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Locative Reverb: Artistic Practice, Sound Technology, and the Grammatization of the Listener in the City

Abstract

There are various ways that artists use technology in exploring the relation of sound to the urban environment, which has different impacts on the listener in relation to place. The rising prominence of these works is connected to a broader sonic turn in urban studies and art, underscoring a rising emphasis on the influence of sound on multisensory experience. Using Bernard Stiegler's consideration of technology as *pharmakon* (or the condition of duality in which something is both poison and cure, bringing both benefit and harm), and his definition of technological grammatization, how artistic use of technology mediates the relationship of the urban environment to the listener through sound is studied through a pharmacological approach in order to nuance the possibilities of artistic critical engagement, emphasising how this can include unintended consequences of re-enforcing certain listener behaviours. At the same time, considerations of how artistic repurposing of listening technology can provide new modes of urban engagement are taken into account, where sound offers the impetus for what Brandon LaBelle (2017) refers to as sonic agency.

Keywords: sonic ecologies; sound art; Bernard Stiegler; pharmakon; sonic agency

0. Introduction

There are various ways that artists use technology in exploring the relation of sound to the urban environment, which has different impacts on the listener in relation to place. The rising prominence of these artworks is connected to a broader sonic turn in urban studies and art, underscoring a gaining emphasis on the influence of sound on multisensory experience. By drawing attention to the significance of the philosophy of technology in artistic practice, specifically Bernard Stiegler's (2013) definition of technology as *pharmakon* (or the condition of duality in which something is both poison and cure, bringing both benefit and harm) and grammatization, an analytic framework of sound art and geography is constructed, which exceeds particular works of art to how listeners engage with the urban milieu as well as how technology frames the act of listening. How artists utilise technology and how this use affords particular actions from users has a significant impact on the listeners' relationship to technology, and subsequently to place, whether through a cartographic interface, as with an online sound map, or an immersive, ephemeral sound attuned mobile experience, as with locative media sound walks. Even though artistic use of sound technology may invite new perceptions of sounds, this critical analysis reveals that creative use of technology does not inherently invite new modes of participation from users. In fact, it is possible for art works to reinforce habits of listening that are complacent in the grammatization of the listener through hegemonic identities, such as private knowledge bodies like Google, and the affirmation of the base map as the primary mode of organising space. In other instances, artistic use of sound and listening technologies can potentially foster what Brandon LaBelle (2017) refers to as sonic agency, allowing for a new means of experiencing public space while cultivating different modes of listening. Beginning with an overview of the sonic turn in urban studies and the fine arts, this chapter provides an analysis of several sound-based cartographic projects, including the sound maps Radio Aporee and LimerickSoundscapes, digital locative

media projects by US artist Teri Rueb, and the electrical walks of Christina Kubisch. Throughout this investigation, there is an examination of how the use of technology by artists informs audience participation, how artists contribute to multisensory experiences of city through aesthetic engagement with sound, and how this has broader implications for technological mediation in urban environments.

1. Technology as *pharmakon*

How technology is able to invite control as well as agency is due to its pharmacological qualities. Philosopher Bernard Stiegler (2013) describes how technology, which is not restricted to the digital but encompasses any tool that enhances human activity, as a *pharmakon*, which has the capacity to behave as both poison and cure. These qualities are inherently interconnected and cannot be separated, meaning that a pharmacological approach to the study and use of technology accounts for its harmful and healing attributes, allowing for a more nuanced understanding of how humans engage with technology. Stiegler derives this concept from Jacques Derrida, though it originates with Plato. While Plato focuses on the poisonous qualities of technology in *Phaedrus* (1995) where he describes how writing acts as a hindrance to true memory, Stiegler is interested in developing a positive pharmacology by exploring technology's curative properties. Even though Stiegler considers technology as integral to human evolution, he is concerned with how technologies have developed and been utilized starting in the twentieth century. Technologies once used for the sharing of knowledge through the externalisation of memory, such as writing, have become calculation technologies of Gilles Deleuze's control societies (1992), where there is the control of production and consumption depriving the user of skills and knowledge. In addition, Stiegler describes the interplay of the externalisation of memory and technology as grammatization, which he derives from the linguist Sylvain Auroux who defines grammatization as the

"production and discretization of structures" (2014, p. 55). However, Stiegler notably diverges from Auroux who focused his understanding of grammatization in language. In contrast, Stiegler expands his framework to include bodily movements and the voice in addition to language, which he connects to grammatization through sound and image.

Stiegler's concepts of the *pharmakon* and grammatization allow for a critical exploration of the multifaceted ways that technology impacts users, avoiding sweeping generalisations in the form of condemnations or celebrations. This approach enables an examination of the unintended consequences of an artistic work, which Jethani and Leorke (2013) argue is critical to comprehending the impact of a project after its initial release. Moreover, taking a pharmacological approach to urban sound mapping and locative media affords a means of critically engaging with the paradoxical nature of these projects, which makes concrete an ephemeral quality of sound in the urban environment that can both empower people through active processes of listening while also restraining them through the often overlooked influence of institutional forces associated with digital geographic technology that is increasingly mediating how people use and understand urban space. One way in which this occurs is through web based sound maps.

