Spectral Sound Systems:
Mapping the Mnemonic Soundscape

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Abstract: This paper considers urban spaces as commercialized topographies of deliberately deployed sonic mnemonics, examining how an acoustemological approach to mapping locale might be reconfigured to address retail environmental music (often referred to as Muzak) as an infrastructural element that bears the capacity to territorialize both their vibratory and non-vibratory sonic spectra – an intentionally articulated sonic architecture that 'us[es] the words of hits as subliminal advertisements' (Szendy viii). Finally, it proposes approaches for reconfiguring the unheard strata via FFT-based spectral convolution processes in order to render it audible.

Keywords: acoustemology, acoustic ecology, Anthropocene, acoustic territories

"Deep Listening is exploring the relationships among any and all sounds, whether natural or technological, intended or unintended, real, remembered or imaginary, Thought is included."

  – Pauline Oliveros. Quantum Listening. p.37

1. Introduction

Moving through space invariably implies moving through an acoustic milieu: sound permeates, delineates and conjoins space. Whether defined as a vibrational force propagated through a medium to a receiving entity or acknowledged as a mnemonic resonance within a contingent subjectivity, sound and the act of listening are inextricably intertwined with territory; it links transmitter and receiver in a complex, fluid, fluctuating and echoing relational embrace. This paper will broach a broadened definition of our soundscape, one extending beyond the acoustic into the mnemonic, arguing that regardless of provenance, medium or audibility, sound manifests itself as an emanation of force and therefore bears the capacity to reveal sources and vectors of influence that would remain obscured within a strictly ocular mapping of space. Mapping 'space', then, is not to be understood here as simply delineating the volumetric or Euclidian; rather it is to be apprehended as a Lefebvrian procedure that acknowledges and integrates the political, the social and the psychological – aspects that have become increasingly fluid and abstracted in the digital age (Lefebvre, 1991).

In this paper, key concepts involving the complex interrelationship between sound, place and subjectivity will be articulated with a view to positioning active, critical attention to the soundscape as an act that offers unique understandings of our anthropocentric condition. An emphasis will be placed on extending the notion of sound beyond the conventionally 'heard' and acknowledging internally-sounding sonic phenomena such as earworms as an integral component of our increasingly commercialized sonic environments. Strategies for re-articulating and foregrounding these unsounding strata within a creative field-recording context will then be put forward.

2. Listening to Spaces

That which we say we 'hear' is usually (but not always, as we shall see) the outcome of energy (vibration) originating from an oscillating source; this force is then propagated through a medium as a longitudinal wave to be vibrationally re-embodied by intervening entities until the energy is dissipated. This journey, then, involves a series of encounters with various materials, surfaces and media, all of which lend their own trace to the original vibrational wave. As sensory ethnographer Paul Rodaway reminds us: 'The structure of the environment, its openness and enclosedness, and the properties of the materials in that environment, sound absorbing or resonating/reflecting, influence…the sort of sound that is actually heard' (Rodaway, 1994, p.82). Importantly, in the case of a human receptor, this energy undergoes further transduction by the individual's brain and all its highly subjective emotional, affective, temporal and mnemonic resonances (Grimshaw and Garner, 2015).

This process is relentless; sound is auditioned continuously (the ears, unlike the eyes, cannot, under normal circumstances, be 'closed'), perpetually surrounding, even engulfing us. In addition, sound has the capacity to negotiate physical obstructions that would occlude an object from sight – one can hear what is behind a wall, for example, although it cannot be seen. Such instances of sound emanating from unseen sources (generally referred to as 'acousmatic') has the capacity to greatly expand and enhance the spatial field by intimating the invisible and alluding to the unknown.

The act of moving through and *listening* to space, then, unveils a vast, continuous network of both seen and unseen vibrational entities or 'sonic agents' – acoustic elements that engage in an 'active, performative role…shap[ing] the urban soundscape' (Schlüter, 2011, p.4). interacting within

a spacious, contingent acoustic ecology 'that creates complex outcomes in terms of cyclical and spatially organised sonic geographies that flow, modulate, and change as the chronology of days and seasons pass' (Atkinson, 2011, p.25).

3. The Soundscape

Paradoxically, the density and relentlessness of this flow of acoustic information that we find ourselves perpetually exposed to – particularly within a contemporary urban context – may be precisely why this resonant sonic topography has been comparatively overlooked, rather than overheard. Our brain has adapted by screening the amount of acoustic data it receives in order that 'information is created and communication takes place only through the cognitive ability to distinguish what is significant' (Truax, 2000, p.17). A reorientation towards a more sensitized and cognizant mapping of the sonic environment, however, was initiated in the 1970s by Simon Fraser University's World Soundscape Project (hereafter referred to as the WSP), whose renewed awareness and study of the 'soundscape' has gone on to influence theoretical developments in the fields of sonic ethnography, acoustemology, acoustic ecology, urban studies and sonic arts practice. The WSP have become influential in the field of sound studies not only for their lexical contributions and commitment to engaged listening, but also for promoting several key auditory-centred mapping practices, most notably soundwalking (popularized by Hildegard Westerkamp as a method of re-engaging with a locale's acoustic environment), engaging the use of audio recording media as essential creative research tools and, perhaps most importantly, foregrounding the act of critical listening as a relevant pedagogical   strategy.

