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ARTICLE

NODE: "THE MATTER WITH MEDIA"

Ritornelli of Everyday Life. Epistemic Experiments with Information Technology

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Abstract

This short essay outlines some sonic approaches to grasp the dynamics of media while listening to their signals, rhythms, noises and fluctuations by mediating or non-mediating methods. It distinguishes between two modes: namely audification and sonification. Furthermore, it emphasises the importance of detailed, micro-logical, micro-temporal and technology conscious inquires about media matters. Lastly, it will briefly contemplate the surplus effects of a combination of rhythmanalysis with network analysis.

Keywords

media archaeology, sound, auditory display, sonification, rhythm, new media

Los ritornelli de la vida cotidiana. Experimentos epistémicos en el campo de la tecnología de la información

Resumen

Este breve artículo describe algunas formas de abordar el sonido para comprender la dinámica de los medios escuchando sus señales, ritmos, ruidos y fluctuaciones con métodos mediatizados o no mediatizados. Se distinguen dos modalidades: la audificación y la sonificación, y se hace hincapié en la importancia de realizar detalladas investigaciones tecnológicas, micrológicas y microtemporales sobre la materia de los medios. En último lugar, se analizan los efectos adicionales de la combinación de ritmo-análisis y análisis de redes.

Palabras clave

arqueología de los medios, sonido, despliegue auditivo, sonificación, nuevos medios

Introduction

[W]hile modern scientists are tracking singularities using computers, the weapon artisan of old had to track them “by ear,” so to speak, following the “traits of expressions” (physical properties) with which these points endow matter, and tapping their morphogenetic capabilities in the process of producing a given weapon

(Delanda, 1991, p. 19)

In the current Western society at the beginning of the 21st century, the ear is not the primary sense of rationality and objectivity. It has been shown, that rationality is mainly connected to the visual sense (Daston/ Galison, 1992) Only when it comes to hidden matters, the ear transforms itself from a neglected organ to the most suited sense of knowledge acquisition. This happened in the case of medical auscultation of the human body as early as in the 18th century and in the case of car engineers, who needed to listen to motor sounds, since the dawn of the car industry. In the case of sonar technology the reconfiguration of the ear happened after the accident of the gigantic steamboat Titanic in 1912 due to a collision with an iceberg, which could have been prevented by suitable means of underwater distant ranging using sound. In all three examples looking was useless, since you either needed to look inside an object, which could not be opened or you were surrounded by darkness. In such situations technical devices of hearing, listening and eavesdropping come into play. Listening could be reconfigured as a *modus operandi* for a critical inquiry about the matter with media, especially with regard to hidden agencies within the networks of the technical unconscious (Thrift, 2004).

The term *ritornello* reveals that the method discussed here briefly is referring to Gilles Deleuze and Felix Guattari's famous book *A Thousand Plateaux*. A *ritornello* is a musical genre with a rich and rhizomatic history mainly between the 14th and late 18th century. It is a diminutive of the Italian word *ritorno*, meaning return (Talbot, 2006). The common principle of all *ritornelli* is therefore repetition and iteration, which connects the term conceptually to rhythm. There are different layers and levels of rhythmic iteration of processes be it in history, geology, biology, physics, engineering or philosophy. One way of making those kind of rhythms audible is the electromagnetic detection of digital data networks, such as Wifi or Bluetooth, but also GSM, UMTS and other systems, which I did with the project *Detektors*. Others are more sophisticated and can be summarised under the term *sonification*. The first approach is mainly oriented towards real world signals and is thus connected to the timing of the physics and hardware of the medium to be inquired. The latter is mainly a symbolico-logical and more software intensive approach to understanding media. The theoretical framework within which such epistemic experiments are conducted is called “media archaeology” (Ernst, 2011).

Rhythmanalysis of Everyday Ritornelli A

“Rhythmanalysis” was coined and formulated by urban sociologist Henri Lefebvre (1901–1991) in his posthumously published work “Elements of a Rhythmanalysis (1992)”. Lefebvre himself refers to Gaston Bachelard, who contemplated about the rhythmic character of matter in “La dialectique de la durée (1936)”:

[L]a matière doit avoir, comme les radiations, des caractères ondulatoires et rythmiques. [...] [L]es figures plus stable doivent leur stabilité à un désaccord rythmique. Elles sont les figures statistique d'un désordre temporel; rien de plus. Nos maison sont construites avec une anarchie de vibration (Bachelard, 2006, p. 130-31).

A *rhythmanalysis* of a city looks and listens to its rhythms of traffic movement, goods delivery, space usage and so on, but as well to the rhythms of machines:

Electric locomotives only present to the eye as a big box that contains and conceals the machinery. One sees them start up, pull, and move forward, but how? The electrical wire and the pole that runs alongside it say nothing about the energy that they transmit. [...] Is our time only accessible after patient analyses, which break up the complexity [...]? It is not necessary to go too far. [...] The gaze and the intellect can still grasp directly some aspects of our reality that are rich in meaning: Notably the everyday and rhythm (Lefebvre 2004, p. 15).