2. Sound Maps

Artist sound maps, or online maps that allow users to listen to recordings plotted on a cartographic interface, have become increasingly popular with the opening up of GPS technology to consumer markets and increased access to cartographic platforms, such as Google Maps API mashups. Through sound maps, artists have developed means of annotating and connoting maps that offer different means of engaging with a place. While artistic engagement with maps is not a novel innovation, as there is a long history of artists challenging institutionally inscribed readings of place through the manipulation of maps and

the presentation of alternative mappings (Wood 2006), changes to mapping technology have led to an increase in artistic projects that involve collective connotation, either by a selected group or open to the general public. One of the largest sound map databases is hosted by Radio Aporee (http://aporee.org/), started by Udo Noll in 2006. The project posits itself as "a global soundmap dedicated to phonography, field recording (and related practices) and the art of listening. it [sic] connects sound recordings and places, in order to create a sonic cartography, open to the public as a collaborative project" (Noll 2015, np). Using the Google Maps interface, the database currently hosts sounds from users all over the globe. Users are welcome to contribute recordings by simply uploading sounds to the site. Open access in terms of contribution and consumption, this net-art project exemplifies how user connotation can support the development of sound maps, exceeding the authorial parameters of a single artist. The open framework for contribution is characteristic of the grassroots-inspired ethos of web-based works, where open participation and sharing are encouraged (Cornell and Halter 2015). Such an extensive archive celebrates the value of collective creation made possible on a mass scale with the advent of social media networks and the release of Google Maps API for free consumer use.

The use of sound as a means of mapping a place is notable as it attempts to tap into the sonic ecology of a place. As a creative medium, sound maintains an ephemeral quality. To experience sound requires listening in the moment. Sound's capacity to reconsider the public sphere is significant to its role in mapping as it posits sound as challenging the predominance of the visual in geography and cartography. At the same time, sound maps are part of a wider sonic turn in urban studies, where greater attention is paid to the acoustic characteristics of the city.

3. The Sonic Turn

For the past few decades, sound has increasingly been gaining attention in relation to the study and planning of urban spaces (Adams et al. 2006; Blesser and Salter 2009; Bull 2000; Wissmann 2014). While there has been great attention to the visual and movement within urban design, sound has been garnering more notice. Acknowledging the qualities of sound in how a person experiences a city does not preclude attention to other senses, but as the following analysis of sound maps, locative media, and sound walks show, sound is integral to the multisensory characteristics of the present-day urban environment, working in conjunction with other senses, such as the visual and proprioception, to inform perceptions of the city. Even though this "sonic turn" (Dillane et al. 2015) is relatively recent, the shifting nature of urban soundscapes is affiliated with the rise of the modern city in the 19th and 20th centuries as industrial sounds and noises abounded (Thompson 2004). The sonic experience of the city is complex and varied, with the fleeting qualities of sound itself making it challenging to capture. Rowland Atkinson describes the interplay of sound and its ability to shape urban experience as sonic ecologies that consist of "a permeable, modulating, fleeting and occasionally persistent soundscape within and across different social and physical sectors of the city. These ecologies fade and grow in intensity and scale according to particular temporal and social sequences" (2007, p. 1913). Sonic ecologies have connections to acoustic ecology, pioneered by R. Murray Schafer (1993) and others during the 1970s, which places emphasis on acute engagement with a sound environment. When describing sonic ecologies, Atkinson highlights how sound not only identifies a place, but demarcates and regulates space that is "regularly contested at both the individual and broader political scales" (2007, p. 1908). Thus, sound is not just a random by-product of urban experience, but is an unevenly distributed milieu that is both ordered and regulates city life, with social, cultural, political, and economic implications.

Sound modifies and influences human behaviours in ways that are not often recognised, as

"sound affects us depending on whether we feel it is out of place, threatening to our well-being, suggestive of unpleasant experience and so on" (Atkinson 2011, p. 19). At the same time, sound influences urban inhabitants in ways that differentiate from the visual. Michael Bull (2000) draws attention to the physical qualities of sound that enables the spacing and placing of experience through relational connection. Along similar lines, Michael Gallagher argues that sound itself functions as a kind of affect, "an oscillating difference, an intensity that moves bodies, a vibration physically pushing and pulling their material fabric" (2016, p. 43). That is, sound's affective capacity is connected to its vibratory nature, or the "base level" of sound, with the human body serving as just another type of body through which sound oscillates.

Moreover, engaging with sound is not limited to just considering the physical auditory environment, but also as a way of making sense of that environment (Thompson 2004). While sound itself may be ephemeral, the ordering of sonic ecologies emerges from their persistence and connection to place, whether they encompass the sounds of the city or attempts to subdue such noises through infrastructural and personal intervention, which can be technological. As Bull notes, the "technologies of sound … affect our relationship to the spaces we inhabit" (2000, p. 9). Thus, sound may also be used as an explicit means of ordering space, underscoring the relationship between sound, space, and power (Gallagher 2016).

