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Recording and manipulating sound "in the field" can lead to increased awareness of the relational nature of space. In this paper I reflect on the potential role of mobile media devices ("smart" phones, tablet computers, etc.) in such a dynamic. Our experience of space is tied to multiple, simultaneous relations—including relationships of time and memory as much as physical distance. How do contemporary, mobile practices of audio field recording, "soundmapping"[1] and sound composition both construct and react to different spaces? What are the dynamics of such engagements? What environmental and ethical considerations emerge through such initiatives? How can mobile media devices bring our senses to bear differently on the spaces we inhabit? I apply Doreen Massey's (2005) approach to understanding space as intrinsically relational, while inflecting this conception through new possibilities that emerge from mobility studies and creative locative audio work.

I discuss the outcomes of a research-creation project based in the Mobile Media Lab at Concordia University, Montreal Canada where I and a small team of research assistants used smart phones to make geo-tagged audio recordings of a particular urban wilderness area in Montreal called the St. Jacques Escarpment (known locally as the

[1]Following Waldock (2011), I have opted for the term "soundmap" as opposed to "sound map".

Falaise St. Jacques, or simply, the "Falaise").[2] These "mapped" audio recordings were then used as source material in the creation of different compositions by team members. A soundmap of the Falaise and five different compositions can be accessed at http://audio-mobile.org/falaise, along with short artist statements for each piece. The soundmap follows the interactive, online format outlined in Waldock (2011), "with pin signs/tags to mark where sounds have been recorded at a particular geographical location. Clicking on the pins allows the soundmap visitor to listen to the sounds and [...] to zoom in to see a picture of the geographical location." (n.p)

Jammed between an abandoned rail yard and major highway (the "Autoroute du Souvenir") to the south and a large commercial street to the north, the Falaise St. Jacques is a thin strip of trees situated amongst kilometres of concrete. The terrain is quite steep, almost cliff-like in many places. It is heavily wooded, but with fast growing species of trees like poplar and Manitoba maple (Acer negundo). It is also *full* of junk, including the kind of waste that people evidently want to dump "discretely" like oil barrels, paint cans, computer parts, dead animals (we found the skeleton of a dog) and sex toys (including a blow-up doll). Most of this waste is to be found near the top of the escarpment (along the part that faces St. Jacques), which we quickly learned to avoid, due to steepness of the terrain and the likelihood of stumbling across hazardous materials.

The soundscape of the Falaise became a site through which team members worked through aspects of their own capacity as audio recordists and composers and also the environmental costs of producing and dumping waste in our proverbial

[2]This research-creation work was supported by the Social Science and Humanities Council of Canada (SSHRC) and Concordia University's Office of the Vice President of Research and Graduate Studies. The MML website is mobilities.ca.

backyards. On the other hand, the resilience and enduring significance of the Falaise in terms of its diverse collection of wildlife was also strongly reinforced.

