DER BAHNHOFSGEIST: EXPLORATIONS ON THE PSYCHOGEOGRAPHY OF THE ELECTROMAGNETIC SPACE

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Abstract

This short essay discusses the acknowledgement of the Urban electromagnetic space as an acoustic territory and its potentialities for musical creation. Departing from ideas borrowed from Critical Design and Psychogeography, the project attempts to create a temporary zone of "electromagnetic drift", by appropriating the auditory territory of Bremen's Central Railway Station using a simple circuit that detects and amplifies GSM cellphone signals, and re-contextualizing them into busker-like musical micro-performances. These experiments aim to broaden the current acknowledgement of the ether as an "inhabited" territory. Its goal is as well to call the city dweller to perceive herself as an intrinsic part of it, as well as to question and engage herself onto the ongoing discussions about the Hertzian Space and its concerns with pervasiveness, surveillance and privacy.

Keywords: hertzian space; critical design; sound studies.

Introduction

In how many layers of perception can a city be described, apprehended or even enjoyed? The urban space is not only about chaos and movement, or even a stage for the play of everyday life, but also an open canvas, full of potentialities yet to be discovered. From street art to traffic jams, the city inhales the ballet of its inhabitants in, and breathes artistic multiplicity out. There is, indeed, a multitude of hidden poetics that could and should be exposed to the very ones unconsciously producing it, for the city is alive, emergent and inherently mutant.

Listening, whether attentive or not, active or passive, is intrinsic to the process of discovering and acknowledging the city at its full potential, for it is plentiful with sonic tension. As Brandon LaBelle (2010) defines, the urban soundscape is part of a political process that is participatory, rhythmic, shared and intimate, appropriated by different communities in various ways, designing relational geographies that surpass the discussion of sonic pressure versus pain to become emotional discourses. It ceases then to be a mere acoustic space, to become an acoustic territory.

Ubiquity

To talk about acoustic territories means also to talk about the unheard sounds of the city, which flood the ether as high-frequency data waves that not only transport broadcasts, traffic information and packages of digital files, but also draw these relational geographies between people. The city dweller is mostly unaware of the amount of data s/he is immersed in, and the relevance of such data to the rhythm and flow of her daily routine.

Indeed, the technology that surrounds the urban everyday life today is mostly invisible. Mobile Phones, computers, ATM machines, for being largely used and present almost everywhere, become ubiquitous, and so do their "invisible skins" (Dunne and Raby 2001, p. 20). Wireless communication weaves connecting threads among physically distant places, bringing all of them into the territory of the in-between. Where does it take place, if not everywhere along the spectrum that connects all peers? Such streams of

data intermittently move back and forth, bouncing, reflecting, absorbing and trespassing architecture, cityscape, ether and bodies.

In fact, the electromagnetic spectrum comprises every single electronic object, which produces radiation that leaks onto space and their nearby objects (Dunne and Raby 2001, p. 8); add to this scenario Cellphones, Radio, Bluetooth, Internet and other high frequencies and one can affirm that the atmosphere is flooded with a plethora of different packets of information, unseen and unheard unless with special apparatuses, but perceived, felt, absorbed, deflected and reflected by the physical body nonetheless. The several health and security concerns raised by this situation have been already extensively discussed, particularly through the critical work of designers such as Dunne & Raby[1] and Auger & Loizeau[2]. Another approach would be to ask to which extent the active contributors, producers and consumers of this spontaneous and disembodied architecture are aware and understand the aesthetic and poetic possibilities opened by this condition created by modern technology.

The hidden poetics of the city

The modern city is largely understood as a self-organized, emergent system. Author Steven Johnson, in his book Emergence compares the rhythm and organizational patterns of the cities to that of the ant colonies and other "social insects", to the extent that both have no clue on how their individual decisions and actions contribute to the collective intelligence of the urban agenda (Johnson 2002, pp. 98-100). By taking local decisions in the short-term, the overall form of the cityscape – as well as the ant colony – is defined in the long-term. In other words, city inhabitants are fully unaware of what constitutes the mechanics of this living organism they reside. The Situationist International (SI), a French group of artists and revolutionaries from the nineteen-sixties also showed a deep concern with how the city and the urban is experienced by its dwellers, and proposed "a tool in an attempt to transform urban life, first for aesthetic purposes but later for increasingly political ends" (Coverley 2006, p. 10), through a

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[1] Available at: <http://www.dunneandraby.co.uk/content/home> [accessed 26 March 2013].
[2] Available at: <http://www.auger-loizeau.com/> [accessed 26 March 2013].

