

GPS Sound Walks, Ecotones and Edge Species

Citation for published version (APA):

Behrendt, F. (2013). GPS Sound Walks, Ecotones and Edge Species. *Soundscape: The Journal of Acoustic Ecology*, 12(1), 25-28.

Document license:

Unspecified

Document status and date:

Published: 01/06/2013

Document Version:

Publisher's PDF, also known as Version of Record (includes final page, issue and volume numbers)

Please check the document version of this publication:

- A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
- The final author version and the galley proof are versions of the publication after peer review.
- The final published version features the final layout of the paper including the volume, issue and page numbers.

[Link to publication](#)

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal.

If the publication is distributed under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license above, please follow below link for the End User Agreement:

www.tue.nl/taverne

Take down policy

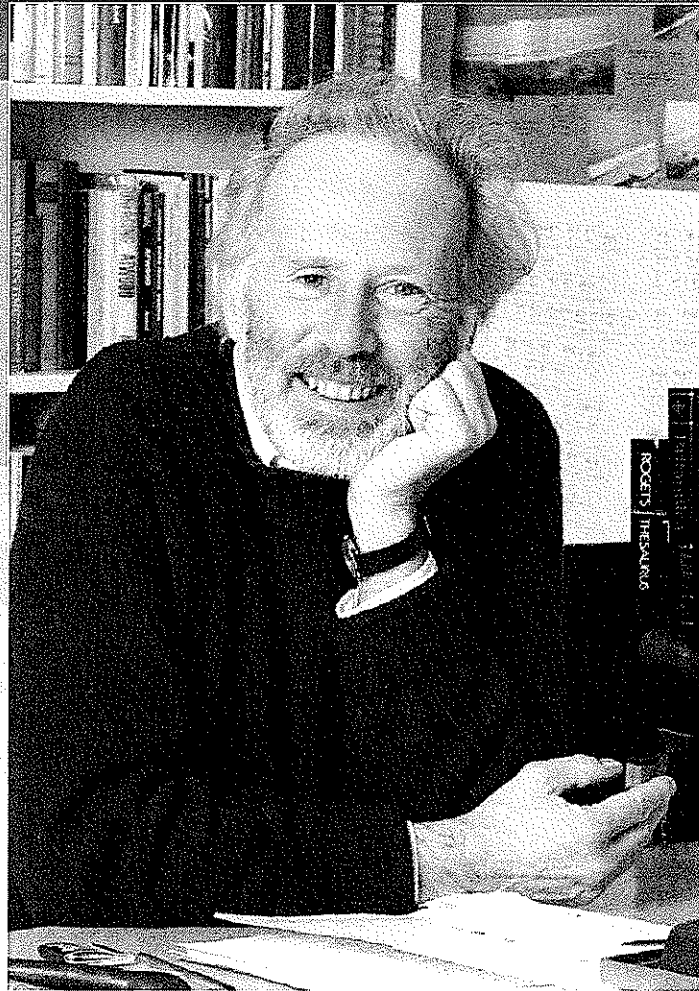
If you believe that this document breaches copyright please contact us at:

openaccess@tue.nl

providing details and we will investigate your claim.

Soundscape

VOLUME 12 NUMBER 1 | WINTER / SPRING 2012 - 2013



THE GLOBAL COMPOSITION:

Dedicated to R. Murray Schafer on his 80th Birthday (July 18)

Founder of Acoustic Ecology

The Journal of Acoustic Ecology

GPS Sound Walks, Ecotones and Edge Species Experiencing Sound within Teri Rueb's Mobile Metaphor

By Frauke Behrendt

Preface

Inspired by sound studies, mobile media studies and ecology, this article introduces an alternative way of framing mobile listening experiences by understanding mobile media as an edge species, a term borrowed from ecology. If we conceptualize mobile media as edge species - spending time in junctions between the techno-ecosystem of our cities and the natural ecosystem of our countryside and landscapes - this opens up a discussion around how mobile networked devices allow us to connect to rather than isolate us from our surroundings. The metaphors of the ecotone, the edge effect, and edge species open up a new way of thinking about those areas where humans, mobile media, and landscapes increasingly co-exist. Despite the carbon footprint of mobile phones, smart phones and other mobile devices, I argue that the 'mobile media use' we observe in GPS sound walks have the potential to re-connect people with "natural ecosystems," especially when we consider the auditory dimensions of the experience and how walking operates as remixing.

