, devised a broadcasting system to stream a Parisian Opera to listeners up to two kilometres away. He connected microphones across the front of the Opera stage and used telephone transmitters to broadcast the Opera to listeners who were required to hold two separate telephone receivers to their ears. The 'stereo' listening experience was the star attraction of the 1881 International Exhibition of Electricity (Collins 2008) and was later commercialised as the "Theatrophone" in 1890 by the Compagnie du Theatrophone, who distributed live concerts via telephone from Paris theatres to pay-per-use telephones in hotels and cafes, and to private subscribers (Cook 1999, p. 16). As well as using technologies of mediation to extend access to sound-based performance, using headphones to experience sound as if through the ears of others has been the focus of pursuits since the early 20th Century. In 1933 at the Chicago Fair, the telephone company AT&T demonstrated the first binaural transmission system, using a mechanical dummy called Oscar with microphones in its ears; Oscar was positioned in a glass box and the public could listen to what Oscar heard in real-time via head receivers (Ganz 2008, p. 78). Building on the same principles of Oscar's transmission system, this access to experience of another's perception, of putting on a headset and experiencing sound as if one's material environment were different to the actual environment, to explore the effect of this on one's sense of body is the basis for a sector of audio theatre that places the audience in headphones; whilst using significantly more sophisticated technological platforms, these productions rely on the same principles of recording sound using a dummy-head.

Binaural recording reproduces sound the way it is heard by human ears, as opposed to 'stereo' recording, which does not take into account the mass between the ears, the 'headspace' in the middle, or the movement of sound over skin. Recording sound using the dummy head accounts for the impact of head mass and shape, and the folds of the outer ear that reflect sound into the ear canal. The human head is an obstacle to high and middle frequency sound waves; binaural recording captures a soundscape as it encounters human materiality, and when listened to via headphones, reproduces the sound as shaped by the human body and material environment. Binaural recording takes into account the head-related transfer function, allowing one to hear sound as heard through human ears, providing a sense of sounds as clearly located in physical

space. When the binaural soundscape accessed via headphones is experienced in an environment other than that which is sonically depicted, the effects of binaural sound can make one not just aware, but wary, of sensory perception. The following works, elevate auditory perception as both the means and matter of the performance.

Example 1:

Complicite's The Encounter layers live and pre-recorded sound that is accessed by the theatre audience via headphones. Simon McBurney performs a two-hour feat of dynamic storytelling using live binaural sound created using a dummy-head on stage with microphones in each of its ears (the Neumann KU100), various other microphone onstage, foley effects, pre-recorded binaural sound, and cinematic background music. He begins in stereo sound introducing us to the various microphones and loop pedals on an otherwise near-empty stage and explains how binaural sound works: "here I am somewhere in your head", he says, before walking from one ear, "across the electrified pate of our brain", to lodge behind our frontal lobe. The binaural sound engineering creates a vivid sense of McBurney's voice as spatially located, as having the capacity to move around, towards, and even potentially inside the listener's body.

The story McBurney brings to life is American photographer Loren McIntyre's visit to the Amazon jungle in 1969 and his encounter with the Mayoruna tribe, as recorded in the book Amazon Beaming by Petru Popescu. McBurney tells us that the function of stories are to enable the listener to enter into the consciousness of the protagonist, and the use of binaural sound places each audience member at the centre of the protagonist's world and sonically renders their immediate environment. McIntyre followings and engages with the tribe as they undertake a mind- altering journey searching for the 'beginning', a time before everything known began. McIntyre's encounter with the Amazon and its people is vividly constructed through sound design by Gareth Fry, and McBurney, speaking to us mostly as a kind of narrator but also slipping into the internal inner monologue of the character, skilfully uses materials he has onstage to create the sounds of the jungle. The sound of the river lapping is created by slowly shaking a water bottle around the microphone, and by trampling a pile of old recording tape, McBurney creates the sounds of crunching leaves underneath our feet.