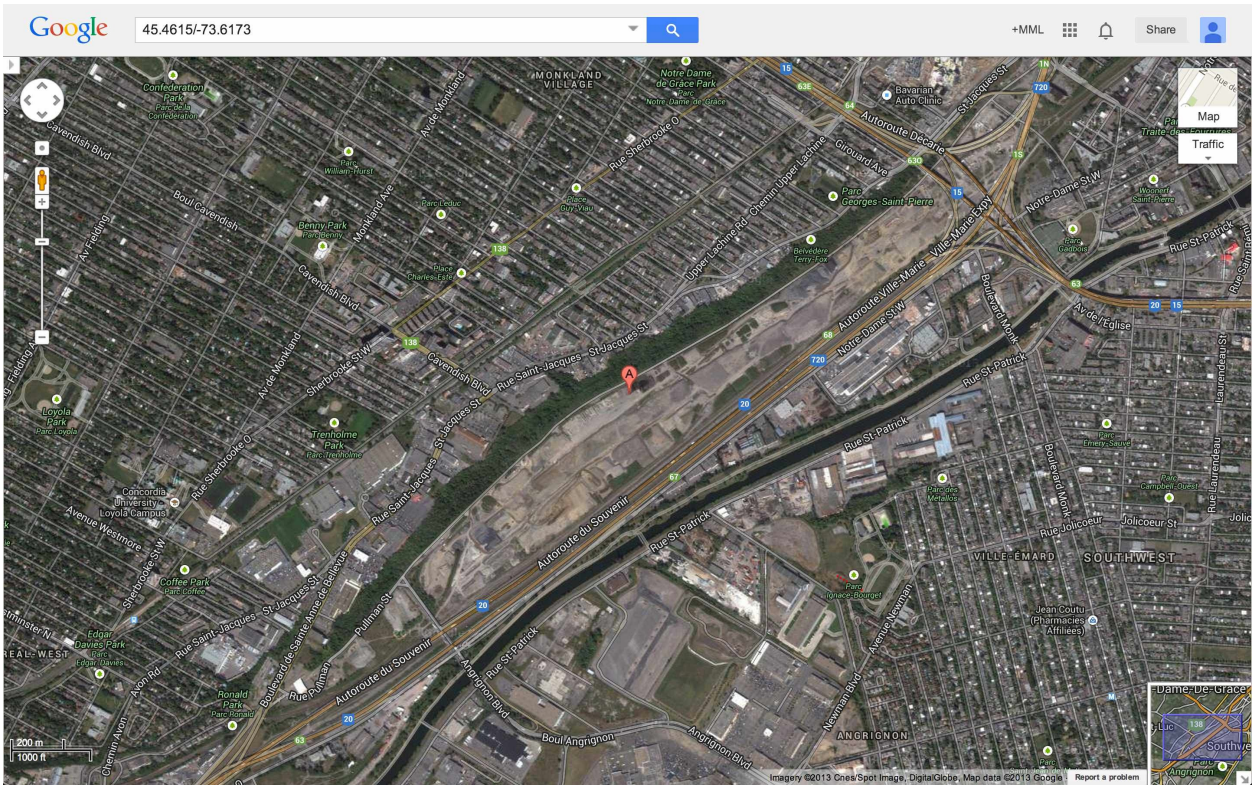

Fig. 1 Google Map Image of the Falaise St. Jacques - 2013

Theoretical and Methodological Context

This initiative is part of a larger project that explores the potential of smart phones and other mobile devices for audio recording, soundmapping and creative production. We have developed an open-source iOS app entitled "AudioMobile" as part

of the project (available for free download at https://itunes.apple.com/us/app/audiomobile/id851837967?mt=8). A tool for collaborative, dynamic field recording, AudioMobile allows users to record the sounds around them, attaching a photograph and GPS coordinates to the file. These elements can then be uploaded to an online sound map (http://audio-mobile.org) and shared with others in a variety of ways.

The growing ubiquity of networked, "smart" devices affords new opportunities for recording spontaneous sonic moments. Moreover, the availability of an ever increasing variety of sophisticated sound production "apps" has generated new opportunities for *in situ* compositions. Mobile devices offer novel means for "audiosocial" interaction and sharing of the sounds around us. Besides being "ready to hand while on the move" (Thulin 2012), the convergence of different forms of media represented by contemporary mobile devices means that digital audio field recordings can now easily be tagged with other types of location-based data, such as GPS coordinates, photographs, as well as user-generated titles, notes and descriptions of recording conditions such as weather. Audio recordings become "locative media" (Lemos 2009) when made with mobile devices.

The digitization of media production technologies has brought with it a parallel reduction in the space and equipment necessary for sophisticated audio recording, editing, mixing, and dissemination. While many of these technologies are portable (i.e., laptops, mixers, digital recorders, etc.), they are not "mobile," in that they are not carried with the user at all times, nor available in all circumstances. Along with these contemporary developments in mobile technologies, "mobility studies" as a field asks how we move through spaces, introducing a temporal dimension into the preoccupation

with space and a call for more robust data sets for the development of simulations and analyses of movement (Sawchuk and Crow 2012; Patterson et al. 2010). Mobile media devices are also a prevalent theme for mobility studies in terms of how they connect or disconnect users from the environments in which they move (Beer 2010; Bull 2004; Lemos 2009; Farnsworth and Austrin 2010; De Souza e Silva and Firth 2010; Cresswell 2006; Goggin 2008; Sheller and Urry 2007; Urry 2007).