Ecotone Between Island and Mobile Media

Eugene P. Odum (1971, 157), one of the pioneers of ecosystem ecology, defines the edge effect as taking place in ecotone areas, a transition zone between several animal communities. "An ecotone," according to Odum, is "a transition between two or more diverse communities [or, rather: community areas] such as between forest and grassland or between a soft bottom and hard bottom marine community." Think of it as "a junction zone or tension belt which may have considerable linear extent but is narrower than the adjoining community areas themselves." Within the ecotonal community, many organisms from each of the overlapping communities commonly co-exist, along with "organisms which are characteristic of and often restricted to the ecotone. Often, both the number of species and the population density of some of the species are greater in the ecotone than in the communities flanking it." The edge effect can be simplified as "the tendency for increased variety and density at community junctions."

If we borrow this concept loosely, we could think of mobile media as one community area. 'Species' in this ecosystem would include GPS and communications satellites, mobile phone masts, mobile devices, network signals, and all other infrastructure related to (for example) making smartphones work. We can then think of 'Spectacle Island' - a national park island in Boston and the location of the GPS sound walk in this discussion - as another community area that has a variety of organisms including shrubs, grass, birds, insects and small mammals. The transition zone between these two community areas, the mobile media community and the island community, could then be understood as an ecotone. The ecotone comes into existence by people using mobile media while visiting the island; it has organisms from both communities. Visitors might be using their

mobile phones to make a phone call, to look up the island's history online, to post photos online or to inform friends and family about their visit via social media. They might also be taking part in Teri Rueb's GPS sound walk 'Core Sample.' In all these scenarios, both the island and the mobile media make up an ecotone, or what is sometimes called 'hybrid space.'

Odum further explains that "organisms which occur primarily or most abundantly or spend the greatest amount of time in junctions between communities are often called 'edge' species" (1971, 158). Mobile media activities such as phoning or using social media can then be understood as examples of edge species - they thrive at the intersection of being on the island and having mobile media infrastructure available. The GPS soundwalk discussed in this article is another example of an edge species thriving in this particular ecotone.

Odum's concept has been questioned in the field of ecology (see Klein 1990, 91-92) but without going into the detail of this debate, I would like to suggest a more metaphorical understanding of the ecotone concept that assists the analysis of cultural, media and social issues in the contemporary context (see also Sennett 2009). The use of mobile media in the countryside is often discussed in negative ways, as a symptom of how we become increasingly disconnected with our environment 'even when out in nature.' Rather than thinking of one type of species invading another territory (mobile devices invading the countryside), I would like to propose that there is a fertile area that exists between natural communities (including those modified by man) and mobile media communities: an ecotone. This ecotone hosts edge species (that are characteristic of, and potentially restricted to this ecotone), and I suggest thinking of Rueb's GPS sound walk 'Core Sample' as one of these edge species. However, it is important to understand the discussion around edge species and edge effects in media as inspired by, rather than as a direct translation of this concept from ecology.

Media experiences traditionally tended to take place in domestic contexts (Silverstone & Hirsch 1992), and in urban environments (Gordon & Silva 2011), or in what Odum calls 'techno-ecosystems' that "involve new, powerful energy sources (fossil and atomic fuels), technology, money, and cities that have little or no parallels in nature" (2001, 137). With the increasing portability of media devices and the proliferation of wireless networks over the last few decades, media usage has spilled out into all parts of our urban environment. Increasingly, mobile media are also used less directly in urban environments, such as national parks and areas that we use for recreation or work (such as hiking trails or farm fields). Humans without mobile media (such as mobile phones or GPS) become increasingly rare, wherever they are or go. Odum urges us to be more pro-active towards making the 'techno-ecosystem' and the natural ecosystems co-evolve, in contrast to the current 'parasite-host system.' "It is

imperative that the fuel-powered techno-ecosystems interface with the solar-powered natural ecosystems in a more positive or mutualistic manner than is now the case, if urban-industrial society is to survive in a finite world" (2001, 137-8).