Influential though the WSP may be, their ideological bias towards the aesthetics of a pre-industrial soundscape has encountered significant critique. According to media theorist Jonathan Sterne, WSP founder R. Murray Schafer's concept of schizophonia (sounds separated from their sources, as evidenced in radio broadcasts, for example) is particularly problematic as it 'ignores that all sounds are "separated from their sources"'(Sterne, 2019, p.88). As we shall hear later in this paper, I would go one step further to suggest that it is precisely within the schizophonic rupture that the contemporary anthropocentric soundscape has the most to reveal.

4. Sonic Ethnography: Acoustemology

This argument that sound is a profoundly relational mechanism articulated between individuals and their surroundings (be these physical or otherwise), is one that has gained significant currency in current sound studies scholarship, most notably in the field of acoustemology. Anthropologist Steven Feld posits acoustemology as a framework for examining 'sonic ways of being in and knowing the world' (Feld, 1996, p.61). Feld stresses that 'The kind of knowing that acoustemology tracks in and through sound and sounding is always experiential, contextual, fallible, changeable, contingent, emergent, opportune, subjective, constructed, selective' (Feld, 2015, p.14). Acoustemology, then, is predicated upon the acknowledgement of a profoundly embodied, personal and fluid apprehension of sonic spatio-temporality.

If we are to embrace an acoustemologically-oriented approach to mapping our sonic environments, to "ask how the dynamism of sound's physical energy indexes its social immediacy" (Feld, 2015, p.12), then the transduction of vibrational energies into the psychological realm merits focused consideration. Despite its role as a key step in the relational chain, however, the nature of this translation from outer (sounding) to inner (unsounding) worlds remains a layer of (psycho)acoustics that has remained almost completely unheard within ethnographic assessments of sonic space (in fact Feld himself specifically states that "acoustemology engages acoustics at the plane of the *audible*" (ibid., italics mine)). Some acoustic ecologists, on the other hand, do begin to broach the concept of the internalization of sonic stimuli; Hildegard Westerkamp, for example, recognizes that "we simultaneously take in the current conditions of the acoustic environment and those of our innermost sound world, our thoughts and emotions" (Westerkamp, n.p.). Furthermore, she explicitly recognizes that this internal sonic space provides a "target for a profit-seeking corporations" – a crucial consideration for the argument at hand, as we shall hear – but stops short of engaging in a more specific discussion of its articulation and effects.

4.1. Acoustic Territories

Following Westerkamp, it is important to emphasize that embodied acoustic emanations of relational vibrational power implicitly constitute a potent instrument for the dissemination of vectors of force, institutionalized or otherwise. Mapping the multivalent political dynamics imbricated within the contemporary soundscape has become a central focus in the writings of sound studies scholars such as Brandon LaBelle and Steven Goodman. Distinctly echoing an acoustemological approach, LaBelle aims to position the act of considered listening to the quotidian soundscape as a profoundly affective form of radical engagement with the lived environment, positing the notion of *acoustic territories*, a distinctly Lefebvrian concept (Lefebvre, 1991) within which sound not only reflects but also produces space, disrupting established notions of interior and exterior, difference and commonality: 'sound operates as an emergent community, stitching together bodies that do not necessarily search for each other, and forcing them into proximity' (LaBelle, 2010,   p.25).

In many respects echoing LaBelle's relational framework for analyzing space as an acoustic phenomenon, sound studies theorist and electronic music producer Steven Goodman proposes a more radically politicized 'aesthetic ontology that revolves around vibrational force and the prehension of affective tonality [that] can be felt as mood, ambience, or atmosphere'

(Goodman, 2012, p.189). A significant portion of his *Sonic Warfare* (2012) examines the deployment of schizophonic technological apparatuses – in many if not most instances developed by the military – developed specifically to further the breadth and depth of institutional sonic influence and control. Furthermore, he recognizes that the use of such schizophonic audio dissemination technologies has extended beyond 'conventional' warfare contexts to become a salient characteristic of our contemporary technotope's soundscape.

5. Unsound

The effectiveness of such sonic technologies of control is predicated not only upon sound's unique ability to negotiate the body/mind membrane but also the fact that, as we have heard, they retain the ability to insinuate themselves covertly: '[sounds that surround us], while legible, influence our behaviors without ever providing us with much incentive to read them per se—to deconstruct their anatomy, source, and function' (Cheng, 2013, p.186). Enter the earworm, the non-sounding yet persistent, looping fragments that exist as echoes of banal musical refrains that are rarely (if ever) auditioned deliberately, but rather manifest as the remnants of contingent circumstance and/or sublimated mnemonic associations. Goodman identifies earworms as a form of socio-economic territorialization– a 'mode of audition within a broader operative logic of power' (Goodman, 2012, p.143), or the echoes of 'a sonic architecture…[an] environment of ubiquitous audition in which consumption is now routinely submerged' (ibid., p.145). This apprehension of urban space as permeated with targeted transmissions of corporate and political control is a condition that is gaining increasing prominence with urban theorists. Rowland Atkinson, for example, explicitly integrates 'functional music' (music disseminated by businesses and workplaces to encourage consumption or productivity, respectively, most commonly referred to as 'Muzak') into an urban acoustemological framework, acknowledging its use as an 'auditory territorial marker' or 'orchestrated sonic ecolog[y]' (Atkinson, 2011, p.19) deployed for the specific purpose of controlling space for commercial or political gain.

Goodman extends the breadth of functional music's territorializing effects to the psychological, stressing that 'branding theory has already moved on to invest in the modulation of emotion by nonverbal means, signaling a mutation of capital logic into a more subtle colonization of memory' (Goodman, 2012, p.148). The earworm, in other words, constitutes no less than an intentionally-generated institutional occupation of individual consciousness (as an interesting – and relevant – aside, Urban Dictionary's definition of 'Muzak' explicitly refers to its propensity to generate earworms, see https://www.urbandictionary.com/define.php?term=Muzak; for his part, R. Murray Schafer describes Muzak simply as 'schizophonic musical drool' (Schafer, 1993, p. 272)).