The AudioMobile project was designed to contribute to dialogues around emergent practices of mobile music-making and cellphone audio performance (Christiane 2003; Essl et al. 2006; Essl and Rohs 2009; Gaye et al. 2003; Gopinath 2013; Weinberg 2005) as well as locative media (Bleeker and Knowlton 2006; Galloway and Ward 2006; Hemment 2004 and 2006; Lemos 2011; Pope 2005; Tarka 2005; Wershler 2008) and critical cartography (Crampton and Krygier 2006; Fusco 2004; Sotelo-Castro 2009). Methodologically, the project follows a "research-creation" approach, which is a Canadian neologism for work that integrates "a creative process, experimental aesthetic component, or artistic work as an integral part of the study" (Chapman and Sawchuk 2012: 6).

The AudioMobile project also draws inspiration from ongoing work at the Centre for research on sonic space & urban environment (CRESSON) in Grenoble, France (see Augoyard 2007; Augoyard and Torgue 2006 and Thibaud (2013). In addition, Andra McCartney's "Soundwalking Interactions" project, focused on re-examining the ethical parameters of soundscape studies (McCartney 2010 and 2013), the "100 Finnish Soundscapes" project, led by Helmi Järviluoma (2006 and 2013) and Brandon Labelle's (2010) account of acoustic territories as forms of movement all provide important touchstones. In terms of studies of electronic and sample-based music, while much has

been written about hip hop and mobility in terms of class and also transportation (especially subway and graffiti culture—see Castleman 1984; Mailer and Naar 2009), and also the historical significance of the mobile "sound system" and boom box (Miller 2004; Hebdige 1994), the role of mobile devices has received little serious attention. Although the cell phone as a form of conspicuous consumption is often referenced in terms of its symbolic value within hip hop and other forms of contemporary electronic music, no studies exist (to my knowledge) on new directions that arise for these genres through the integration of mobile devices as new audio production platforms. The approach outlined in this essay is also relevant to studies of sampling in contemporary music, but in the novel sense of "sampling" the soundscape, or audio environment, as opposed to copyrighted audio material (see Rose 1994; Schloss 2004; Serazio 2008).

Ecotonality

McCartney describes the ecological concept of the "ecotone" as "a marginal zone, a transitional area where species from adjacent ecosystems interact." (McCartney 2010, n.p.) Ecotones are notable for interspecies interaction, but also for providing rich and unique habitats for other species to thrive that would not be found elsewhere. McCartney explores the concept as a means to highlight the relationships that become apparent through close listening to audio environments, or soundscapes, asking "what would it mean to pay attention to how sounds overlap, to how they rub up against each other, in whatever context"? (McCartney 2010, n.p.) While crossing Canada by car in August 2013, I visited a rest-stop near the eastern edge of the province of Manitoba,

where the Canadian Prairies meet up with Ontario's boreal forest. The small park by the highway was filled with prairie grasses, but also lots of trees. I used my cell phone to record the sound of a woodpecker cry mixed with crickets and wind in the long grass in the background (http://audio-mobile.org/#8/49.889/-95.177).

Applying the notion of the ecotone to an urban space like the Falaise is a bit more of a stretch, perhaps, but is still highly evocative. Species certainly interact in such a pocket of urban wilderness, but it is less a space where two ecosystems intersect as it is a thin island of green amidst kilometres of urban development/decay. But if one extends the notion of ecosystem as designating specific sonic as well as ecological characteristics, the Falaise is an example of a robust "ecotonality" that is as mundane as it is extraordinary. Applying the concept to the space is also helped by a linguistic coincidence—in 2004 the city of Montreal designated the Falaise St. Jacques as one of ten "eco-territories" in the region—their term for areas where "protecting and enhancing natural spaces are a priority" (Montreal 2004a). Some are previously protected areas, others are not. In the case of the Falaise, most of it has been owned by the city for the past 30+ years, but besides a couple of municipal clean up efforts in the 1980s and 90s, the site is consistently treated as a local dumping ground, with St. Jacques business owners at times charging construction companies cheaper rates to illegally throw waste over the side than the local city dump. (Riga 2007: A4) In 2003 the city took legal action against a car dealership for cutting down 50 trees from the area, sparking renewed interest in the space, and its designation in the 2004 "Master Plan" for the City of Montreal as one of the 10 eco-territories. (Riga 2007: A4; Montreal 2004b) As of this writing, however, there has been zero implementation of any plan for protecting and

enhancing the Falaise, and indeed the term "eco-territory" was dropped from the 2011 Master Plan for the city (Montreal 2011).