Mobile phones and other portable media devices are of course fossil-fuelled themselves: their production, batteries and the infrastructure behind them (mobile phone networks, GPS satellites, etc.) all carry a heavy carbon footprint. There are more recent efforts to design them in more sustainable ways and to combine them with solar power, such are hopefully a step towards a more mutualistic interface between natural ecosystems and mobile media. We can conceptualize Rueb's 'Core Sample' as a model of a mobile media use where symptoms of the techno-ecosystem (e.g. mobile phones) interface with natural ecosystems (e.g. an island) in a mutualistic way. The mobile media (techno-ecosystem) use we observe in sound walks like Rueb's actually has the potential to (re-)connect people with "natural ecosystems," rather than alienating them further, as I will argue later in this article.

A GPS Soundwalk as an Example of an Edge Species

Rueb's 'Core Sample' is one example of the GPS genre of sound walks (Rueb n.d.). To experience a GPS sound walk, the audience walks around in a predefined area, using headphones (or earphones)

to listen to sounds that have been connected to specific locations in this area. GPS sound walks could be described as geo-tagging with audio files that are triggered as soon as participants enter a specific zone, or they could also be understood as geo-curated soundtracks for specific locations. They are part of a rich history of mobile and locative sound art practices (with and without media) and the field of GPS sound walks in particular has developed since the late 1990s including several sub-genres with historic, narrative and experimental works (see Behrendt 2004, 2010). Rueb has been one of the pioneers of this area and has a growing portfolio of critical practice in this genre.

Her 2007 work 'Core Sample' is a GPS sound walk situated on one of Boston's Harbour Islands (Spectacle Island, see figure 1). Visitors reach the national park island by ferry. The Institute for Contemporary Art (ICA) Boston that commissioned the piece describes it as "interactive sound walk" where visitors are invited to "[b]orrow headphones from the Island's Visitor Center and then roam the island to experience a landscape of sounds activated by GPS (...). Discover unique combinations of natural and processed sounds - that correspond to the Spectacle's many subterranean layers, as well as its present soundscape" (ICA Boston 2007, 5).

Sounds corresponding to specific historic periods of the island are mapped onto its geographical elevation profile with sounds relating to periods further from the past at sea level, and sounds relating to more recent times mapped to the tops of the hills. Visitors walk the island's path system with a 'Core Sample' map where different colours represent the elevation levels and sound zones: "Atmosphere, plantings, top soil/loam, central artery fill, modern landfill, settlement and industry 17th-21st century, native american landfill 500-1580, geologic core" (ICA Boston 2007, 6). These sounds are specifically recorded for the piece and include atmospheric and experimental sounds as well as narrative fragments from interviews the artist conducted with people connected to the island and its past.

As 'Core Sample' is a site-specific piece, some understanding of this landscape is vital to contextualize the audience experience of the piece. The island has a varied history: after being used as a dump for toxic material, it had been closed to the public for decades but has now been turned into a national park by covering it with soil from the 'big dig' (a huge tunnel project) in Boston. The exhibition booklet summarizes the island's history: "Spectacle has been home

to casinos and hotels, a horse rendering plant, city dumping, and to families who lived and worked on the island. Now active parkland, Spectacle's two prominent man-made drumlins were shaped with excavated material from Boston's 'Big Dig' and planted with 28,000 trees, shrubs and grasses" (ICA Boston 2007, 5).

In an interview I conducted with Rueb, the artist explains that 'Core Sample' is an artwork concerned with "a theme around margin and edge and outcast." Following on from her detailed research and interviews with residents and experts about the island and its history, the artist states:

It is also a dearly loved island. It means a lot of different things to many different people. And the former residents, for the most part describe it as an idyllic landscape. There was always the dump. You [referring to my experience of the piece] heard that edge quality in the landfill section. That was not considered the island. That was just known as 'the other side' where the trash went. Residents lived on 'the island'.