6. Space Invaders

"For if the hit itself is a question of value, money, currency, and exchange, this is not only because it is a mass musical commodity generating considerable profits but also because it is an earworm, an obsessive melody that continues to reproduce itself in innumerable copies in the souls of the melomaniacs that we are."

– Peter Szendy. *Hits.* p.66-67

Moving through urban space, then, constitutes a sonic transit through a vibratory territory of sublimated systems, mediated transmissions and unsounding internal thoughts and refrains. Infrastructural/architectural elements all emit audible and inaudible energies, a radiant topography of vibration; furthermore, commercial environments, vehicles, living spaces, and individuals are often accompanied by their own, bespoke soundtracks. In addition, advertising slogans, shop names and signage, as well as quotidian events all bear the capacity to elicit spontaneous, subjective resonances of half- (or fully) remembered songs, forging a bridge between personal memory, contingent experience and embodied terrain. These real and imagined spectra function as silent, yet profoundly multivalent and often intentionally guileful manipulators of anthropocentric space/place.

I will illustrate the sinister mechanics of the phenomenon by means of an anecdote: my daughter and I were running errands together on a section of Queen Street West – a busy shopping district situated in downtown Toronto – on a Saturday afternoon. As it was early autumn and the weather was still warm, many of the local businesses had their doors open, an extra incentive for potential passing customers to enter their retail – and also acoustic – spaces. As we continued our walk, we became aware that we were both softly humming the same song, a piece of music that neither of us particularly liked. A strange coincidence, we thought. A few minutes later, the phenomenon repeated itself, a different song this time. At this point the notion of this being happenstance or a mutual father-daughter psychic resonance began to appear less likely. Fascinated, we backtracked with the hope of identifying the source of the nagging earworms we were both experiencing, managing to catch the dying strains of the looping refrain we had been humming emanating from the local Urban Outfitters outlet. My daughter, who had recently worked at that particular retail location, mentioned that she used to hear the song several times a day as it was part of the retail chain's prescribed soundtrack – a component of its aural architecture, in other words.

Here, then, we have a salient example of an acoustic territorialization that not only pervades Euclidian space but also extends beyond the spatio-temporal restrictions imposed by traditional acoustic technology, which is bound to and contained by the machinery and acoustic characteristics of a point of dissemination. Instead, we have a schizophonic sonic agent that behaves as an audio parasite, embedding itself into a memory-space, an involuntary internal refrain deliberately deployed as an

envoy of the interlaced, networked, market-driven structures of consumption.

6.1 An Unsound History

The suggestion that sound is being deployed in order to psychologically and emotionally manipulate a public may initially have a disconcerting tinge of crackpot conspiracy theory about it. In fact, it has a long and well-established history and continues to function as a mainstay technique in political propaganda. It would be unusual to find a political manifestation in which there is no chanting, for example, and loudspeakers blaring patriotic songs, slogans and (dis)information continue to be used in many locales, most notably those under the control of authoritarian leaderships.

These acoustic deployments make no effort to dissimulate themselves, however. They are openly visible and audible, their function and purpose evident. What I wish to examine here is a far more covert, nefarious and widespread manifestation of acoustic control.

One of the pioneers in the field of acoustic manipulation was Harold Burris-Meyer, a sound technician working at the Stevens Institute of Technology (SIT) in New Jersey beginning in the 1930s. Burris-Meyer's initial efforts centred on using contemporary electroacoustic technology to create bespoke acoustic environments for the theatre, his goal being to 'produce specific emotional and physiological responses in people' that would enhance the theatrical spectacle (Ouzounian 2021, p.206). These experiments in what he termed 'sound control' involved the use of spatialized speaker arrays as well as 'subsonics' (what we now refer to as infrasound) and in many instances were executed covertly, as Burris-Meyer sought to 'manipulate audiences' emotions subconsciously' (ibid. p.205). Burris-Meyer quickly became fascinated by what he observed: 'audiences could be 'made to sit up, or move forward, relax, etc., almost regardless of the visual part of the production' '("Of Sound, Fury, and Stevens Tech" 1941, 1, quoted in Ouzounian, 2021, p.207) – an 'involuntary' sound and music-based behaviourism. Although these experiments understandably caused some consternation among the public and within the theatre press – at least for those who eventually became aware of what was going on – his results elicited the interest of Muzak Corporation, a firm billing themselves as 'International Specialists in the Physiological and Psychological Applications of Music' (quoted in Blecha) specifically for the purpose of enhancing employee and/or customer behaviour. Burris-Meyer's research for Muzak aimed to increase worker productivity via the exploitation of the physiological effects of music he had pioneered within theatrical contexts. Muzak Corporation, however, was taking the technique to a whole new level, not only refining the amplitude and precision of the physio-psychological responses they were aiming to elicit , but also in terms of extending its ability to deploy 'sound control' on an industrial scale: 'With Muzak, the atmosphere of work, and by extension, the worker in that atmosphere, was

controlled, through sound, and on a mass scale' (Ouzounian, 2021, p.232).