While it is not my intent to argue for greater environmental protection of the Falaise, it is worth noting that all project members grew quite fond of the area, and it is easy to imagine that it could be cleaned up and turned into something beautiful, but only with a lot of effort and shifting of local attitudes around the space. Decrees of "eco-territory" status work well for city planning or visioning documents. But in this case they have fallen short. Our compositional and soundmapping work, then, can be read as an alternative form of commentary on the Falaise and by extension other spaces like it, which exist the world over.

Fig. 2 Soundmap of the Falaise St. Jacques - 2013 by David Madden http://audio-mobile.org/#15/45.4641/-73.6155

Soundmapping the Falaise

The 16 hectare core of the Falaise has park zoning. It is about three kilometres in length and covers an area of over 20 hectares stretching from the neighbourhoods of Montreal West to Westmount, and passing through much of Notre Dame de Grace (known locally as NDG). But the Falaise is not a park, even though there are remnants of trails and a small section of paved path. In the 1980s Montreal Mayor Jean Drapeau initiated a plan for his vision of a "linear park: a hiking-and-biking trail that could be used for cross-country skiing in winter. In the ensuing 25 years, Montreal spent more than $2 million on the Falaise. There's still no sign of a park." (Riga 2007: A4). Money was spent on clean-up initiatives, where truckloads of oil barrels, abandoned cars, tires and the like were removed. Different species of trees were planted. Property was bought by the city. But the efforts were repeatedly abandoned (first by Drapeau, then by his successor Jean Doré in the 1990s). Throughout the years the space returned to use as a dumping ground by local business and residents. Planted samplings were dug up and removed by locals. Cleared areas for trails grew over.(Riga 2007: A4)

While parking lots from the businesses along St. Jacques cover much of the upper access to the area, the bottom borders onto the expansive former Turcot rail yards, which is now used, among other things, as a winter repository for snow cleared from the dirty, salt covered streets of Montreal. The Falaise is "thought to be a geological formation dating back to the Champlain Sea, which covered much of the Montreal area 10,000 years ago, at the end of the last ice age." (Riga 2007: A4) According to the City of

Montreal, the Falaise "together with Mount Royal, are each defining characteristics of the Island of Montréal landscape" (Montreal 2004). The comparison, it must be admitted, comes across as somewhat ludicrous, as the latter is an immensely popular and extremely well-tended park. The same civic document then goes on to explain that the Falaise is "of strategic importance for migratory waterfowl" a other bird species such as the Indigo Bunting (breeding), Chimney Swift (breeding), Ruby-Throated Hummingbird (breeding), Scarlet Tanager (migration), Wood Thrush (migration), Cooper's Hawk (migration), Red-Shouldered Hawk (migration), and American Kestrel (migration). (Montreal 2004)

While the soundscape of the Falaise has one predominant quality—traffic noise—the birds are not to be underestimated. In David Madden's soundmap, his search for bird sounds on an October day, right in the middle of migration season, was foiled time and again by traffic and construction noise. But his final recording featured success:

> The construction noise to the south is represented most prominently in the recordings, in combination with the noise I was making—stepping on branches, sliding down the hill, moving little rocks and pushing away branches, etc. I was actually expecting there to be more of a range of sounds (and dynamics) within the space. There were very few birds throughout most of the walk. It was not until the final recording of the day—"tree full of birds"—that I was able to represent a broad mixing of sounds. In the recording you can hear that there are so many birds in the trees and a lot of traffic. Strangely, these flocks of birds emerged in the part of the Falaise that is closest to St. Jacques. (David Madden, personal communication with author, Nov. 20 2013)