The 'edge' theme and the 'edgy sounds' mentioned by the artist resonate in interesting ways with the concept of 'edge species' suggested here by the author. To experience the piece, and the "edge" sounds the artist mentions (these sounds are electronic textures mixed with recordings of trash trucks), participants borrow a small GPS-enabled PDA (remember: this is pre-smartphone era) with headphones and explore the path system of the island by walking up and down two hills. Depending on their location they hear specific sounds that are related to the island's past and present, including abstract sounds, historic radio snippets, voices of former residents, and many more. I argue that the intersection of mobile media and the existing island landscape could be understood as an ecotone, where the edge species 'GPS sound walk' is an example of how a high density and variety of organisms can occur in these areas (just think of all the apps we now use on our smartphones) - the edge effect. We are in the physical space of walking the island, but we are also in the mobile media space designed by the artist as we listen to the curated sounds alongside the island's soundscape. Both listening and walking operate as interface for exploring the ecotone. They operate in tandem but it is useful to now consider each of them in detail.

Experiencing The Ecotone Through Listening

If we understand the GPS sound walk 'Core Sample' as an edge species, then listening to the piece could be conceptualized as a way of exploring the ecotone that forms at the intersection of the island and the mobile media infrastructure. Sound's relation to space and time is different to the visual world of objects we see with our eyes. Sound as an "object of sensual perception [...] differs fundamentally from visible and tangible things that can be grasped from a distance as discrete objects" (Loock 2005, 89). We are immersed in sound. If we look at objects we perceive space as being empty, only being "decorated" with objects. But actually the invisible, see-through space is full of sounds, and we are surrounded by it. "The eye creates distance; the ear puts us at the centre of a dynamic energy-filled realm. In our visual culture, space seems like an empty box," as Bernd Schulz puts it (2002, 15). In a paragraph about the difference between oral and literary cultures, Walter Ong makes a similar argument: "Sound situates man in the middle of actuality and in simultaneity, whereas vision situates man in front of things and in sequentiality" (2000, 128). Listening to the sounds of an GPS sound walk places us in the middle, for we experience the sound of the techno-ecosystem through the headphones while we can still hear the soundscape of the natural ecosystem. We are in the middle of both systems, an edge species in an ecotone, where the sound highlights our presence within rather than at a distance.



Figure 1: Impression from experiencing 'Core Sample' by Rueb (2007): headphones and PDA, exhibition booklet, view from 'Spectacle Island' toward the Boston Skyline. Photo by Frauke Behrendt

We are not able to shut our ears as we can do with our eyes, but at the same time we have a well-developed ability to block out unwanted sounds. We can focus our attention towards certain sounds and shift our attention between foreground and background sounds for example, either listening to the person next to us in a noisy cafe or to the music played in the venue - the so-called 'cocktail party effect.' At other times it seems impossible to shift our attention away from a sound that is annoying us, a clock ticking at night, for example. Sound artists often engage with this economy of acoustic attention, for example by aiming to shift our hearing towards specific sounds or all sounds. Bassett (2003) observes that when making a mobile phone call, we tend to prioritize the auditory space of engaging with mobile media over the visual space of our physical environment. This economy of auditory attention operates slightly different when engaging with the GPS sound walk 'Core Sample' as the sounds we listen to are relevant to the actual physical environment — whereas a phone call tends to be separate from it. 'Core Sample' draws the audience in, shifting its attention between the soundscape (see Schafer 1993) as the artist and/or participant overlays onto the location and the existing soundscape of the island. One soundscape is that of the natural ecosystem, and the other one is derived from the techno-ecosystem — with the audience exploring the ecotone between them; the mobile device used for listening is the edge species.