Whether acoustic stimuli is considered sound or noise can also influence its relationship to place. According to philosopher and musician Paul Hegarty (2007), noise is not an objective term, but constitutes a judgement about sound that is a subjective assessment. In addition, Atkinson (2007, 2011) emphasises how in the context of the city, noise can take on political dimensions and even connotations of prejudice as attempts to mediate "noise" varies

depending on class, cultural difference, and social clout. Urban noise abatement policies tend to focus solely on decibel levels, the quantifiable aspect of sound, while not considering how certain loud sounds contribute to the unique soundscape of a place (Adams et al. 2006).

Just as the difference between "sound" and "noise" can influence how a person responds to acoustic stimuli, there is a difference between how a person engages with it whether through "hearing" or "listening." Stephen Handel describes how "hearing" can be considered a passive process that involves the physicality of acoustic reception, while "listening" is active: "it allows age, experience, expectation, and expertise to influence perception" (1993, p. 3). Listening, therefore, is a form of subjective perception that mediates and judges sounds, which may vary from person to person. How someone listens will depend on what sounds they are exposed to and how their judgement of sound is informed culturally and socially. The sounds a person is familiar with and the sounds that become part of an acoustic background, along with the corporeal qualities of how a person listens (i.e. does a person have sensitivity to certain sounds, use a hearing device, or have impaired hearing?) will contribute to their judgement as to what sounds are appreciated or considered unpleasant noise. This judgement can change depending on exposure. Sounds maps, like Radio Aporee, enable people to become more attuned to a soundscape through listening as they engage actively with the acoustics of a place and its distinctive sonic qualities.

The rise of artistic sound maps, like Radio Aporee, in the early 21st century is part of broader trend concerning aesthetic appreciation of sound, as popularised through sound art, which places sensory emphasis on the sonic and listening in fine art as opposed to the domination of the visual. Sound art emerged as an art form during the 20th century, corresponding (though not always directly) with the increased attention to sound in urban environments. LaBelle (2015) emphasises how sound has gained recognition as an aesthetic category since the

1950s, when John Cage's experimental compositions that encouraged listening to everyday and environmental noise highlighted how sound can be treated as distinctive from music. LaBelle describes sound art as a practice that "harnesses, describes, analyses, performs, and interrogates the condition of sound and the processes by which it operates" (2015, p. xi). LaBelle argues that as a result, sound has transgressive properties inherent to the medium: "sound works to unsettle and exceed areas of visibility by relating us to the unseen, the non-represented or the not-yet-apparent" (2015, p. 2). This rising aesthetic appreciation for sound, which includes non-musical everyday sounds, is changing how people listen. Toby Butler points out how the advent of sound art has included a "movement to record and celebrate more contemporary, everyday sound, which has been hitherto overlooked or even resented as 'noise'" (2006, p. 892). That is, by inviting audience members to actively listen to sounds that may have otherwise been experienced passively or with frustration, listeners are able to cultivate a different appreciation for an environment. Sonic artistic practices only became possible, however, due to innovations in sound recording, playback, and listening technologies.

4. Sound Technologies and Cartographic Interfaces

With the advent of recording and playback technologies in the late 19th and early 20th century, sound could now be captured and re-played, revolutionising how people engage with sound personally, socially, and culturally. Ground breaking recording technological innovations of the twentieth century include the invention of the gramophone, the introduction of microphones, the advent of electromagnetic tape, the dispersal of consumer recording equipment, and the digital revolution of the twenty-first century. Through these technological advancements, the ability to record and play back sound has changed human engagement with this fleeting form, or what Mark Katz refers to as the "phonograph effect" that arises

from the "interaction of three equally important and mutually influencing agents of change: the technology, the users of the technology, and society" (2010, p. 16). LaBelle describes the relationship of recording to sound's ephemeral nature and the bodies of listeners as follows:

> To record sound, trap it on media ready for amplification, diffusion, and distribution, through systems of transport and broadcast, is to toy with the present, undo origin, and realign memory. It is also to turn sound into object, giving it weight and mass, added strength and force, a figure haunting through its continual reappearance the bodily real (2015, p. 24).

While sounds can be recorded, and therefore result in identical playbacks, each listening experience may vary. As Gallagher notes, "sound constantly unfolds in difference, confounding expectations" (2016, p. 45).

While the recording of sound dissociates it from its original context of presentation, the sound map repositions the recorded sound in relation to a geographic environment through cartographic inscription; transposing the sonic ecology of a place onto its visual representation. Drawing from Atkinson's description of sonic ecologies as the simultaneous nature of being in flux, yet situated in a place, sound has the ability to structure a space through the listener's experience on individual and collective levels. In this sense, there is already a process of ordering associated with listening in the city; a process that is concretised through the production of sound maps like Radio Aporee. The question of grammatization in relation to sound mapping, therefore, concerns how sound is used to condition the behaviours of listening and how these listeners subsequently engage with a place. Therefore, the grammatization of the city in relation to sound maps involves not just concretization of the fleeting ambiance of the urban milieu, but also the listener in relation to this environment.