Burris-Meyer would eventually extend his research in the service of the military, further exploring the applications for ultrasound as well as, among other things, airborne speaker systems for the use of psychological warfare (The *Ride of the Valkyries* helicopter attack scene in Coppola's *Apocalypse Now* is one of the better-known examples of the type of work he was involved in). Although this may present a revealing and not-irrelevant addendum to the discussion, of greater concern here is the use of sound's affective properties to enact a form of subconscious social manipulation within our lived environments – a covert application of control in the interests of a deliberately obscured higher power. A disconcerting proposition, particularly when one considers that complex sound dissemination systems have become more or less ubiquitous within our branded lived environments, an acoustic architecture projecting music into our bodies and minds when we visit our malls (not to mention the specific retail locations within those malls), enter our workspaces, board a commercial airliner, or dine in a restaurant. Whether emanating from the shops of the high street or the boulevards of Pyongyang, our contemporary acoustic environments are permeated by involuntarily audited sound; as Ouzounian is careful to remind us: 'In order for sound control to be effective as a means for emotional control, listeners should not notice the sound effects at all. Rather, sound should manipulate their emotions subconsciously or subliminally, at the level of physiology. The optimal acoustic environment should be experienced as acoustic "scenery," a backdrop to the action at hand, masterfully conjured and used for "effect."' (Ouzounian, 2021, p.247).

6.2 An Unsound Industry

The relationship between the music industry at large and those invested in the evocation of 'acoustic sceneries' as an integral component of brand identity and increased sales has evolved from a the straightforward collection and broadcasting of appropriate pre-existing musical material into a reciprocal system: the motivations underlying commercial and industrial manipulations enabled by the bodily and emotive capacities of music have become an integral, even expected, component of popular music. This is, in fact, the entire reasoning behind the use of advertising jingles: sound scholars Tere Vadén and Juha Torvinen remind us that the 'common meanings of music are experienced un- or pre-consciously, a fact well known by the advertising and film music industries' (44).

As useful as the jingle might still be to advertisers, it persists as a rather primitive instance of musical control – a coelacanth of the promotional world. Reference to brand names – within contemporary hip-hop and R&B in particular – has become a common-place form of co-branding and evolved into a form of shorthand in terms of market positioning. A relatively run-of-the-mill hip-hop song such as Lil' Pump's *Gucci Gang*, for example (see https://genius.com/Lil-pump-gucci-gang-lyrics), manages to

mention not only the titular brand, but also Balmains (a luxury clothing brand), 'Red Bottoms' (vernacular for Christian Louboutin shoes), Percocet (an oxycodone drug manufactured by Endo Pharmaceuticals) and, perhaps most hilariously, the Canadian budget airline WestJet (though the line isn't exactly complementary), all this in addition to more oblique references such as 'Hunnids' on his wrist (luxury watch) and 'sippin' Tech' (cough syrup containing codeine). Those aiming to flex a more approachable mall-brand vibe might drop references to Vans (Lil B'/The Pack), a most uncool Abercrombie & Fitch (Lil Uzi Vert, though his attention has been credited with upping the sagging brand's cachet) or Levi's (*Drumma Boy* feat. Rocko & 2 Chainz). This type of product placement has moved beyond a story-telling-based lyrical name-dropping; it has matured to the point that it is not unusual for artists to approach brands (and vice-versa) in order to advertise them. According to music industry analyst Eliot Van Buskirk, 'things have gotten so weird in the music business that high-profile acts are inserting ads into their song lyrics. The next time you hear a brand mentioned in a song, it could be due to a paid product placement' (Van Buskirk). Earbud listeners hoping to bypass the imposed generated soundtracks of their acoustic environments now have bespoke brand messages disseminated to them via their own curated playlists.

Here we hear the role of sound in the articulation of what media theorist Sean Cubitt describes as 'the becoming-environment of information' (Cubitt, 2013, p.489), a suffusion of our spaces with sublimated brand messages working to weave a complex network of associations, relations and, when functioning optimally, emotions, a mnemonic machinery guiding us to make product choices based on half-recognized impressions derived from the subliminal sonic prompts and prods that saturate not only our spaces of consumption and suffuse our homes but are also voluntarily pumped directly into our bodies via our AirPods. After all, how are we left to decide what sneaker brand to buy? It's unlikely that a typical consumer will be familiar with the tensile properties of the materials used in the manufacturing of a running shoe; what's far more likely is that we've been well-versed by verses themselves, ascribing brand meaning and associated lifestyle value as an echo of half-heard lyrics drifting in the aether of our quotidian soundscape or pumped into our ears via our own Spotify playlists.

What we have here, then, is an infrastructural element that bears the capacity to territorialize both their vibratory and non-vibratory sonic spectra – an intentionally articulated sonic architecture that 'us[es] the words of hits as subliminal advertisements' (Szendy, 2012, viii). Furthermore, the system is a self-perpetuating one; already in the 1940s, Theodor Adorno was conscient of the propensity for the 'culture industry' to insinuate itself into the soundscape, stating that 'everything is heard in terms of…the commodities derived from it' (Adorno, 1998, p.50), and contextualizing popular music as a series of predetermined signifiers designed to incite mimetic reflexes. Contemporary cultural theorist Peter Szendy has extrapolated upon Adorno's incisive analysis of music as commodity, stressing its almost uncanny ability to parasitically embed itself within the psyche of the listener as a mnemonic haunting: 'Not only would each one of these singing ads claim to say…All of this and more is for you…but it would also just as immediately inspire in you the irrepressible mnemonic effect of which it is capable: A memory proper to you would be attached to each one, an unforgettable yet buried moment that would all of a sudden rise to the surface of your conscious memory' (Szendy, 2012, viii). Herein lies the insidious territorializing capacity of the parasitical earworm; it maintains the ability to not only penetrate but also to weave itself deeply into the very fabric of one's consciousness.