The aesthetic places emphasis on the performer's physical efforts; McBurney's labour creating the fictional environment is made ever more visible. My attention is also drawn to my own embodiment, both through the material engagement with binaural sound and through the content of the story; McBurney's describes the protagonist's encounter with the rainforest involving cut skin, breath, dehydration, eating, and indigestion. McIntyre experiences illness, thirst, fear, and some kind of hallucinatory episode. He wakes up believing the Mayoruna village to be under attack from a jaguar, and in fleeing, becomes lost in the pitch black jungle that seems to attack him; thorns rip at his skin, their barbs thoroughly embedded, and insects flock around his head. He scratches and flails, coming face to face with spiders, snakes, and overwhelming darkness. McIntyre inundation with jungle fauna and immersion in the world of the Mayurona is powerfully depicted by McBurney using his rather rustic onstage toolkit and three-dimensional sound technologies, placing the audience in the middle of McIntyre's viscerally immersive environment.

Examples 2:

David Rosenberg and Glen Neath's Fiction (2015) and Séance (2017) are the second and third collaborations between writer Neath and director Rosenberg using binaural sound in total darkness, following Ring (2012). In Fiction (2014), which was performed at the Battersea Arts Centre, Neath's script plays with the overlap of theatre, dreams, imagination and memory. The audience are told that they are attending a conference in a hotel and that the keynote speaker is late; a speaker's podium stands in front of a projection screen showing the interior of a hotel room. Messages appear on the screen and we are informed that half the audience are actually actors. A seemingly random audience member is called up onto the stage where she gives an introductory speech about the nature of fiction, talking into a microphone that amplifies directly into our headphones. She describes the way in which the mind creates, characterizes and visualizes places, and she explains the power of the imagination to fill in missing pieces of a storyline. As she speaks, the lights go dark, and she reminds us that reality is only measured by experience. A soft, female voice whispers in my ear, comforting and familiar, and she remains a reference point throughout the work, a kind of personal narrator and guide creating a distancing effect between me and the seemingly film-like happenings that unfold around me. She coaxes me towards sleep, and the strange events that unravel have the qualities of dreams, involving various common dream tropes such as being unprepared for a public speech, being naked in public, and being conscious of the fact one is dreaming but unable to wake up.

At one point, I am inside a car and the quality of the air around me feels compressed; the sounds and air are close and as I hear rain patter on the roof of the car I feel physically enclosed. Someone bangs on the roof, just above my head, and I instinctively look towards my side where I perceive that someone would be standing. In one moment, the scent of deodorant pervades my nostrils; in another, a deep base rumbles through the floor, seeming to vibrate in my feet. I regularly find myself pushing my feet into the floor and my hands into my chair so as to physically confirm material existence. The narrative is obscure and muddy, deliberately discombobulating, with all the logic and plot of a series of unrelated dreams. I wake up in the middle of already unfolding events, take on various roles in different locations, without a realistic sense of time or causal linearity.

Examples 3:

Séance, which was performed at Summerhall in the Edinburgh Festival in 2017, also uses binaural sound and takes place in absolute darkness. However, unlike Fiction, which is nearly an hour long, Séance is only fifteen minutes; the show lacks the meditative, narrative qualities of Fiction but instead offers a short, visceral, immersive experience exploring the human capacity for superstition and the contagious nature of fear. The headphone-wearing audience of twenty are seated inside a customised shipping container on velvet chairs around a long table with their backs to the wall. Hanging over the table, small metal bells are suspended with cord, and the audience are asked to place their hands flat on the table for the duration of the performance. When the doors close and black-out ensues, I am hostage to the

voices in my ears. The blackness is disorientating and I am rendered immobile and silent.

We hear the sound of the door opening and a man enter the space, and the binaural soundscape tricks the proprioceptive system into responding to this imagined presence. The audience are participants in a séance and this man is our medium; he moves through the space, whispers in our ears, walks the length of the table and conjures spirits in the darkness. The show does just rely on special effects or on making the audience jump in surprise, but evokes an uneasiness, a wariness, and an interest in the line between real and imagined, playing with one's openness to a perception of the paranormal. It is an experiment in the nature of fear itself; whilst rationally one knows the sounds are not live, the body responds to objects and entities it senses in the space. I do not suspend my disbelief, rather I cling to it, as the information saturating my senses tries to convince me that my environment and situation are different to what my rational thinking knows to be true. The liveness and communal aspect of the performance is key; we hear breathing and murmuring coming from where we know other audience members are sitting, and the fearful whispers of the other séance participants are infectious.