With a web based sound map such as Radio Aporee, users upload field recordings to database, which is then connected to particular geographic locations on a map interface.

Salomé Voegelin describes how sounds are inherently invisible, but may have visual counterparts, such as scores (2010, loc. 40). The sound map provides visual form to sounds — making fleeting moments of urban experience (which is what a field recording captures) and makes them concrete through sonic geographies, while also emphasising the multisensory aspects of the city by bringing together the sound with the visual that a user navigates through the map's interface. The field recording is a document of a passing moment and the listener becomes attuned to qualities of an environment through sensory immersion. In that sense, the field recording is a document of a place, but it maintains an indexical relationship to the environment that is experiential while retaining an invisibility. A sound map makes this invisibility visible. Voegelin emphasises how listening is contextual, but the context is fleeting (2010, loc. 30). The map interface, however, pinpoints recordings to a particular location, countering the ephemerality of sound. Through the creation of a database and the visual placement of sounds, the cartographic interface restrains the variability of listening, as moments of experience become concrete identifiers of a place. Sounds are abstracted from the context of creation, but then are associated with a particular visualisation of space.

In terms of a pharmacological analysis, sound maps can enhance appreciation of sounds through the cultivation of active listening, which is the curative aspect of the pharmakon, while at the same time reinforce listening habits that homogenise perception, which is a poisonous aspect of the pharmakon. Stiegler argues that digital discretisation of movements, which includes listening, allows for their "*ordering, treatment, calculation and imitation*," thus leading to an illusion of individuality through the loss of individuation (2014, p. 68). Therefore, there is a grammatization of place and the listener in relation to place where sounds becomes pinned to particular locations: the fleeting urban ambiance are made concrete through the discretisation of Google Maps cultivating homogenous shared listening.

These processes impact a person's relationship to sound, but also to place, emphasising a unified listening experience of that place.

Through Radio Aporee's creation of a database, the knowledge of listeners is categorised, but also shared. The concern is not the centralisation and sharing of knowledge per say, but as Stiegler (2014) points out, grammatization makes the sharing of knowledge possible as well as inviting control. Martin Crowley notes in response to Stiegler: "digital media, which might offer new creative possibilities are 'perverted' by being deployed massively to stifle differentiation and favor standardization" (2013, p. 124). Stephen McQuire (2017) offers such an analysis of Google Street View, where the collection of Google's image database coordinates an experience of the city through its imagery. Even though the user of Google Street View can develop their own path, this "user choice" is restricted by what the database affords. While Radio Aporee's sound database lacks the seeming seamless, integrated editing associated with Google Street View, the unacknowledged restrictions of user engagement are pertinent, which can perpetuate homogenisation in listening. Therefore, this critique of Radio Aporee is not concerning the collective sharing of field recordings through the connotation of a map per say, but how the interface of the map, as a Google platform, risks perpetuating the growth of Google's hegemonic singular knowledge base while re-inscribing a specific base map. In addition, as users contribute sounds to Radio Aporee's constantly growing database, these sounds are translated into data through Google, with no indication of how they are used beyond the surface of the interface.

Moreover, grammatization not only occurs through the shared listening of sounds, but also through the map interface and the data that is collected through the building of the sound database. As noted, Radio Aporee uses the Google Maps API as its base map. Artists may choose to use Google as their base map due to its ease of use as a seemingly neutral platform

and accuracies in geographic locations. Since introducing Google maps in 2005, the company has formed an influential infrastructure of cartographic knowledge that competes with traditional institutions that relied solely on the expertise of professionals, such as the UK Ordinance Survey and the French IGN (Plantin 2018). Jean-Christophe Plantin points out how this is not to say that experts are absent from Google's infrastructure, but that it relies heavily on its users to contribute cartographic knowledge as they actively produce geographic data, either directly through suggested changes to base map information, such as altering street names, or indirectly through the passive collection of data through use.

One of the key ways that differentiates Google from other cartographic infrastructures is that it is a private corporation driven "by its business of targeted consumer advertising" (Dalton 2013, p. 267). Basing his analysis in part on the work of Bernard Stiegler, McQuire (2017) emphasises how Google's business model is the organisation of the physical world into data, where common resources, such as urban sounds, are attributed private values. Google creates what he refers to as an operational archive, or an archive that is "constantly 'under development' even as it is being used" (McQuire 2017, p. 83). Its effectiveness emerges from widespread use, which is the basis of its commercial value, meaning that it functions as a source of information but also as a tool for gathering information. McQuire states: "Google Maps functions primarily as a lure, since value to Google is derived primarily from the data they can accrue through encouraging user transactions" (2017, pp. 84–5). The result is the mass appropriation of the urban environment as a means of extracting value, part of a wider movements of subjecting life to "value extraction through data acquisition" (McQuire 2017, p. 86). As users upload media and listen to Radio Aporee through the Google Maps interface, they are contributing to its growing operational archive, which in turn is transforming the sounds of experience into data that have potential commercial value.