discipline they called 'psychogeography'. The situationists claimed for an urban architecture fulfilled with possibilities for experimentation, anarchy and play (Sadler 1998, p. 69), and whereas many of their architectural attempts remained on sketches and plans, their practice of the *dérive* – or drift –, a spontaneous action of wandering through the city's inner rhythms, subconsciously guided by architecture and geography towards a unique aesthetic experience of the urban environment (LaBelle 2010, p. 214; Sadler 1998 pp. 77-78), was largely put into practice and resonates until nowadays in contemporary groups of psychogeographers and drifters, continuing "to provide a political response to the perceived failures of urban governance" (Coverley 2006, p. 111). The drift, an intrinsically sociable activity, would then unveil a unique yet previously hidden city for its inhabitants, as a "transgression of the alienated world" (Sadler 1998, p. 94).

These new layers added by the current paradigm of cordless communication, ubiquitous yet physically perceived, constitute a territory of the auditory, for both carrier and signal are nothing but frequencies – physical energy. In other words, this means that such a space of frequency data should also be considered as part of a large auditory space, from the moment these frequencies become audible, as well as are called attention upon, to the city dweller through the use of a mediator or a mediating device. Connecting these ideas presented above, e.g. the cityscape as being shaped in the long-term by short-term decisions and movements – an idea which one can easily mirror to the shape of the electromagnetic cityscape – and the *dérive* as a practice that aims to rediscover the unplanned beauty of urbanism, the performance proposes to "give audible form to the formless" (LaBelle 2010, p. 236), to appreciate the acoustic capabilities of the Hertzian psychogeography as means to unveil the hidden poetics of the city. Understood as *ghosts of everyday life, they* are contained within the sublime experience of the city. This study proposes to unearth a specific portion of the hidden ether and explore its aesthetic and musical potentialities as a performative account of the disembodied architecture. Whereas the idea of amplifying the Electromagnetic spectrum is nothing

new – it has been largely explored in the works of Christina Kubisch[3], Shintaro Miyazaki[4] and others in terms of "sound walks", cartographies and databases – the exploration of their properties as musical performances is an activity seldom undertaken.[5]

Der Bahnhofsgeist: the project

Audio 1. (6'09''): "Der Bahnhofsgeist", Take 1. Five-second field recordings of the Train Station are constantly cut in realtime by the current intensity of its GSM signals.

Audio 2. (10'): "Der Bahnhofsgeist", Take 2. GSM Signals are captured in realtime by the transducer, amplified and then fed back into the environment.

The train station (*Bahnhof* in German), is, especially in Germany, of central importance to everyday life. One can also view the station as a territory of in-between, of constant transit and flow connecting several points – cities – while at the same time belonging to none of them. As LaBelle (2010, p. 9) remarks, it is a social paradox. "It brings together by enabling separate journeys; it structures individual desires and yet in doing so it remains strangely impersonal". Train stations are overwhelmed with urban poetics, for they welcome home, greet for the first time, bid farewell and physically tear apart relationships, but also leave behind a trace of longing, happiness

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[3] Available at: <http://www.cabinetmagazine.org/issues/21/cox.php> [accessed 13 May 2013].

[4] Available at: <http://www.algorhythmics.com/persons/miyazaki/> [accessed 26 March 2013].

[5] One can affirm that Kubisch's "electrical walks" are also a form of musical performance. However, in her case she herself acts as a guide, pointing out explicitly which points are "potentially musical" and leaving not so much open space for serendipitous discoveries. Plus, the selected participants have to wear headphones, which turns the walk into something selective and exclusive to whomever is aware of what is going on. (the author has taken part in one of her performances in November 25th 2011 in Köln, Germany)

and sadness, all at the same time, wandering through their corridors and platforms. Especially nowadays within the aforementioned mobile communication panorama, the train station is incessantly filled with *ghosts*, connecting cities not only physically but also in the ether.

Following this assumption, the Central Station of Bremen, Germany, was the chosen site for the design of a small performance exploring Hertzian psychogeography. Using a simple electronic circuit that detects and amplifies GSM Cellphone signals, therefore acting as transducer and mediator between the non-heard and the listening experience, invisible relational architectures and acoustic territory, the performance presents the city dweller to these hidden layers of urban life by attempting to turn them, as well as their physical properties, into musical pieces. The performer, then, takes the duty of a mediator which weaves the Hertzian psychogeography of that specific site, thereby creating a temporary zone of drift for those who let themselves lead into the hidden rhythm.