Sonic Immersion

Over-the ear-headphones create a physical barrier between the world and the wearer's ear rendering them deaf to all noise except that presented. In *The Encounter, Fiction* and *Séance*, it is easy to forget that one is wearing headphones; they fit comfortably and do not inhibit movement, enabling a high degree of immersion. While psychological immersion involves mental commitment or absorption in fictional content, the notion of psychological immersion refers to the physical barriers of mediation that close-off the audience member to all but the mediated content. Headphones shut out the exterior world of the here and now and enable mediated, directed sound to enter into and resonate throughout the body. They enable a high degree of perceptual immersion, but as they also remain unobtrusive, do not distract from achieving psychological immersion. The productions discussed here make clever use of this specific modality of headphones; Glen Neath explains that in making the work, "We took a long time to come to the conclusion that we didn't want to show the technology…With virtual reality, you've got this headset on so you know you're in this virtual world. Whereas with ours, we're playing with the idea that we don't know what's real and what's not" (Neith in Manthorpe, 2017).

Headphones enforce perceptual immersion, however, rather than involving the projection of oneself into a separate, alternate reality, they facilitate a perceptual shift in which material reality is made strange and coloured by the auditory information received. Immersion here is based within the here and now, not involving transportation into an alternate reality, but an alteration, a theatricalisation, of our surrounding space. In *The Encounter*, the visual environment is perceived via the lens of the auditory; auditory space is overlaid across material environment, filling the interior of the Barbican theatre with the atmosphere of the Amazon. In *Fiction and Séance,* the audience continually question the relation of the sounds they hear to their immediate physical environment, both seeking and shying away from moments of correlation. When the bell hanging above the table that was seen on entering the container is heard to ring, there is correlation between what I know my physical space

to be and what I hear, so when I also hear through my headphones the sounds of footsteps across the table in-front of me, and feel the reverberation of these steps through my palms, my belief in the reality of the sonically rendered is inevitably enhanced. Sonic information populates the material environment; the listener's immersion does not involve the projection of their presence, their 'being there', in an elsewhere, but a heightened experience of an altered here-and-now.

That sound is immersive has been much discussed. Jean-Luc Nancy asserts that while 'visual presence' exists prior to one's encounter with it, "sonorous presence *arrives* – it entails an *attack,* as musicians and acousticians say. And animal bodies, in general – the human body, in particular – are not constructed to interrupt at their leisure the sonorous arrival, as has often been noted (2007: 14)." Sound is pervasive and as Murray Schafer asserts, "We have no ear lids. We are condemned to listen" (2003: 25). However, as Schafer's mention of 'condemnation' and Nancy's mention of 'attack' suggests, explanations of sonic 'immersion' often portray the experience as passive and mindless, as involving absorption or rapture, or even as being held hostage to sound that is inescapable, as opposed to critical thought, engagement and reflection. Frank Popper describes immersion as "diminishing critical distance from what is shown and increasing emotional investment in what is happening" (Popper, 2006: 180). This understanding of immersion as mindless is echoed in discussions of sonic immersion and the experience of recorded sound. Theodor Adorno says of recorded sound:

> By circling people, by enveloping them - as inherent in the acoustical phenomenon - and turning them as listeners into participants, it contributes ideologically to the integration which modern society never tires of achieving in reality. It leaves no room for conceptual reflection between itself and the subject, and so it creates an illusion of immediacy in a totally mediated world. (1990: 310)

Audio theatre as addressed here envelop listeners in sound, circling them "as is inherent in the acoustical phenomenon", however in the *staging* of recorded sound, a space is made between itself and the subject, and as such these works not only leave room for but insist on conceptual reflection.

Audience experience of these headphone theatre productions can involve both immersion and critical reflection; audience members may experience an oscillation or duality of these states, both/and thinking and feeling, psychological and physiological. This thinking/feeling immersion forms a key characteristic of audience listening in audio theatre. These works facilitate audience engagement best described as contemplative immersion, a phrase that might initially sound paradoxical: unlike the experiential quality of immersion, when we contemplate we are meant to be rational and analytical. Adorno uses the term 'contemplative immersion' in *Aesthetic Theory* when he asserts, "Through contemplative immersion, the immanent processual quality of the work is set free' (1990: 241). These audio productions demand a form of involvement in which the audience member is immersed, as an experiencer of audio content, and yet is simultaneously cognizant of their own immersion and perceptual processes. The metaphor of immersion suggests deep mental involvement or physical submersion in matter or space, and contemplative immersion involves submergence in this space whilst simultaneously reflecting on its otherness. It entails an experience of the texture and qualities of the matter in which one is immersed, whilst reflecting on how one experiences immersion.