Google Maps encompasses a single body of knowledge that is algorithmically customized for our use. The perceived openness of its participatory engagement makes it more accessible to users, allowing for more diversified and individualised commercial approach, while also lending to its appeal for use in creative projects. Jethani and Leorke (2013) emphasize the influence of institutional and commercial influences in the development and impact of such projects, which can have unintended consequences. The omnipresence of Google Maps and transferable qualities of the interface to different uses through APIs do enhance accessibility of works, since the familiar format can open them up to new audiences who otherwise may not engage with sound art or field recordings. While the crowdsourcing model used in Radio Aporee have facilitated what Stiegler refers to as "bottom up" processes (2012), this data is exploitable by hegemonic entities like Google. That is, the grammatization affiliated with mapping does not just involve how geographic data is categorised, structured, and shared, but influences how bodies relate to space and move within a place, and how they can be directed to do so through technological interfaces.

In addition, introducing connotations to an already existing map does not critically engage with the base map being utilised. In her analysis of collaborative mapping projects that arose during the first decade of the twenty-first century, such as *Urban Tapestries* (2004), Alison Sant (2006) describes how many of these projects replicate the datasets inherent to these cartographic interfaces. She defines how the base map consists of a "purely geographic categorisation of urban space, defined by the Cartesian coordinates, the road system, and the block plan" that perpetuate a "singular notion of urban space" (Sant 2006, np). As the base map is replicated through interfaces such as the Google Maps API, this particular ordering of place is unquestionably replicated through cartographic rendering, thereby limiting the extent to which connoted maps contribute to the reimagining of place.

5. LimerickSoundscapes and the Critical (Listening) Citizen

It is important to note that grammatization extends to how sounds are collected, as this can influence the cultivation of listening behaviours. While Radio Aporee depends on an crowdsourcing model where users are invited to add sounds to its data base, LimerickSoundscapes (2014) emerged as a project that developed a sound map of the Irish city of Limerick produced through volunteer collectors who were trained and supported by the project's coordinators. Collectors were from local groups, including Active Retired Citizens, Headway Ireland (a community group for people with brain injuries), Doras Luminí (a group that supports asylum seekers and migrants that are new to Limerick), and other community and parish groups, which incorporated a diverse population of participants from different religious, socio-economic, age, and ethnic affiliations (Dillane and Langlois 2015). Many participants were new to sound recording, and especially field recording that carries its own challenges of capturing sound in an uncontrolled environment (in contrast to the controlled space of a sound studio or sound booth). They were provided with digital recorders, high quality wind-jammers, and headphones along with being trained in how to use this equipment in ongoing dialogues and face-to-face workshops in order to ensure that recordings were of appropriate quality and to cultivate relations between facilitators and participants. In addition, workshops considered the ethical implications of field recording, which is absent or unacknowledged in other sound maps, including Radio Aporee. The collected material was collated and presented on an online sound map that utilises a Google Maps API.

From its inception, emphasis was placed on community involvement, or what the key members of the project Aileen Dillane and Tony Langlois (2015) refer to as "critical citizenship." The aim of LimerickSoundscapes was not just to engage with the city through

sound or to create a digital map of Limerick, but to treat the act of collecting sound and engaging with participants “as a means of mobilising civic engagement, in order to create a participatory and creative citizenship for the diverse array of people living in cities” (Dillane and Langlois 2015, p. 136). The citizen in this context is defined as a dweller of a city who has a vested interest in that place (Dillane et al. 2015). Thus the project co-ordinators accentuate the importance of developing a methodology for teaching people to engage in field recording as perhaps even more vital to the project than the output of the sound map. Placing emphasis on engaging with and training collectors through community groups foster relations between participants that exceed the acts of recording and mapping sound while highlighting the place-particular qualities of the project.

One way the LimerickSoundscape differs from Radio Aporee is that the collaborative process of production is not limited to the final sound map presented on the Internet. However, as with Radio Aporee, LimerickSoundscapes remains reliant on its base map, provided through Google Maps, perpetuating some of the concerns related to use of these maps noted above. While there is an interactive layer of engagement introduced, the base map remains unchanged. This outcome of the project does not negate the emphasis that LimerickSoundscapes places on teaching its collectors how to record audio. Participants become sonically attuned to Limerick in distinctive ways, where the use of recording technology is placed in a wider discursive and practical framework, cultivating a pedagogy of listening through workshops and training, as opposed to relying on the technology to perform the task of listening. In order to take a pharmacological approach in analysis, though, requires acknowledging the limitations of the project in relation to its technological platforms, noting that the poisonous qualities of a technology are not in a zero-sum relation with the curative properties. Even through the use of dynamically collaborative methodologies and the development of a collective pedagogy of listening, certain un-noted restraints of digital

technology are still present. In this context, the LimerickSoundscape alters how the city is presented cartographically, though the grammatization of the listener and the city through the final digital map interface remains unchallenged.