6.3 The Earworm

Szendy's analysis of the commercially generated earworm is a fascinating one. In marked contrast to Adorno, he embraces its banality, suggesting that its affective potential is a direct correlation of its lack of defining characteristics: 'What does the triviality of the hit really hide when it can nonetheless move us as no one else can? What singular emotions are in play? What investments, what economies— both mercantile and psychic—are at work in them, and perhaps even what politics?' (Szendy, 2012, p.3). Evoking Marx, Szendy hears the usefulness (and therefore effectiveness) of the sonic commodity as a consequence of its status as a 'social relationship between things' (ibid. 19) rather than a tangible thing in itself. Music negotiates our positioning amongst the objects and events that define our individual existences, a spectral albeit manipulative accomplice in the guise of a doppelganger: 'What we might call the musical self or the lyrical ''I'' of song would then be the voice of the commodity itself, in the midst of speaking about itself' (ibid. 9). The penetration of the earworm is so profound that we ultimately merge with the musical refrains into an exhilarating haze of commodification – distinctions between the corporeal, earthly individual and a nebulous melodic/rhythmic/textural alter ego dissipate into a fantastical technicolour drift. Admittedly, there may be a certain pleasure to be found in this narcotic meshing of self and sound; there is often also a corresponding reluctance, however, to acknowledge that this intoxicating 'life soundtrack' is the product of a deliberate strategy, one that provides the audio agent its formidable strength and enables the sonic machinery to execute its task: 'these haunting melodies; they come back in us and in spite of ourselves to speak to us about us. They even make us gain access to ourselves' (ibid. 80). I use the term 'machinery' here deliberately, a reminder that popular music is, after all, an industry, creating items of mass consumption, driven by market research, honed in boardrooms, and distributed via massive multi-modal physical and virtual merchandising infrastructures; the notion of it emerging from the creative mind and heart of an emoting human 'artist' often functions merely as a decorative conceit. Negotiating and mapping an anthropocentric consumer

environment, then, corresponds to a drift through a *'marketplace of mass melodic articles in the psychic economy'*, as Szendy puts it (italics his), 'For if the hit itself is a question of value, money, currency, and exchange, this is not only because it is a mass musical commodity generating considerable profits but also because it is an earworm, an obsessive melody that continues to reproduce itself in innumerable copies in the souls of the melomaniacs that we are' (66-67).

6.4 An Unsound Taxonomy

Establishing a taxonomy of internalized sonic affects, however, would be beneficial in order to engage in a broader analysis and creative redeployment of the various methods and effects of institutionalized acoustic territorialization. For this, we must turn to sound scholars such as Henry Torgue and François Augoyard, who delve into what they term 'mnemo-perceptive' effects with a particular ear to how these may influence an individual's relationship with the urban environment. Two categories in particular, *anamnetic* and *phonomnetic* sounds, warrant investigation not only in terms of how they exist as mnemonically-situated yet integral components of a soundscape, but also with regard to how they might be integrated into the sonic manipulation of space.

Anamnesis is described as 'an effect of reminiscence in which a past situation or atmosphere is brought back to the listener's consciousness, provoked by a particular signal or sonic context' (Augoyard and Torgue , 2006, p.21). This effect is understood as usually being involuntary; furthermore, it can be elicited via any type of sonic trigger, though it is suggested that music can be particularly effective given its polyvalent nature: 'Undoubtedly music, more than other modes of expression, or even other aspects of the sound domain, possesses an evocative faculty that calls at the same time a feeling and a memory.' (ibid. 24). Although Augoyard and Torgue do not confine the effect to music, specifically mentioning that 'sounds of flowing water, rain, crackling fire, thunder, and singing birds, but also sounds of industrial automatic devices, cars, and urban drones' (ibid. 23) may also elicit anamnesia, they confine their description of extra-sonic triggers of anamnetic sounds to mainly spatial, more specifically, architectural cues: 'Spatial configuration, and consequently visual perception, sometimes intervenes to favour the emergence of this effect' (ibid. 24).

Phonomnesis is a similar internal non-sounding sonic-mnemonic effect/affect, referring to 'a sound that is imagined but not actually heard' (ibid. 85). Again, this form of listening is stripped of its causal provenance and contextualized as 'most often voluntary', occurring within creative contexts and forming 'one of the great methods of composition' (ibid).

6.5 Unsounding Text

Although useful in that a consideration of non-musical sounds as mnemonic triggers is acknowledged, Augoyard and Torgue's description of the anamnetic and phonomnetic effects tends toward the unidirectional. While recognizing that 'anamnesis effect is only rarely confined specifically to the aural sphere' (ibid.24), what appears to be missing from this taxonomical description is the inverse condition, that of a situational (visual, tactile, olfactory, etc.) stimulus eliciting a sonic memory. The effect that I am referring to here can be witnessed in advertisements that repurpose a section of a popular song's lyric in order to embed a brand message within a potential consumer's consciousness. Typically, this strategy can be witnessed on billboards or other (often outdoor) advertisements, supports that are configured to deliver a condensed yet concise brand message within a reduced timeframe. Someone driving down a highway, for example, will have only a few seconds to notice, read and retain whatever content an outdoor ad wishes to convey – a tough ask for an ad executive tasked with relaying a multi-layered yet evocative product and lifestyle message.