In audio theatre, that within which the audience are immersed is what Marshall McLuhan calls 'auditory space' or what Jean-Luc Nancy calls 'the sonourous present', which he suggests "is the result of space-time: it spreads through space, or rather it opens a space that is its own, the very spreading out of its resonance, its expansion and its reverberation" (2007: p. 13). While sound, or listening, is often thought of as temporal and linear, with the impact of music for example reliant on the ability to relate sounds through time, the notion of immersion often involves a sense of being outside of time; video gamers for example often report that a particular feature of immersion in video games is an experience of a loss of an awareness of time passing (see for example Sanders and Cairns, 2010). Immersive sound is spatial and functions to spatialise; binaural sound renders three-dimensional space, circling the listener within resonant, auditory space. Nancy describes the 'sonorous present' as opening a space that is its own, a space that "is immediately omni-dimensional and transversate through all spaces: the expansion of sound through obstacles, its property of penetration and ubiquity, has always been noted" (2007: p.13). Sound penetrates and inhabits the body and its environment, and in the case of immersive sound as experienced in headphone theatre, it colonises the visual, the environmental, the material.

Nancy's 'sonorous present' is not dissimilar to Marshall McLuhan's understanding of 'auditory space', which he defines as a "field of simultaneous relations without centre or periphery. That is, auditory space contains nothing and is contained in nothing" (McLuhan, 2005: 48). In his paper *Inside the Five Senses*, McLuhan writes, "It is the act of hearing that itself creates 'auditory space', because we hear from every direction at once…Yet even intelligent and, especially literate people flee from the very idea of 'auditory space', because, naturally, it cannot be visualised" (McLuhan, 2005: 48). Auditory space is an effect of binaural hearing and somatically engages the spectator in sonic experience. McLuhan and Carpenter describe auditory space in the pages of *Explorations, 7:*

> The essential feature of sound is not that it has a location but that it be, that it fill space. Sound is an envelope. No point of focus; no fixed boundaries; space made by the thing itself, not space containing. It is not pictorial space but dynamic, always in flux; creating its own dimensions moment by moment. It has no fixed boundaries, is indifferent to background the ear favours sounds from any direction, it can experience things simultaneously (in Marchessault, 2005: 91).

 The use of audio-technologies in performance creates various dimensions of auditory space that surround, and stem from, the body of the listener. In *The Encounter, Fiction and Séance,* the listener is immersed in an emergent sound-space that envelops and engages the entire sensorium.

The Body-in-Sound

In exploring the engagement of the body immersed in sound, it is necessary to avoid reasserting the separation and hierarchical division of listening and seeing; rather a Gibsonian understanding of the senses allows for intersensoriality, promoting the senses as 'perceptual systems' (Gibson 1983). Understanding the senses as perceptual systems accepts that the sensors usually attributed specifically to sight, smell, touch, hearing and taste, may intermingle and interact as they form our perceptions of the world. Rather than mutually exclusive, sensory systems overlap and collaborate in

perceiving a world that is simultaneously seen, touched, heard, smelt etc. Accepting the senses as potentially overlapping and interacting enables a consideration of 'hearing' as involving one's entire body and sensory apparatus. In the examples of audio theatre addressed here, immersion in auditory space showcases the listening experience as fundamentally intersensorial and draws the listener's attention to their exteroceptive and interoceptive somatosensory processing.

Auditory space engages the participant somaesthetically, involving not just the faculties of hearing but of proprioception and touch, which together with the modality of temperature sensation, work to create perception of environmental elements in a process of haptics. Neuroscientists have asserted the importance of haptics in integrating visual and auditory information, confirming their hypothesis of a 'haptic bond' between visual and auditory stimuli (Fredembach et al, 2009). With the dominance of the visual undermined as a result of auditory dominance (as in *The Encounter*) or in the absence of sight altogether (as in *Fiction* and *Séance*), our haptic senses become of central importance to our awareness of the world. James Gibson describes the haptic system as "the sensibility of the individual to the world adjacent to the body by the use of his body" (1966: 97). Haptics are the porous frontier of the body, the indistinct boundary between 'self' and environment. Gibson asserts, "The haptic system, unlike the other perceptual systems, includes the whole body, most of its parts, and all of its surface" (1966: 99). Immersion in auditory space as found in binaural headphone listening is experienced haptically, as sound is brought to bear on the listener's body. Sonic immersion creates a profound self-awareness of one's body schema; headphone productions such as *The Encounter*, *Fiction* and *Seance* force the proprioceptive system, the system that provides our sense of equilibrium and being in space, to respond to sound as a spatial and proximate presence.