6. Locative Media

With the aforementioned sound maps, users are restricted to the stationary experience of engagement on a desktop computer in a different context from which the sounds were originally recorded. The possibilities for sound artists changed, however, with the advent of locative media. Locative media has become increasingly popular over the past decade as a means of integrating digital art into the physical environment, beyond the context of the gallery and the computer screen. The phrase "locative media" is attributed to Karlis Kalnins, who used it to differentiate digital art that is spatially localized from net-art, or art that can be experienced on a computer desktop, and was coined in 2002 during a workshop at the Latvian electronic art and media centre RIXC (Tuters and Varnelis 2006). The rise of locative media is attributed to the increased ubiquity of GPS due to US President Bill Clinton's lifting of encryption on GPS signals in 2000 (Holmes 2003) and the increased popular access of consumer products that utilise GPS technology, which initially included portable computer tablets and PDAs. The invention and dissemination of the Smartphone in 2007 further increased access to GPS (Frith 2015), allowing both artists and audience members to more easily engage with GPS based projects through apps. According to Marc Tuters and Kazys Varnelis, its practitioners "have claimed an avant-garde position, insisting not only that their work is capable of creating a paradigmatic shift in the art world, but also that it can reconfigure our everyday life as well by renewing our sense of place in the world" (2006, p. 358). With utopian aspirations, locative media artists find ways to alter perceptions of geographies in situ.

US artist Teri Rueb has been creating locative media sound walks since 1999, utilizing GPS in order to play particular sounds and sonic compositions when a listener reaches a specific location. Examples of these works include *Trace* (1999), *itinerant* (2005), *Core Sample* (2007), and *Other Order* (2014). Her sound walks tend to emerge from "urban wilds," or natural zones in urban centres. She regularly incorporates the practice of walking into the manifestation of the work; a combination of audience mobility and sonic attunement referred to as sound walks. The sound walk has gained popularity as a particular form of sound art, which emphasises the movements of a listener in a specific geographic location. Generally, sound walks include an audio component that a person listens to through headphones while in situ. One notable quality of the sound walk is that along with taking advantage of the visual and sonic qualities of the city, there is also engagement with proprioception. The listener is immersed in the environment of the sound work, opening up potential for unpredictability and interactivity with the geographic site as experienced through the body.

Core Sample (2007) is a GPS enabled, locative media sound walk that Rueb created for Spectacle Island located in Boston Harbour. Now a park land, Spectacle Island has a rich history that includes being the site of a casino and hotels, a horse rendering plant, and city dumps. The current form of the island was shaped with excavated material from Boston's "Big Dig," which was a massive urban re-construction process, lasting from 1982 to 2007, that involved moving the major highway traversing Boston, interstate 93, underground (LeBlanc 2007). *Core Sample* provides a cultural topography of Spectacle Island's past and reclamation, as Rueb crafted a soundscape that blends field recordings taken on the island, interviews of former inhabitants, and electro-acoustic sounds and manipulations that shift as the listener changes elevation while walking in the environment. In addition, the listener uses headphones that are designed to allow in ambient noises as they navigate the place, blending the recorded, virtual soundscape with the natural environment.

A significant quality of locative media projects like *Core Sample* is that they rely on the listener being immersed in a particular setting in order to engage in the work. Thus, the listener becomes attuned to the acoustic environment while sound retains its fleeting and dynamic qualities. Voegelin describes how sound influences geographies by introducing "dynamic trajectories of individuals moving, being moved and remaining in place" (2010, loc. 143). Through her sonic overlay, Rueb connects sound to particular locations of the environment, which shifts and emerges in relation to the listeners' movements. In this sense, there is some directing of the listeners' movements, but these connections of sound to place are not finite. Instead, the listeners' movements inform the unfolding of the work, creating invisible connections of the listener to the environment, as well as to each other.

As noted, when locative media gained momentum during the first decade of the twenty-first century, its practitioners celebrated the ability to extend the aesthetic experience of digital art beyond the computer desktop and gallery context. Despite the utopian aspirations of proponents of locative media, it is not without its critics. The early debates concerning the artistic forays into digital mapping have tended to focus on its reliance on GPS, a military technology. Some critics, including Andreas Broeckmann (Graham 2004), Coco Fusco (2004), and Brian Holmes (2003), have questioned the political efficacy of these art practices. For instance, Broeckman emphasises how "'locative' in regards to locative media does not only relate to the user in the space using media to enrich experience of a place, but also the ability to locate or track down anyone wearing such a device" (as quoted in Graham 2004, np). Thus, attention is drawn to dystopian potential of this technological reliance, focusing on GPS and the roots of this technology in the US military. By easily contributing data through the networks that enable locative media, users are facilitating the ability of institutional network surveillance.