The integration of a short lyrical fragment presents an ideal solution to this communication conundrum. In his book *Sinister Resonance*, sound studies theorist David Toop foregrounds the mediatic polyvalency of sound, stating that 'Dwelling in every written text there are voices; within images there is some suggestion of acoustic space' (Toop, 2010, viii). A mere excerpt of a well-known song can immediately imply a larger whole that, in turn, can carry an intricate network of societal and subjective mnemonic cues, as discussed above. Additionally, this strategy capitalizes on the elicited earworm's persistence in order to enable an insistent temporal elongation, all the while remaining textually and sonically muted. A condensed prompt calls forth an unsounding song, initiating a chain reaction of imbricated associations, a catalyst leaving us to do most of the message-generating work ourselves.

Need a break from the dreariness of a Canadian winter? Well hey, "Little darlin', Here comes the sun":
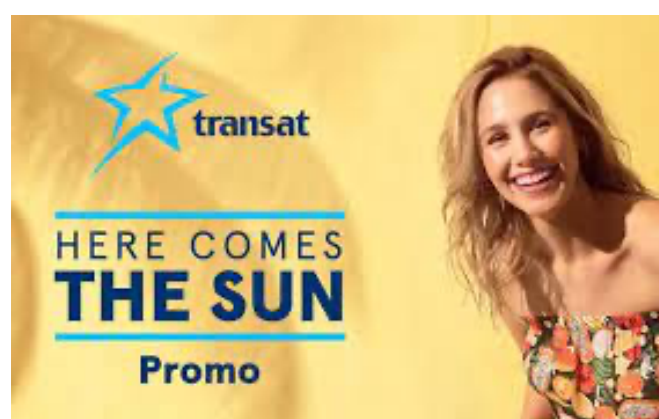

Figure 1. Transat Holidays promotional poster.
Source: https://imagineholidays.ca/deals/sun-promotion/

Marketing material tends to be forthright in terms of acknowledging this sonic emotional manipulation, often foregrounding the benefits of generating earworms, as the following excerpts from the Boston-based Millenium

Agency's website demonstrates: "Advertisers know that consumers form an emotional connection to music, much more so than regular text-based advertising… this is because musical communication creates a deep empathic and neurologic connection in a potential buyer. Due to this, music can be used to evoke an emotional connection…

Lyrical content can help achieve the "song-stuck-in-head" syndrome that helps engrain a brand within a consumer's memory. People are far better at remembering things when they can place a beat or rhythm to them. Musically wording a certain message assists brand recall and recognition."

(Source: https://mill.agency/creative/lyrics-song-can-used-advertise-business/).

Such instances of deliberately evoking and manipulating an anamnetic response in order to elicit specific consumer behaviours, then, comprise an essential tool for acoustic territorialization – a voiceless voice that transforms into our own, one that detaches itself from its point of dissemination to burrow into our brains. Negotiating (and therefore also mapping) urban space has become a drift through (as Holger Schulze puts it) 'the installed entertainment weaponry of sound and image projection' (Schulze, 2018, p.87).

7. Resounding Unsound

Recognizing and anticipating the seductive yet disruptive song of the marketing sirens becomes of utmost importance if we intend to strategize against them, to deflect their provocative call. Assessing one's positioning within the spectrum of influence is no easy task given the fact that we are (almost) all consumers and therefore implicitly imbricated within the forces that we wish to begin dismantling. How, then, does one address and subsequently incorporate those massive yet muted forces that evade the conventional recording apparatus? More specifically, how might hey be redeployed within a creative, acoustemologically-minded field-recording practice?

An approach adopted by the author is based on a technique known as spectral convolution. This is a digital process that 'sounds' a sound within another via a multiplication of the sonic spectra in the frequency domain. Accomplished through a procedure known as Fast Fourier transform (FFT), spectral convolution multiplies the frequency spectra of two sounds; this results in the amplification of frequencies that are present in both signals along with a corresponding reduction in volume of frequencies that are weak in either input signal (Truax n.d.). Spectral convolution is most commonly used in audio production for the digital creation of reverberation simulations. In this context, an impulse response is obtained from an acoustic space by emitting a short burst of broadband signal (ideally via a white noise sample, though in many cases simply popping a balloon will suffice) and recording the outcome. The resulting recorded sample can then be used to obtain a mathematical model of the decay times across various frequencies, thereby providing a model of the acoustic characteristics of the locale. In a traditional, i.e. musical, context, the impulse response would be typically loaded into an appropriate digital plug-in and a dry signal fed through; the output would be a convincing emulation of the sound occurring within the previously sampled space. In this manner, one could recreate sound of a dry, studio-recorded acoustic guitar being played in the Notre Dame Cathedral, for example.

Put simply, this procedure allows one to 'sound' an audio file within another; any two sounds can be used, in other words, and they need not be engaged to artificially simulate a real space. In practice, the application of spectral convolution on other audio sources creates a textured and evolving output that is rich in frequency content, retaining characteristics of the source files and occupying an ambiguous space between the organic and synthesized.

In terms of my own field-recording based interest in redeploying and foregrounding the mnemonic strata of the soundscape, spectral convolution provides an ideal process, allowing for the meshing of internal and external sonic worlds. While recording, a diary is kept of the anamnetic and phonomnetic sounds – the earworms, of which I seem to be particularly susceptible – being experienced within the subject spaces, usually commercial retail environments or other similar anthropocentric non-places (Augé 1995). In most instances, field recordings containing broadcasts of the songs as audited in situ are employed whereas in other cases the song files are subsequently sourced to be then spectrally convolved with field recordings obtained concurrently within the same locales. Although the re-representation of internal soundings is inherently ambiguous and highly subjective, it nonetheless manifests a resonant, contingent moment, an invisible and unheard relation. As such, it re-mediates a spatial encounter that bears (or has borne) an impact on shaping an experience of time and space, one that is, as emphasized throughout this chapter, striated with influences of a political, economic, social and environmental nature. Examples of the work described in the preceding paragraph can be found at https://notype.com/en/drones/a/379/spectral-sound-system-michael-trommer.