In these performances, characters whisper into the ears of the participants, and the effects of the binaural recordings create a sensation of physical proximity. A voice speaks to my right and I 'feel' the speaker standing beside me, moving behind me, and as she speaks intimately in my ear, I believe I feel her breath on the back of my neck and moving the hair on the top of my head. The dialogue through the headphones clearly locates the speaker in relation to the body of the audience member, so that the listener is surrounded by spatially located sound sources. These productions provide a profound sense of physical presence within virtualised space, and the authenticity of the auditory rendering of an augmented environment triggers the haptic system into responding to the presence of imagined bodies and objects. In *Fiction* and *The Encounter,* is not just the sonically implied bodies of others that bear on my proprioception but my sense of positioning within, and engagement with, the material environment; in *Fiction* as I am listening to the weather from inside a car, I feel the closeness of the atmosphere in the confined space, the shift in air density as rendered through sound, on the surface of my being. In *The Encounter,* the sounds of rustling leaves and buzzing insects, of weather and moving air, bear upon my body; my hand reaches automatically to swot away a mosquito buzzing around my head and as McBurney crunches a crisp pack to create the effect of fire crackling and spitting, I anticipate the heat of the fire pressing through the air onto my skin. In *Séance*, I not only experience proximity to a sonically present performer (the medium) who moves around me and whispers in my ears, but also to an imagined ghostly, monstrous being that my rational brain knows cannot exist but which my nervous system, ready to flee or fight, responds to anyway.

With the modality of hearing entwined with those of touch and proprioception, immersion in auditory space is full-bodied and experienced through the skin. Michel Serres argues, "the ear is no more to be located in one place than the skin" (in Conner, 2005: 324). "The skin", Serres suggests, "receives all the senses together…

> Our wide, long, variable envelope hears much, sees little, secretly breathes perfumes, always shudders, draws back with horror, withdraws or exults at loud sounds, bright light, foul smells. We are bathed in things from head to toe…We are not aboard a boat ten feet above the water line, but submerged in the water itself" (2005: 70).

The staging of the binaural listening experience, while it is doubtful it can actually increase sensitivity, makes prominent the body's haptic sensitivities. In headphone listening, the body is submerged in acoustic space and sound rushes the skin. The three-dimensional sound shapes have physical bearing, and the skin system responds to their imagined colour, size, texture and temperature. It draws back from, and reaches out for, the bodies of those whispering next to them. It senses the space in between its surface and the surface of the objects off of which sound bounces and is absorbed; the car dashboard, rainforest leaves, a hotel room.

In *The Encounter,* Simon McBurney draws the listener's attention to the sensitivity of the skin from the outset, suggesting that as they listen to his voice whisper into their ear, the brain may imagine that the surface of the ear may feel his breath and become hot. Throughout his narrative he emphasises sensations of touch and texture; he describes the qualities of leaves brushing fingers and the thick, clammy, humid air. He describes burning feet and ripped skin, and in one scene in which the protagonist suffers some kind of tropical illness, carnivorous maggots hatching from underneath the skin. By emphasising the body within his narrative, McBurney's performance attunes our body's sensitivities in preparation for sonic immersion, forcing contemplation of the role of the skin in defending against, in the enjoyment of, and incorporation with the world. In *Seance,* as well as the medium's movement and whispering working to trigger the listener's physical response, the production targets the audience's sensorium and draws attention to embodiment in various ways. At the beginning of the séance the medium tells us to focus on our own breathing, which draws contemplation of the movement of lungs, chest, and lips. The audience's hands are vulnerable, and as the sound of footsteps across the table tread near, hands tense in anticipation of being stepped on. I am acutely aware of the concrete texture of the table surface and at one point, I feel the table move off the floor, but without visual confirmation, it is difficult to know if this really happens or is imagined. In both *Séance* and *Fiction*, vibrations are felt through the chair in which the audience member is seated, moving up from the floor and inside the skin, heightening the listener's sensitivity to the interfacing of their body and the material environment, and of the body's boundaries as fundamentally penetrable in its relation to the world.