Electric locomotives while moving still produce some rhythmic noises, which are timed within some artificial framework, such as the pattern of the junctions on the rail tracks, the distribution of train stations and protocolled changes of speed and so on. The German national economist Karl Bücher (1847–1930), who wrote a very popular book on the relation of labour and rhythm published for the first time in 1897 with different editions until the 1930s, remarked that in the realm of handcraft there has always been disciplinary effects of rhythm, which synchronised, optimised and decomposed body and tool movements into discrete sequential steps (1897, p. 22ff.). Such disciplinary effects of control are as well embodied into protocols of modern communication (Galloway 2004), which happens as well rhythmically. The discrete signals of Morse coding - the oldest form of electric communication - were meant to be read visually by eye, but it soon turned out that listening to them was more efficient and no telegrapher was watching the signs of dots and lines anymore, but listening to the rhythms of telegraphy (Sterne, 2003, p. 147ff.). During the era of early mainframe computing between the late 1940s and early 1960s, when computers operated within the limits of audible frequencies, engineers, operators and programmers used to listen to the fluctuation of data signals at shift registers or high-speed busses by attaching simple amplifier-loudspeaker

set-ups to them for monitoring and error detection (Miyazaki, 2012). In the early days of amateur digital networks in the 1970s the sounds of data transfer were sent via the audio channel of telephone networks. From the 1960s to the 1970s phreaks were hacking telephone networks by listening to the rhythmic control sounds of the telephone systems. And as I have shown with artistic projects such as “detektors (2010)” in collaboration with Martin Howse, digital devices and Morse coding gadgets of the early 21st century - while operating continuously - produce electromagnetic side-effects, which can be made audible as rhythms, noises and tones by simple DIY techniques using electromagnetic coils or logarithmic HF-demodulators.

Rhythmanalysis of Everyday Ritornelli B

Due to fact that most rhythms are discrete, symbolical and coded or at least can, with some losses, be digitalised, it is as well possible to conduct rhythmanalyses, which were created with the help of more symbolic and abstract processing rather than direct signal transduction or modulation. Such a rhythmanalysis is often closer to music, since the sonic characteristics of the process can be controlled more precisely and are detached from the process to analyse. Abstract and non-indexical analyses are as well able to slow down or speed up the processes of the matter to be inquired. In the jargon of the ICAD - International Community for Auditory Display - such kind of audible investigations are called sonifications in contrast to audification, which are more indexical and analogic to the processes to analyse (Kramer, 1994, p. 24). Most sonifications are done with the help of computers and are done with software.

In collaboration with Michael Chinen I created an open source software called Algorhythmic Sorting. It is a learning tool for people, who want to learn and analyse the diversity of sorting algorithms by hearing the different rhythmic behaviour of different sorting algorithms like bubble sort, merge sort, quick sort or heap sort and others. Sorting algorithms are little programs, pieces of software that a student in computer science learns in their first semester. The diversity of solutions for the simple problem of sorting numbers in an increasing or decreasing order, usually forms a good introduction into the different methods or algorithms, which are step-by-step formulations of such solutions for computing machines. And as it is known, we are more or less surrounded by small computing machines and their invisible algorithmic processes. In this sense algorithmic processes are processes of media matter, which matter. The project makes one category of these invisible, seemingly immaterial processes, namely sorting algorithms, audible and plays their embodied rhythms. Controllable parameters of the software are the amount of numbers to sort, the starting conditions (already ordered, random, reverse ordered etc.), the speed of computation and the range of the audible

tones. There is as well an attempt to sonify the depth of recursion for recursive algorithms.

Conclusion: Rhythms and Networks

An rhythmanalysis conducted with means of sonification is usually an abstract environment created by software, which can be explored, analysed and inquired interactively. From such a perspective sonification is more dynamic than audification. A rhythmanalysis with means of audification, or even by listening merely to someone's acoustic environment, can as well be done interactively. One just needs to move or change situations. In this way exploring the sonic rhythms of a city, listening to the sounds and rhythms of human bodies or trying to fix a car motor by listening are all examples of such interactive investigations of everyday ritornelli.

The analysis of everyday processes, which are timed and produced by the dynamics of media matters implies a cultivation of both kind of rhythmanalyses. To gain complementary insights into our hidden infrastructures provided by information technology it is crucial to balance both its more abstract, logico-mathematical aspects, but also its physical, signal-based aspects. Media processes are based on measurable effects of material matters such as communication networks, but also of small networks inside the silicon based circuits of our everyday gadgets. With the dawn of digital technologies, physical signals occurring in the real world became controllable by symbols and signs, thus by abstract means of mathematics, but also power and bureaucracy. Electric signals, which can produce lights, sounds, vibrations, actions or other modalities of human senses, came under the regime of microscopic power structures only known to those elite engineers and scientists who know the details.

Listening to media matters is often more an implicit way of knowledge. It needs practice and works mostly with non-speech sounds, which can be memorised easily, but are difficult to describe with language. To make it explicit and communicable, maps, diagrams, networks and other forms of visualisations are needed. An analysis of a complex mediated matter such as the dynamics of data networks, brain networks or social networks is usually based on diagrams showing different nodes connected by network structures. There is no sound involved. Dynamic visual movements and signs are used, but the related rhythms are forgotten or ignored, since most the time it is sufficient just to show the dynamics, but not listen to it. Nevertheless, a micro-logical and critical inquiry is driven by an interest in forgotten details and the timing of hidden processes. As mentioned before, it is crucial to be interested in the details of media matters. A second and alternative channel of information via sound can create surplus effects. One could for example focus only on the communications between two nodes of a network.

It has been shown that listening to media matters implies a cultivation of the signal, the rhythm and the vibratory aspects of media technology and their dynamic becoming. In the era of digital humanities, research projects inquiring the dynamic aspects of current culture and media need to program their own software for sonification and visualisation of the subject matter. Listening not only to words, but also to non-speech acoustic signals, becomes more and more a crucial way of critical media studies.

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Related links:

- <http://www.shintaro-miyazaki.com/>
<http://detektors.org/>
<http://www.algorhythmics.net/>

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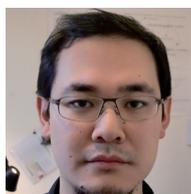
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