8. Conclusion

We are not independent of our environments. Not only does the *spatial* positioning of a listener – the actual vibrational interaction with the acoustic characteristics of locale – bear an impact on what is heard, but also the broader *temporal* aspects; the intricate variables that define the 'now' of the moment of audition interacting with an entangled, variable and experientially unstable history.

The ephemerality of the sonic subject/environment interface is a topic that sound studies theorist Salomé Voegelin has explored at length, emphasizing its centrality in developing an individual agency within a broader ecology of networked forces, reminding us that 'To invite the possible into practice and into discourse signals an

acknowledgement at once of an object and a subject's unseen dimension, the invisible edge of their definition and description, and of our limitation at grasping it' (Voegelin, 2019,p.2).

A complete acoustemological mapping of our contemporary anthropocentric soundscape, then, must accommodate those spectral sonic emanations, the ghostly unsounds that permeate our commercial topographies and populate our psyches, as they comprise an integral and essential component of the mechanisms that are drawing us into environmental, economic, and by default, social decline. Assessing one's positioning within this spectrum of influence is no easy task, however, given the fact that we are (almost) all consumers and therefore implicitly imbricated within the sounding and unsounding sonic energies that haunt our quotidian spaces and places.

Whether enacted through various modes of creative cartography (soundwalking, field recording, soundscape-based installation work, etc.), or simply through the act of considered, reflective listening, situating one's self within the networked vectors of sonic forces that constitute a resonant strata of lived reality implicitly and necessarily becomes a starting point for any agential action that may follow. Although the mediated presentation of a contingent, variable subjectivity risks veering into self-indulgence or abstruseness, to disregard one's placement, to engage in the pretence of being capable of assuming a semblance of objectivity bears its own dangers and limitations. Following Voegelin, I am arguing for an appraisal of 'hearing as an accessing of different variants of the actual, whose possibility is determined by my position, by my being in the world" (Voegelin, 2019, p.26), a polyphonic placement that stands firmly in opposition to the ''the monochord of rational thought and manifest in Neo-liberal capitalism' (ibid. p.35). It is important to remember that just as the sonics of acoustic territorialization bear the capacity to disrupt and disorient, so too do they retain the ability to unify and mobilize.

9. Bibliography

Adorno, Theodor W., 1998. Quasi Una Fantasia: Essays on Modern Music. Verso.

Atkinson, Rowland, 2007. "Ecology of Sound: The Sonic Order of Urban Space." Urban studies (Edinburgh, Scotland) 44, no. 10 (September 1, 2007): 1905–1917.

Augé, Marc, 1995. Non-Places: Introduction to an Anthropology of Supermodernity. Verso.

Augoyard, Jean François, et al., 2006. Sonic Experience: a Guide to Everyday Sounds. McGill-Queen's University Press,

Blecha, Peter. "Muzak, Inc. — Originators of 'Elevator Music". HistoryLink.org, April 6th, 2012, https://www.historylink.org/File/10072

Blesser, Barry., and Linda-Ruth. Salter, 2007. Spaces Speak, Are You Listening?: Experiencing Aural Architecture. MIT Press.

Boon, Marcus, 2022. The Politics of Vibration: Music as a Cosmopolitical Practice. Duke University Press.

Carpenter, E.., 1973. Eskimo Realities, New York: Holt, Rinehart & Winston.

Chattopadhyay, Budhaditya, 2021. The Auditory Setting: Environmental Sounds in Film and Media Arts. Edinburgh: Edinburgh University Press.

Cox, Christoph, and Daniel Warner., 2017. Audio Culture: Readings in Modern Music. Revised edition. New York, NY: Bloomsbury Academic.

Cheng, William, 2013. "Monstrous Noise: Silent Hill and the Aesthetic Economies of Fear." In Carol Vernallis, Amy Herzog and John Richardson (Ed) The Oxford Handbook of Sound and Image in Digital Media (173-190). New York: Oxford University Press.

Cubitt, Sean, 2013. "Source Code: Eco-Criticism and Subjectivity." The Oxford Handbook of Sound and Image in Digital Media, Oxford University Press.

Demers, Joanna Teresa, 2010. Listening Through the Noise: The Aesthetics of Experimental Electronic Music. New York ; Oxford University Press.

Droumeva, Milena, and Randolph Jordan. 2019. Sound, Media, Ecology. Edited by Milena Droumeva and Randolph Jordan, Palgrave Macmillan.

Dyson, Frances. 2009. Sounding New Media: Immersion and Embodiment in the Arts and Culture. Los Angeles: University of California Press.

Dyson, Frances, 2014. The Tone of Our Times: Sound, Sense, Economy, and Ecology. Cambridge: MIT Press.

Enn, Anthony and Shelley Trower, 2013. Vibratory Modernism. New York, Palgrave MacMillan.

Erlmann, Veit, 2010. Reason and Resonance: A History of Modern Aurality. New York: Zone Books.

Feld, Steven and Keith H. Basso, 1996. Senses of Place. Santa Fe, N.M.: School of American Research Press.

Feld, Steven, 2015. Acoustemology. In Novak, David, and Matt Sakakeeny (Ed.). Keywords in Sound (12 – 21). Durham: Duke University Press.