The ecotonality of the space complicated Madden's express purpose while on his audio recording/soundmapping trip—to collect bird sounds. The discovery of the "tree of birds", however, belies the reputation of the Falaise as a bird sanctuary. But Madden's experience also points out one of the limitations of a soundmap or any field recording in general, namely that we are dealing with representations of sonic reality—and such representations are limited to particular times and spaces. They also vary immensely depending on the disposition of the recordist—whether or not she interacts with objects or people in the environment, for example, to create sounds for recording (tapping on trees, etc.), not to mention the question of including her voice. Soundmaps and field recordings used to represent a space are always mediated, and if someone wants to make claims for a certain level of authenticity for a particular representation (e.g. mapping the "signature" sounds of a city), that authenticity should be grounded through reflecting on the limitations of the "totality" represented (see Waldock 2011). While there are multiple ways in which soundmapping as a practice can be accused of being reductionist, this is not an essential quality of the practice or technology involved, but rather a question of disposition and attitude around the thing produced.

Fig. 3 Tree Full of Birds - 2013 David Madden

Soundmaps as Relational

The ubiquity of mobile devices has the potential to open up audio field recording to new communities of practitioners. However, claiming that such devices democratize practices of audio field recording and soundmapping is a slippery slope (Waldock 2011), and can lead to utopian proselytizing about soundmaps reaching across "geographic,

economic, educational, cultural and racial divides" (Sound Seeker 2013). Massey's relational notion of space provides a model for developing the reflexive potential of activities like soundmapping. She narrows her perspective on space down to three main propositions,

> *First*, that we recognise space as the product of interrelations; as constituted through interactions, from the immensity of the global to the intimately tiny.[…]*Second*, that we understand space as the sphere of the possibility of the existence of multiplicity in the sense of contemporaneous plurality; as the sphere in which distinct trajectories coexist; as the sphere, therefore of coexisting heterogeneity.[…]*Third*, that we recognise space as always under construction. Precisely because space on this reading is a product of relations-between, relations which are necessarily embedded material practices which have to be carried out, it is always in the process of being made. It is never finished; never closed. Perhaps we could imagine spaces as a simultaneity of stories-so-far. (Massey 2005: 9)

If we consider space as produced by interrelations, then it follows that those interrelations are multiple and plural (otherwise how could they be "inter"?) as well as complex and unpredictable as they shift and incessantly affect each other over time. The account makes room for the significance of enterprises such as audio field recording, soundmapping, soundscape composition, etc., as means to access this shifting, this movement. On this account, soundmaps, soundscape compositions and other creative forms of audio expression produced using field recorded material act as representations of the constellation of interrelations felt by the recordist/composer while moving

through the space of recording. They are situated (Haraway 1988) attempts to write logs of the "stories so far" of relational spaces as perceived by individual recordists.

Creating such soundscape media provides an accessible and meaningful route towards a reflexive engagement with our aural environment. Mobile devices, in their ubiquity and "ready-to-handness", offer important new affordances in terms of soundmapping and soundscape composition that have the potential to revolutionize these practices on the levels of accessibility and diversity. As demonstrated through the AudioMobile Falaise St. Jacques project, such initiatives can operate as means to deepen our engagements with our local environments, both in terms of sonic as well as physical phenomena (such as different forms of pollution). Space, understood as a process of embedded material considerations, is a sonorous realm - since it is always already filled with sound that is constantly changing, providing analog signals for our aural senses (hearing, touch) that infuse our daily lives and which help us navigate our quotidian routines/rhythms. Soundmaps and soundscape compositions have indexical qualities, but these are always filtered through too many contingent considerations to be considered completely representational. Which is not to say that such media cannot be used to provoke a reconsideration of spaces suffering from sonic and other forms of environmental neglect, only that such arguments need to be grounded in situated explanations of context if they are to carry any weight. This is something that the majority of contemporary online soundmaps fail to achieve - mostly due to the limitations of the two-dimensional "Google Maps" interface used and the tendency to reinforce such media as audio archives as opposed to forms of personal expression and potential sonic advocacy.

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