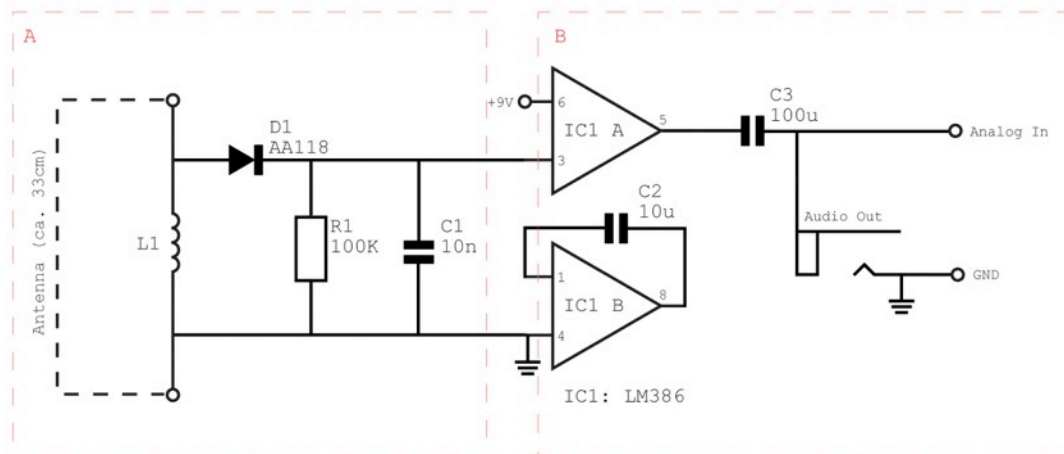**Figure 1.** Bremen Hauptbahnhof (Central Station). Source: Author's collection.

Figure 2. GSM Sniffer circuit.

The circuit, shown in figure 2[6], is rather simple: the first part *(A)* is an envelope (amplitude) detector and uses a Crystal radio receiver (germanium diode AA118), a self-built coil and an Antenna. In order for the Antenna to properly detect the GSM signal, it must be of the same size as the wanted wavelength, i.e. 33cm for 950MHz[7]; the second part *(B)* is a simple audio amplifier built using an LM386, which is powered by a 9 volt battery and has its gain boosted up to around two hundred times the original signal. The outputs go to both a headphone jack and an Arduino[8] micro-controller board. These outputs allow for both recording of the frequencies as audio as well as their use as digital data for other processing possibilities.

The piece consists of two experiments or micro-performances: the first one uses the captured GSM signals to manipulate a field capture of the station's movements in realtime using Puredata[9]. A five-second sample is recorded and constantly updated, and its length and starting points are determined by the GSM signal income through the Arduino board (the decision of whether it changes length or starting point is decided at random), and the output is mixed with the non-processed capture in realtime. By doing so, this experiment attempts to blur these two layers of urban everyday life:

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[6] Based on <http://interface.khm.de/index.php/lab/experiments/radio-signal-strength-sensor/> [accessed 26 March 2013].
[7] The mathematical formula used to achieve this length is $L = c/f$, where "*L*" is the desired Wavelength in meters, "*c*" is the constant speed of a Radio Wave in meters per second (speed of Light, i.e. 300000000) and "*f*" is the GSM frequency in Hertz (950000).
[8] Available at: <http://www.arduino.cc> [accessed 26 March 2013].
[9] Available at: <http://www.puredata.info> [accessed 26 March 2013].

