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Willim, Robert

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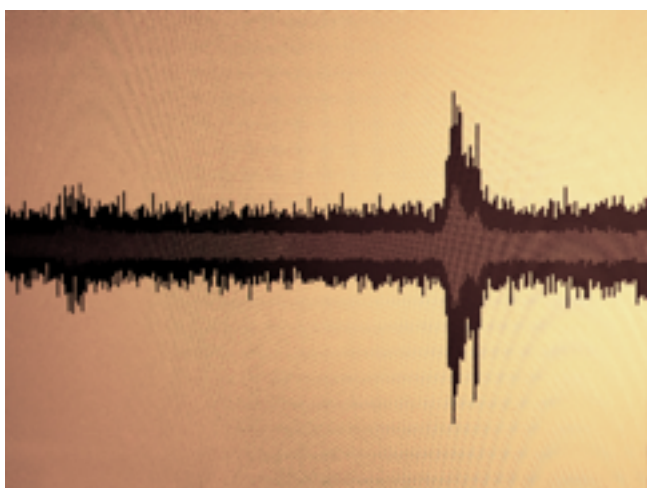
PO Box 117
221 00 Lund
+46 46-222 00 00

The Noise at The End of The Data Stream

Paper for Broken Data Workshop, Copenhagen 29 August 2016

@robertwillim

Before coming to this workshop I was asked to make a video documentation of the event. I decided to use my iPhone for the video, but to enhance the device's sound with an external microphone. However, when I tested recording with the setup a couple of weeks ago I recognised that the sound files produced were corrupted by hearable cracks, characterised by the special sharpness of digital distortion. The glitchy and noisy sound files that was the result of the recording is a good starting point to reflect on what could be broken data.



A sound file consists of data. In this case it was based on digitally encoded sonic variations captured by a microphone. To make the sound file audible it has to be decoded and output through some equipment that can reproduce sound, like a pair of speakers. The origin of the cracking glitchy sounds occurred somewhere in the flow of signals, in the coding or decoding between sound waves and digital data, or for

some reason the data could have become corrupted while being processed in the iPhone.

Data should be understood in relation to the ways it is intended to be processed. The distorted parts of the sound file consist of data, and so do other parts of the file that we could experience as for an example a voice uttering a sequence of words. What we hear as a distorted glitch become categorised as noise in relation to other parts of the file that we define as a meaningful and expected signal, or as appreciated content. It's only in the light of intended uses that some data might be considered as broken, split, fractured, malfunctioning or noisy.

The removal or filtering out of noise is an important part of data management. Noise abatement can be seen as a process of maintenance or repair. However, like all sorting and arrangement this maintenance, this filtering, has its own politics, aesthetics and peculiarities. If we assign the filtering

to algorithms, someone or something has to decide how these algorithms sort out noise or smoothen a data set or a data stream.

When sound is recorded we get a data stream that is transformed into a file. How should this file be managed? Which parts of a sound file should be evened out, what should be removed and what should replace the removed data in order to keep the experience of the sound satisfying? For sound engineers or music producers there are no given and predefined general routines of how to deal with specific levels and characters of noise. Decisions when and how to intervene in a data stream have to be made in relation to norms, aesthetic appreciations and stylistic preferences. Imaginations about how a finalised processed sound should be affect choices during the management process. There is no predetermined definition when data is broken.

Sounds and Images of Malfunction

For some years I have researched the role of noise, especially in relation to digital culture and creative practices like video art and electronic music. As I've argued in a previous text, once noise has been defined and framed, one can choose either to filter it out or to transform it into something valuable (Willim 2014; cf. Krapp 2011). Within the art world, and subsequently within digital culture, utilisations of the noisy and erroneous have become escape routes from predictably structured practices of creation. Within electronic music a plethora of artists started to experiment with glitches and the sounds of technological malfunction during the 1990s. Artists like *Oval*, *Pole* and *Ryoji Ikeda* created music based on sounds from skipping compact discs, broken electronic circuits and corrupted data streams. In 2000 Kim Cascone wrote about what he referred to as *The Aesthetics of Failure*:

The "post-digital" aesthetic was developed in part as a result of the immersive experience of working in environments suffused with digital technology: computer fans whirring, laser printers churning out documents, the sonification of user-interfaces, and the muffled noise of hard drives. But more specifically, it is from the "failure" of digital technology that this new work has emerged: glitches, bugs, application errors, system crashes, clipping, aliasing, distortion, quantization noise, and even the noise floor of computer sound cards are the raw materials composers seek to incorporate into their music (Cascone 2000:12f).