In addition, while artists may have led early experimentation with locative media, this process was overtaken by commercial interests with the advent of the Smartphone in 2007 (McQuire 2017). Through her practice, Rueb has taken advantage of different technological developments that have taken place since the beginning of the twenty-first century, this includes utilising GPS technology that makes users locatable. *Core Sample* is one sound walk that was created prior to the advent of Smartphones, along with *Trace* (1999) and *itinerant* (2005). These earlier projects were dependent on the listener being provided with the appropriate equipment to engage with the work. When *Trace* was first created for the Yoho National Park in British Columbia, it required listeners to wear a backpack with a computer containing a database of recordings that were enabled with a GPS receiver. The backpack was also fitted with headphones for the listener to use while hiking through the park (Rueb n.d.). In 2012, Rueb developed an iPhone app that provides access to the project, no longer restricting listeners to specialised equipment, correlating with a broader trend of technology becoming obsolete and being replaced with commercial alternatives (Jethani and Leorke 2013). The sound walk *Other Order* (2014) that was created for Harvard University's Arnold Arboretum, located in Jamaica Plain, Boston, MA, is native to the Smartphone app. The risk with using commercial technologies, according to Jethani and Leoke, is that the radical ideals of Locative Media, which is heavily influenced by Guy Debord and the mid-century revolutionary artist group the Situationist International (see Zeffiro 2012), "become a ready-made, prepackaged resource for any number of artists and designers to appropriate and 'recuperate' through their work" (2013, p. 497). As indicated, these resources are connected to private industrial structures that profit off of the collection of contributed data while homogenising and restricting the participatory potential of such projects as listeners are restricted by the limits of the database, geospatial data, and the technological affordances of the base map.

In addition to considering the implications of utilising locative media technologies that are potentially locative mediating, it is also important to acknowledge how Rueb plays with memory through the organisation of perception. In *Core Sample*, Rueb uses audio to shift through Spectacle Island's material, cultural, and social histories creating a topographic palimpsest that mimics the landscape of the island. Her sound walks are experienced through headphones, an individual form of sound delivery. In his empirical and theoretical study of personal stereos in the city, Michael Bull (2000) points out how these devices have the potential to empower subjects through the cultivation of an aesthetic construction of urban space using technology. Engaging with the often overlooked act of everyday mobility in the city, Bull considers how listening to personal stereos enable an mediation of the city through communication technology, as it enacts an ordering of the senses in relation to experience. Even though his study focuses on listening to music selected by the listener, his points regarding the interplay of listening to personal audio devices in relation to moving through cities is relevant to sound walks. However, instead of the listener selecting the soundtrack, as in Bull's studies, GPS enabled sound walks such as *Core Sample* are activated through the movements of the listener, though are composed spatially through the relation of sounds to GPS enabled specifications, making it more reactive than interactive. While each listening experience may vary, making it an individualised experience, ultimately the walk is directed by the artist. Also, as with the sound maps discussed above, user choice is restricted by the affordances of the database. In terms of sound walks, this does not just impact how users see or listen to a place, but also how they move through it, contributing to the grammatization of the listener in the city.

7. Electrical Walks: Transforming the Base map

While Rueb's projects invite different ways of multisensory perception in relation to

listening, these are still constrained through the technology she uses. Perhaps the most effective way to adopt technology to radically alter listening, therefore, is to not engage with it directly. German artist Christina Kubisch's *Electrical Walks* provides an alternative approach to artistic mapping as a means of challenging the navigation of urban space while also breaking from reliance on specific base maps. In these works, which began in 2004 in Cologne, Germany, she invites audience members to put on a specially designed set of headphones, equipped with a coil that translates electromagnetic fields into audible noises through induction, which is an analogue process. With this equipment and a paper map that indicates "hot spots" (suggested locations such as ATMs, security systems, tram lines, and other locations that emit strong signals) listeners move throughout the urban environment, allowing sound to function as a guide. The map provides only suggestions for listening, not informing what sounds are to appear in particular locations, as in the sound maps and locative media projects utilising GPS discussed above. To fully appreciate the aesthetic experience of the *Electrical Walks* involves being immersed in the cityscape, exploring the scene with curiosity and wonder. Attuned to a different perception of a place, participants engage in a distinctive manner sonically, visually, and proprioceptively with that particular locale. Their gestures and actions shift in order to more effectively listen to sounds that to passers-by are undetectable. For instance, participants of *Electrical Walks* bend their heads to listen to ATMs and ticket machines—they are adjusting their movements to hear objects that emit high levels of electromagnetic waves, with each movement changing the quality of sound being produced

The listeners embody these acts of performative mapping as they negotiate the terrain in a novel way. To date, Kubisch has staged over forty personal and public *Electrical Walks* in different parts of the world, including Germany, Ireland, France, Japan, Russia, Switzerland, Spain, and the United States. According to Seth Kim-Cohen: "Kubisch and others have

discussed this work in terms of revealing a hitherto hidden aspect of the city. The suggestion is that these sounds constitute a kind of secret about—or secret life of—the city" (2009, p. 110). In other words, in *Electrical Walks,* Kubisch does not direct the listeners where to go, but instead, provides them with specialised equipment and encourages them to roam. She appropriates what can be considered a by-product of many technological devices—electromagnetic radiation—that commonly goes unnoticed, transforming this energy into a new means of tuning into the world, inviting audience members to adjust sonically and proprioceptively to the surrounding environment. The listeners performatively carve new experiential geographies into each urban centre.