one perceived by the direct senses, and the invisible other on top of that creating an uncanny constant stutter of the first one.
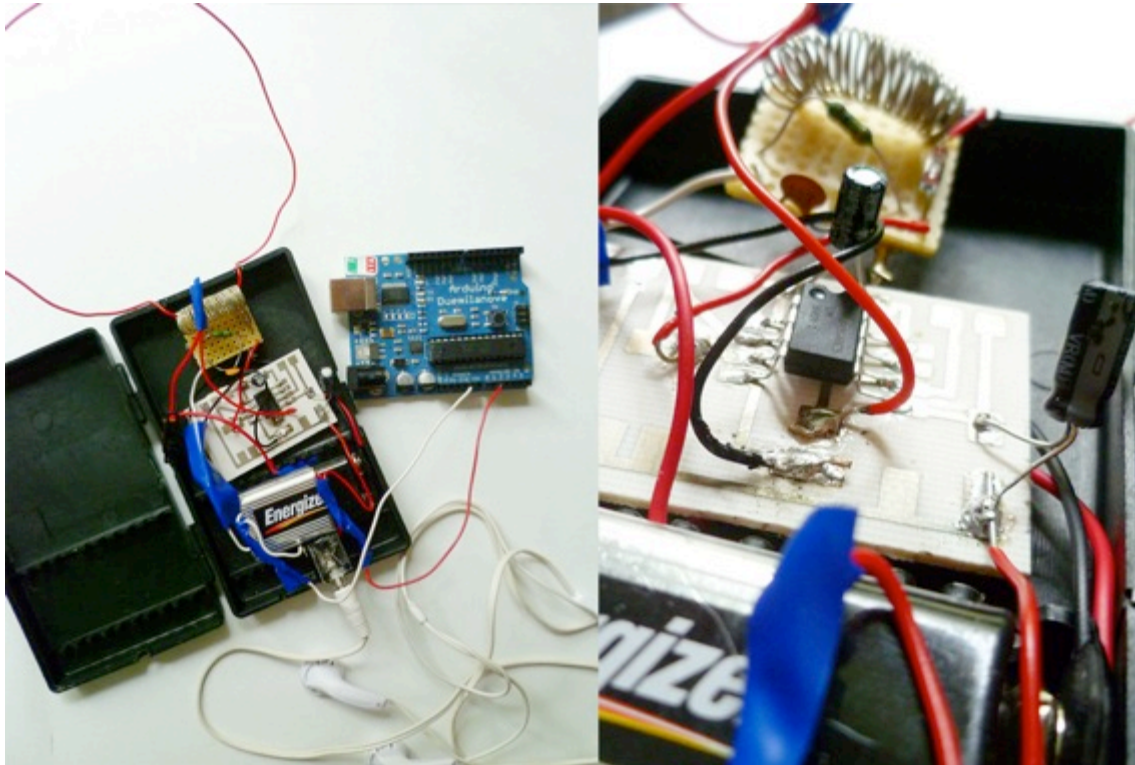

Figure 3. Assembled GSM Sniffer prototype. Source: Author's collection.

For the second attempt the idea is to capture the GSM signals by themselves and feed them back into the environment, either non-processed (although already slightly distorted by the amplifier) or manipulated in realtime by changing the device's focus. This micro-performance aims to unveil the aesthetic possibilities of these signals as music, in an attitude that resembles that of the busker (a common figure on train stations), as a claim for the appreciation of the endless, unheard soundscape created by human mobility through wireless communication.

In both cases, the sonification and amplification of such data serves aesthetic and performative purposes, for the intention of such a work is to call attention upon the hidden poetics of this transitory space which is the train station while at the same time it is unveiling for the unaware passer-by the amount of frequency data as packets of information, that are generated in such short amounts of time.

Consideration

The disembodied, extended boundaries of electronic objects such as Computers and Mobile Phones occupy an enormous invisible space that is constantly absorbed and reflected by the body, and it is rather unlikely that there is a good acknowledgement of these invisible spaces by the average city dweller. The produced data transverses the air encrypted and allegedly protected all over the urban space. However, such streams of data can be easily detected, captured, amplified and even decoded, provided that there is an intent to do so. The invisibility, to explore aesthetic possibilities as means to "provide new and unusual ways to excite and engage" (Buechley 2010, p. 86) is to expose and perhaps incite reflection, ponderation and discussion upon it? – Who may have access to the data we produce, and where is the line between fair use and pervasiveness, appropriation and surveillance?

These experiments aim to broaden the spectrum for the development of new possibilities for treating the Hertzian space as potentially musical, as potentially performative. Artists and urbanists have been questioning the invisibility of the city rhythms and organization in a broader scale, claiming attention for the very environment they live within. By combining and blurring these two principles, this experience attempted to position itself immersed in the invisible soundscape, resulting from an ever growing Hertzian geography, and its relevance for the understanding of one's own micro-role on the living organism – the city and its territories – through performance and music.

Hence, one can ask what kind of musical value can be extracted and subverted from this expanding non-heard acoustic territory, as well as which kind of statement these temporary zones of drift make. As LaBelle (2010, p. 207) affirms, "[t]his ethereal topography can be appreciated as a primary site of sound, for it acts as a supple and ambiguous materiality, while being overlaid with numerous meanings; it is the primary source of sonorous becoming as well as consisting of the body's own vitality (...) [w]hat kind of geography might this be, and how might we begin to trace this weave of airy happenings?"

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