When experiencing 'Core Sample,' we might be absorbed in the sound on the headphones to the point where we almost forget our surroundings (like getting lost in music), as happened to me at one

point where I did not even realize I lost my jacket on the island's path. At other times, the sound makes us pay attention to our surroundings and the island's soundscape, especially as many of the pieces' sounds are recordings from the very soundscape of the island. This analysis of auditory attention in GPS sound walks challenges the common argument that headphone listening disconnects you from your physical surroundings suggesting that one would only pay attention to the sounds on the headphones and not to the wider soundscape. However, participants listen to both — the sounds on the headphones and the wider soundscape, negotiated by their shifting sensory attention. This is not only the case for sound art, but also for everyday headphone listening (see Bull 2007).

In this case study, listening actually connects us to the landscape and not 'just' to the mobile media. When participants experience this particular edge species through listening and walking, the GPS walk connects them to the ecotone that is made up of the island and the mobile media infrastructure. Most discussions around networked and mobile media use are largely focused on a visual analysis, where for example using mobile phones is all about interacting with screens. The ecological concepts of ecotone and edges species in conjunction with a sound studies perspective have allowed a broadening of this analysis. Because of increasing mobility, screens are becoming more and more impractical for interaction on the move. We rarely stare at the screen motionless anymore (as we used to do in the era of desktop internet access) but we are embedded in technology, carrying a potential and actual bubble of connectivity with us, a condition that sounds very familiar to the above discussion of sonic experience

(see also Dyson 2009). I argue that the embedded and immersive nature of 24/7 mobile media experience is much more suitable for a critical analysis from a sound studies perspective. While sound studies perspectives are often critical of media (and headphone) use, especially in the countryside, media studies analyses are often focused on screens. By bringing both together, this article develops a 'sound' conceptual framework for understanding contemporary mobile media experiences, inspired by an ecological perspective.

Experience the Ecotone Through Walking

Listening is a key aspect of experiencing a GPS sound walk, of exploring this media/landscape ecotone, but walking is equally as important in this process (see also Behrendt 2012). The different sounds of 'Core Sample' are distributed across the island's topography and in order to explore these sounds participants need to explore the island on foot (however, the path system is also accessible for those with alternative mobility needs); they need to walk from sound to sound. Participants create their own version of the piece, depending on the route chosen and the time spent with the piece (see also Hight 2006). Each person participating in a GPS sound walk creates a unique remix of the piece. Here, the scale of traditional remixing with vinyl is extended to the scale of the island, where the path system could be likened to the grooves of the vinyl, the mobile device corresponds to the pickup, and the GPS sound walker selects the sample (and its order) by walking a certain 'groove' and the speed of walking moderates how long they can hear each sample (to a certain extent). The GPS sound walk remix is created through walking and listening, a media practice that connects.

Walking and Listening to Experience the Ecotone, To Connect

There are similarities between the discourses on mediated listening and mediated walking — both typically see mobile media as an intrusion and argue that using mobile media while walking/listening disconnects us from our surroundings and diminishes our experience of the landscape, as attention is mainly paid to the mediascape of the mobile device. Analysing the experience of participating in 'Core Sample' shows how we can in fact experience several scapes at once: landscape, soundscape and mediascape — and even partly (co)-create them by our interaction. Walking and listening are not only the two key modes for experiencing GPS sound walks, they are also two powerful modes of connecting us to our surroundings — and mobile media can be part of this process of connection, rather than isolating or alienating us from them. 'Core Sample' as an edge species in the ecotone between a national park and mobile media has illustrated how this can be performed. The edge species only comes alive when it is performed — walked and listened — by the participant.

Guest book entries (see Behrendt 2010) also reveal that mobile media experiences such as the GPS sound walk 'Core Sample' attract people to the outdoors that would not have otherwise made the trip to the island (but might have stayed at home in front of the TV or video games). This underlines the importance of analyzing how mobile media use and headphone listening can connect people to landscapes, rather than isolating them from their surroundings or alienating them further from 'nature,' as is often argued. This conceptual framework is relevant beyond GPS sound walks, as the use of mobile networked media in 'the countryside' becomes ever more popular, with the plethora of mobile phones and the recent obsession with lifestyle and sports-related apps underscore. Listening and walking are both intrinsically temporal — and can be particularly engaging and immersive, connecting us strongly to the physical landscape around us — and at the same time to the mediascape of mobile media especially when operating in tandem.