In addition to a heightened sense of one's physical positioning within external space, the use of binaural sound also has the potential to provide an intimate sense of one's interior space. As Jean-Luc Nancy explains, "the sound that penetrates through the ear propagates throughout the entire body something of its effects" (2007: 14). The process of hearing involves not just the skin but flesh and bone; the body conducts the sound the sound impregnates and inhabits its interior spaces. Serres explains, "We hear through our skin and feet. We hear through our skull, abdomen and thorax. We

hear through our muscles, nerves and tendons. Our body-box, strung tight, is covered head to toe with a tympanym" (2016: 141). In triggering the body's response to its perceived proximity to sound sources, and in specifically speaking to the sensations of touch and proprioception, audio theatre emphasises the body's engagement with its external sonic environment. However, these productions also strategically draw attention to the interior of the body and the passing of sound into, through, and around the chamber of the 'body-box'. In all three productions at different moments, sound seems to bounce through the body mass, and the eardrum extends across the entire body-drum.

These productions draw on the specific capacity of binaural sound technologies to position sound both inside and outside the body, exploiting the psychoacoustics of headphones, which produce a vivid imaging of one's own 'headspace'. As Charles Stankievech writes in his article tracing the trajectory of listening *From Stethoscopes to Headphones* (2007), "A modern technological prosthetic, headphones are quite literally a bracketing of the world for a precise analysis of sound, allowing for a focused investigation into a 'phenomenology of interiority'" (55). Headphones produce an effect that acoustic engineers call 'in-head acoustic imaging', which involves the perception of a space not out there in the world but inside one's own head: this effect is deemed a 'noisy', undesirable quality of headphone listening (2007: 55). Headphones enable an awareness of the 'space between the ears'. Space is created inside the body, and the audience are faced with an uncanny consciousness of their own interior; faced with self-reflection from the inside out.

Audio theatre can take advantage of the capacity for headphone listening to enable a sense of sound as located within the body and facilitate an investigation of interiority. In *The Encounter*, the protagonist believes he is receiving telepathic communications from the tribe leader (who he calls 'Barnacle'), and the audience hear the leaders' voice as if it were spatially located between their ears, forcing contemplation of where and in what one locates their internal voice. *Séance* draws on the effectiveness of binaural sound's in-head acoustic imaging to facilitate the listener experiencing a sonic entity (or for narrative purposes, a paranormal spirit) entering one ear, moving through the tissue of the brain, bouncing around the cranial cavity, and eventually exiting the body. The listener is inhabited by something that has entered from the external world, that squishes through one's internal matter, bounces between the bones, and leaves the body empty behind it. I hear internal rumblings and blood circulating, and am forced to ask if these are indeed my own bodily sounds or (as rationality dictates) pre-recorded sounds spatially located in my body? Either way, the audience is pushed to focus not just on the surface sensations of the body but on its interior spaces and processes.

In different ways, all three works use binaural sound to draw attention to the listener's interoception; interoception is the process of appraising one's internal systems including the respiratory, digestive and cardiovascular systems. Sound is a significant element in interoception; one of key measures for testing an individual's interoception is their ability to accurately hear their own heartbeat (Garfinkel et al, 2015: 65), and while elements of the interoceptive system such as digestion, respiration, and circulation may be 'felt', they are also 'heard' (heartbeat, stomach rumbling, breath etc). *The Encounter, Séance,* and *Fiction* in different ways all emphasise the heartbeat through realistic sound effects, through the pace and rhythm of drumming sounds, and

through the narrator's text. In *Séance,* the listener hears a heartbeat that seems to originate from the approximate location of the listener's own heart, and whether the listener momentarily mistakes it for their own or not, consideration is given to the functioning of the circulatory system and the pace of its pulse as an indicator of emotional state. In *Fiction*, the voice in your ear tells you that someone needs to pee; who needs to pee, do I? The audience member's focus is forced inwards, on this occasion towards the bladder, in an assessment of one's interior workings and interoceptive signals. In *The Encounter*, McBurney describes McIntyre gorging and gobbling food after a period of hunger and we hear in three dimensions the intimate, visceral squelch of chewing and swallowing; as I hear McIntyre swallow, with the sounds seeming to originate from where they would if I was swallowing, I envisage the piece of food McIntyre has consumed making its way down my own oesophagus, extinguishing pangs of hunger and triggering digestion.