Moreover, the *Electrical Walks* invites new, multisensory behaviours of listening, which contrasts with the GPS-enabled projects discussed above. Even though Kubisch's work depends on mobile, solo listeners—a characteristic of today's auditory practices—she encourages them to modify their physical behaviours in a collective, public scenario as these participants complete the works through their embodied presence. It is only through the physicality of the listeners' presence that the *Electrical Walk* is made manifest, engaging in what Seth Kim-Cohen describes as "a slew of concerns having little or nothing to do with the sonic" (2009, p. 119). Instead, it is the play of sociality, the relations engendered between participants and their surrounding, multi-layered context, and the challenging of the implied movements within the city that constitute the significance of her work: not the sonic properties (though the resulting soundtracks are distinctive and notable compositions created through movement). Kubisch invites participants to engage with familiar environments in a distinctive way, thereby altering the prescribed Cartesian mapping of place. The listeners become producers of an improvised choreography, undermining norms of urban spatial etiquette that in turn create minute sites of resistance. As such, Christina Kubisch's *Electrical Walks* offer a distinctive spin on locative media that challenges particular grammars of place

and listening of the sound map and sound walks. Listeners defy the implied performances of the city as ubiquitous electromagnetic fields become the soundtrack and guide of a new means of engaging with the urban environment in a fleeting experience.

LaBelle's definition of sonic agency is useful for considering Kubisch's *Electrical Walks*, particularly in the re-conceptualisation of public space. The headphones utilised by participants in an *Electrical Walk* work by transduction as the electromagnetic waves that exceed the human senses are sonified, thus making the act of listening the predominate means of engaging with place. Sound in this context leads the listener through curiosity, as opposed to the unfolding of narrative, as in Teri Rueb's *Core Sample*. Thus, the agency of the listener is made more apparent, with the capacity of the listener to affect place made manifest through the execution of embodied gestures that challenge the implied performances of that place. Sonic agency in this context functions as a means of engaging attention (LaBelle 2017), inviting a mode of listening that encompasses new forms relating to place, things, and bodies (both human and non-human), contributing to and reconfiguring the sonic ecology of an environment by tapping into an energy that is not inherently sound-based.

Through the *Electrical Walks*, Kubisch evokes different modes of perception by sonifying what is commonly inaudible. In turn, there is a shift in the performative engagement with a space as bodies attune to the sounds of the environment. The sounds are not pre-recorded, but unfold through perception.[1] While an online-based sound map, like Radio Aporee, has a higher degree of accessibility than the experiences of Kubisch's electrical walks, it is important to not equate accessibility with an inherent potential for instigating changes to how place is experienced. As noted previously, the behaviours invited by users of the Radio

[1] Kubisch has recorded the sounds emitted from the electric walks, though these function as documentation of the art work than the work itself.

Aporee sound map reinforce particular grammatization of the listener in relation to public space, where sounds become affiliated with a particular visualisation of space through the map, listening experiences are shared yet risk homogenisation, and participation is restricted to the affordances of the interface dedicated to extracting value from the acquisition of data. In short, Radio Aporee does not challenge the base map. While Kubisch's walks may immediately impact a smaller group of participants, the actions that are invited through listening allow for a subversion of how public spaces are utilised. These sonic experiences not only challenge how people listen in relation to public space, but also contribute to redefining the base map of a place as listening and walking are constitutive of place.

8. Conclusion

While the examples discussed above were created as art projects, what they invite in terms of listening behaviours extend beyond these initial contexts of presentation. Geographer Harriet Hawkins (2012) emphasises the significance of artistic practice in expanding understandings of a place, as art can alter orientation to site, defamiliarize the body's phenomenological experience, and draw attention to materialities that otherwise go unnoticed. Treating art as a "mode of critical exploration" (Hawkins 2012, p. 53), as opposed to focusing on representational qualities, enables expanded modes of inquiry that exceed aesthetic appreciation. Focusing on acts of listening in the city, these projects offer new modes of acoustic engagement that enhances multisensory experiences of urban environments. Listening is treated as an active process where participants develop or alter judgments of sound through sensory reception, becoming attuned to the specific sonic qualities of a place, but the use of technology by artists may have unforeseen consequences. Taking a pharmacological approach, based on Stiegler's definition of the *pharmakon*, to artistic sound mapping projects in the city explores some of the unacknowledged implications of artists that

use mapping and sound technologies. The acknowledgement of these implications is not meant to condemn these works, but to highlight the limitations of technological affordances, databases, and the base map in terms of user participation, which can lead to the homogenization of listening behaviours through standardization resulting in the grammatization of the listener in the city. However, as the examination of Kubisch's *Electrical Walks* illustrates, sound can also invite new forms of agency through listening. These implications extend beyond the artistic works discussed to raise questions and insights of what it means to listen to a place and how the experience of listening can be mediated or dramatically altered.

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