About the Author

DR. FRAUKE BEHRENDT is Senior Lecturer (Department of Media Studies) at the University of Brighton, UK, and is leading the 'Smart e-bikes' research project. Her research interests include the areas of mobility, digital media, sustainability and sound studies. She served on the Steering Committee of the EU COST Action on Sonic Interaction Design and the International Workshops of Mobile Music Technology. www.fraukebehrendt.com, f.behrendt@brighton.ac.uk.

References

- Bassett, C. 2003. "How Many Movements?" in *The Auditory Culture Reader*, eds. Michael Bull & Les Back (Oxford: Berg), 343–355.
- Behrendt, F. 2004. *Handymusik: Klangkunst und 'Mobile Devices.'* Epos: Osnabrück.
- Behrendt, F. 2010. *Mobile Sound: Media Art in Hybrid Spaces.* Unpublished PhD thesis, University of Sussex, UK.
- Behrendt, F. 2012. "The Sound of Locative Media." *Convergence* 18(3), 283–295.
- Breitsameter, S. 2004. "Sonic Art in Herzian Space." Teri Rueb in *Conversation with Sabine Breitsameter*. SWR2. www.audiohyperspace.de/en/2004/08/sonic-art-in-hertzian-space (accessed 14 April, 2013). [Also see transcripts, radio programme on mobile listening: www.audiohyperspace.de/wp-content/uploads/Die-Mobilisierung-des-Hoerers_2007.pdf]
- Bull, M. 2007. *Sound Moves: iPod Culture and Urban Experience.* New York: Routledge.
- Dyson, F. 2009. *Sounding New Media: Immersion and Embodiment in the Arts and Culture.* Berkeley: University of California Press.
- Gordon, E., & Silva, A. 2011. *Net Locality: Why Location Matters in a Networked World.*
- Hoboken, NJ: John Wiley and Sons.
- Hight, J. 2006. "Views From Above: Locative Narrative and the Landscape." *Leonardo Electronic Almanac*, 14 (07–08).
- ICA Boston. 2007. "Teri Rueb, Core Sample," in *Art on the Harbor Islands Exhibition Booklet.* Boston: ICA Boston, 5–6.
- Klein, J.T. 1990. *Interdisciplinarity: History, Theory, and Practice.* Detroit, MI: Wayne State University Press.
- Looock, U. 2005. "Times Square, Max Neuhaus' Sound Work of Public Art in New York City," in *Open: Cahier on Art in the Public Domain*, 09 *Sound in Art and Culture*, 82–92.
- Odum, E.P. 1971. *Fundamentals of Ecology.* Philadelphia: W.B. Saunders.
- Odum, E.P. (1977). "The Emergence of Ecology as a New Integrative Discipline." *Science*, New Series, 195, 1289–1293.
- Odum, E.P. 2001. "Techno-Ecosystem." *Bulletin of the Ecological Society of America*, 82, 137–138.
- Ong, W.J. 2000. *The Presence of the Word.* Binghamton, NY: Global Publications.
- Rueb, T. (n.d.). "Core Sample." www.terirueb.net/core_sample (accessed 1 February, 2013)
- Schulz, B. 2002. "Introduction," in *Resonanzen: Aspekte der Klangkunst. Resonances: Aspects of Sound Art.* (Heidelberg: Kehrer) 14–18.
- Sennett, R. 2009. *Quant: The Public Realm.* www.richardsennett.com/site/SENN/Templates/General2.aspx?pageid=16 (accessed 1 February, 2013).
- Silverstone, R. & Hirsch, E. 1992. *Consuming Technologies: Media and Information in Domestic Spaces.* New York: Routledge.
- Schafer, M. 1993. *The Soundscape: Our Sonic Environment and the Tuning of the World.* Rochester, VT: Destiny Books.