Fowler, Michael. "Sounds in Space or Space in Sounds? Architecture as an Auditory Construct." Arq (London, England), vol. 19, no. 1, 2015, pp. 61–72,

Garner, Tom A, 2018. Echoes of Other Worlds Sound in Virtual Reality: Past, Present and Future. Palgrave Macmillan.

Goodman, Steve, 2012. Sonic Warfare: Sound, Affect, and the Ecology of Fear. Cambridge: MIT Press.

Goodman, Steve, Toby Heys, and Eleni Ikoniadou, eds.. 2019. AUDiNT Unsound: Undead. Falmouth, U.K: Urbanomic.

Grimshaw, Mark, and Garner, Tom, 2015. Sonic Virtuality: Sound as Emergent Perception. Oxford: Oxford University Press.

Henriques, Julian, 2011. Sonic Bodies: Reggae Sound Systems, Performance, Techniques, and Ways of Knowing. New York: Continuum.

Ihde, Don, 2007. Listening and Voice: Phenomenologies of Sound (2nd ed). Albany, NY: State University of New York Press.

Jasen, Paul C, 2016. Low End Theory: Bass, Bodies and the Materiality of Sonic Experience. Bloomsbury Academic.

Kahn, Douglas, 2013. Earth Sound Earth Signal: Energies and Earth Magnitude in the Arts. Berkeley: University of California Press.

Kane, Brian, 2014. Sound Unseen: Acousmatic Sound in Theory and Practice. New York: Oxford University Press.

Kim-Cohen, Seth. 2016. Against Ambience and Other Essays. New York: Bloomsbury Academic.

Labelle, Brandon, 2010. Acoustic Territories: Sound Culture and Everyday Life. New York: Bloomsbury Academic.

LaBelle, Brandon, 2015. Background Noise : Perspectives on Sound Art. Second edition. New York, NY: Bloomsbury Academic.

Lane, Cathy, and Angus Carlyle, 2013. In the Field : the Art of Field Recording. Uniformbooks.

Lanza, Joseph, 2004. Elevator Music: A Surreal History of Muzak, Easy-Listening, and Other Moodsong. Rev. and expanded ed., University of Michigan Press.

Lefebvre, Henri, 1991. The Production of Space. Oxford: Blackwell Publishing.

Oliveros, Pauline, 2005. Deep Listening: A Composer's Sound Practice. Bloomington, IN: iUniverse, Inc..

Oliveros, Pauline., 2022 Quantum Listening. Terra Ignota Books.

Ortner, Sherry B. "Subjectivity and Cultural Critique." Anthropological Theory, vol. 5, no. 1, 2005, pp. 31–52,

Ouzounian, Gascia. "Embodied Sound: Aural Architectures and the Body." Contemporary Music Review, vol. 25, no. 1-2, 2006, pp. 69–79,

Ouzounian, Gascia, 2021. Stereophonica: Sound and Space in Science, Technology, and the Arts. MIT Press.

Riedel, Friedlind, and Juha Torvinen, 2020. Music as Atmosphere: Collective Feelings and Affective Sounds. 1st ed., Routledge.

Rodaway, Paul, 1994. Sensuous Geographies: Body, Sense and Place. London: Routledge.

Schafer, R. Murray, 1993. Our Sonic Environment and The Soundscape – the Tuning of the World. Merrimac, MA: Destiny Books.

Schlüter, Fritz, 2011. "Mapping the Drone. Sonic Agents in Urban Soundscapes." Non-humans in Social Science: Animals, Spaces, Things. Edited by Petr Gibas, Karolína Pauknerová, Marco Stella et al. (2011): Červený Kostelec: Pavel Mervart, 2011, p. 117-136.

Schulze, Holger, 2018. The Sonic Persona: An Anthropology of Sound. Bloomsbury Academic.

Scrimshaw, Will, 2017. Immanence and Immersion: on the Acoustic Condition in Contemporary Art. Bloomsbury Academic.

Sterne, Jonathan, 2019. "Multimodal Scholarship in World Soundscape Project Composition: Toward a Different Media-Theoretical Legacy (Or: The WSP as OG DH)." In Milena Droumeva and Randolph Jordan (Ed.) Sound, Media, Ecology (85 – 110). Cham, Switzerland: Palgrave.

Szendy, Peter, and Will Bishop, 2012. Hits: Philosophy in the Jukebox. Fordham University Press.

Thibaud, Jean-Paul, and Gernot Bohme, 2017. The Aesthetics of Atmospheres. Routledge.

Toop, David, 2010. Sinister Resonance : the Mediumship of the Listener. Continuum.

Truax, Barry, 1984. Acoustic Communication Norwood, N.J: Ablex.

Truax, Barry. "Convolution." https://www.sfu.ca/~truax/conv.html.

Vadén, Tere, and Juha Torvinen, 2020. "Musical Meaning in Between: Ineffability, Atmosphere and Asubjectivity in Musical Experience." Music as Atmosphere, 1st ed., Routledge,pp.43–59,

Van Buskirk, Eliot. 2009. "Products Placed: How Companies Pay Artists to Include Brands in Lyrics" Wired Magazine, September 19th, 2009. https://www.wired.com/2008/09/products-placed/

Voegelin, Salomé. 2010. Listening to Noise and Silence: Towards a Philosophy of Sound Art. Continuum.

Voegelin, Salomé, 2019. The Political Possibility of Sound: Fragments of Listening. Bloomsbury Academic.

Wright, Mark Peter, 2022. Listening after Nature: Field Recording, Ecology, Critical Practice. Bloomsbury Academic.