Breath is of course a fundamental physiological function and a vital element of interoceptive processing. It both inhabits the body and extends its presence into exterior space in its exhalation. It transcends and challenges the boundaries of inside and outside, both inflating interior space and escaping the confines of the body. Early in proceedings in *Séance*, the medium instructs the audience member to slowly breath in and out, and the room is filled with the sounds of deliberate respiration. The audience members are required to breath and focus on breathing, made aware of the role of breath in influencing other physiological elements (for example, slowing the heartbeat) and its bearing on perceptual openness. At the beginning of *The Encounter,* McBurney blows on the microphone, demonstrating the binaural technologies but also emphasising breath from the outset. Breath is regularly mentioned by McBurney, for example, in his description of McIntyre's first encounter with Barnacle who is close enough to feel his breath, or of holding his breath when involved in a tribal ritual. In various scenes McBurney's breath is played on a loop over other sounds, for example, of footsteps crunching leaves, and the final sound of the production is McBurney's daughter Noma's breath as she sleeps. McBurney's exertions lead him to breath heavily; sometimes this breath is the actor/narrator's; other times it is the breath of the character McIntyre, and as we are invited to visualise the Amazon as McIntyre saw it, hearing sounds as he did, so his breath becomes our own, an effect both of McBurney's use of first person storytelling and also of the potential for binaural technologies to locate sound within the listener's body.

The Resonant Body

In staging the phenomenon of aural perception, audio theatre explores the physical encounter of the body and the world. Listening is not just about the giving of aural attention, but also involves (in the works discussed here) a physical reception of, response to, and participation in auditory space. Contemplative immersion in auditory space as manifest in *The Encounter, Fiction* and *Seance* reveals the listener's body as fundamentally 'resonant'. The resonant body is a body inhabited by sound, open to sound and opened out by sound in the process of listening. Frances Dyson suggests, "In listening, one is engaged in a synergy with the world and the senses, a hearing/touch that is the essence of what we mean by gut reaction – a response that is simultaneously physiological and psychological, body and mind" (2009:4). Dyson's 'hearing/touch' speaks to the imbrication of hearing and haptics, and in the three productions discussed here, the audience respond physiologically to a sound-world

that implicates the body, working across and through the skin, inhabiting the sonorous mass within, and triggering proprioception and interoceptive awareness. The storytelling of McBurney, the dreamlike text of *Fiction*, and the dialogue in *Séance*, involve a dramaturgy that creates theme and meaning physiologically; a dramaturgy of 'hearing/touch' that performance through and within the gut-reaction of the audience.

In experiencing the body as resonant, the audience experiences being in and with sound, within auditory space and containing auditory space, and part of a world of matter through which sound indiscriminately permeates. The body is both sounding board and echo-chamber, attuned to and resonating with sound, as well as generating and amplifying the internal sounds through which it makes itself known. Speaking of the body's relationship to the 'infinite repercussions and reverberations' it encounters, Serres suggests, "Resonating within us: a column of air and water and solids, three-dimensional space, tissue and skin, long and broad walls and patches, and wiring, running through them…as though our bodies were the union of ear and orchestra, transmission and reception" (2016: 141). The use of headphone-accessed binaural sound stages the three-dimensional interiority of the listener, spatializing the body and emphasising its viscerality. Sound resonates through the air, water, solids, and spaces of the body, across the skin and through the hollow structure of the skeleton, offering not only in-head acoustic imaging, but interior imaging of the entire body.

Sound in binaural audio theatre reverberates throughout the listener, crossing through the borders of body and world. The listener is made aware of their body schema in relation to the world around them; they are made attentive to the activities of proprioception and interoception, and the potentially porous relation between interior and external space. The resonant body is both permeated and inhabited by sound, and its own sonority made prominent, with sound the means by which the interior of the body communicates through interoceptive awareness. Far from mindless, as depictions of sonic immersion often imply, this experience can be self-aware, mindful, contemplative. The audience attend to the bodily sensations of listening, and as such, to their body's situation in its environment, experiencing immersion not passively but as a participant, alert to the embodied performance of listening.

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