Similar practices could be found within video art, when distorted and grainy images were sought after to create certain aesthetic effects. Subsequently broken media and data was also commodified

and turned into products that could "create glitches with ease". One example is the plugin *Data Glitch* for Adobe's video software *Premiere* and *After Effects*. This software plugin was aimed at filmmakers and visual artists interested in prefabricated glitches and broken data. The plugin could be used to make glitches and to "corrupt" moving images:

Simulate Realistic Digital Image Glitches with Ease!

Data Glitch is a native After Effects plugin that creates awesome realistic digital image glitches with total ease. Something you would see during a satellite transmission or a cable broadcast or from a damaged disk. Bad TV plugin is great for analog TV look, but this is 2010 and you hardly see anything that's analog anymore. This plugin simulates a realistic digital glitch effect. In real-life most of the glitches occur due to problems in encoding/decoding and sometimes data corruption. This plugin does exactly that. It encodes the data, glitches the data and then decodes it similar to the real life situation (Aeplugins 2010, <http://aescrpts.com/data-glitch/>).



It wasn't very surprising that this kind of software which could create artistic effects "with ease" met critique from artists and designers. As Rosa Menkman argued in her research on glitch art and software artists:

There is an obvious critique here [from some artists]: to design a glitch means to domesticate it. When the glitch becomes domesticated into a desired process, controlled by a tool, or technology – essentially cultivated – it has lost the radical basis of its enchantment and becomes predictable. It is no longer a break from a flow within a technology, but instead a form of craft. For many critical artists, it is considered no longer a glitch, but a filter that consists of a preset and/or a default: what was once a glitch is now a new commodity (Menkman 2011:55).

So, noise can be turned into something appreciated, and even something commodified. Broken data could be part of similar transformation processes. Glitches, noise and what is experienced as broken is relational and mutable.

Transmutations of Noise / Transmutations of Data

The glitch art and music of recent decades have had a number of predecessors, from the music of the Italian Futurist movement to the works of several experimental music composers. One composer and sound artist that might shed light on ideas about the brokenness of data is Alvin Lucier. In many of his works he has been working with the way sound relates to different spaces. In 1969 he made *I am sitting in a room* (<http://www.ubu.com/sound/lucier.html>). The work connects ideas about sound, space, noise and human experience in an intriguing way. It shows how noise is something relational and also how it is specific to contexts.

While sitting in a room he recorded his voice, the recording was played back through speakers in the room. The sound was recorded again, then played back and recorded in an iterative process. Lucier's voice became more and more distorted during the process, the resonances from the room and the technological mediation changed the sound. The sentences uttered by Lucier in the work describe the concept:

I am sitting in a room different from the one you are in now. I am recording the sound of my speaking voice and I am going to play it back into the room again and again until the resonant frequencies of the room reinforce themselves so that any semblance of my speech, with perhaps the exception of rhythm, is destroyed. What you will hear, then, are the natural resonant frequencies of the room articulated by speech. I regard this activity not so much as a demonstration of a physical fact, but more as a way to smooth out any irregularities my speech might have (In: Kahn 2009: 28).

The way the resonant frequencies of the room smoothed out Lucier's voice give us perspective on what could be considered as noise and data. There is no clear-cut demarcation between signal and noise in this context, no point at where data is obviously broken.

40 years after Lucier made *I'm Sitting in a Room* I made a work called *Close to Nature* (<https://vimeo.com/44951079>). This work built on a similar idea of an iterative noise inducing process. *Close to Nature* was probing ideas about how visual experiences of Nature are evoked and engendered through uses of technology. It was part of a more extending exploration of mediation, imaginaries and space and it took an area in Northeastern Finland as the point of departure.

The execution of the work was partly based on using technology beyond the context of its intended use. This decontextualised technology was a small device called The Viddy, by the German company Intenso. It was a quite prosaic communication device marketed as a video messenger. It had a small 1.8" lo-res screen, a camera and a microphone. It was equipped with a magnetic rear panel, making it possible to attach to steel surfaces (like a fridge magnet).

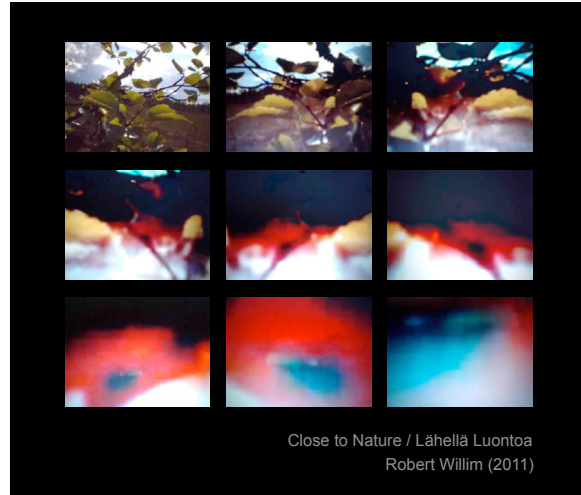
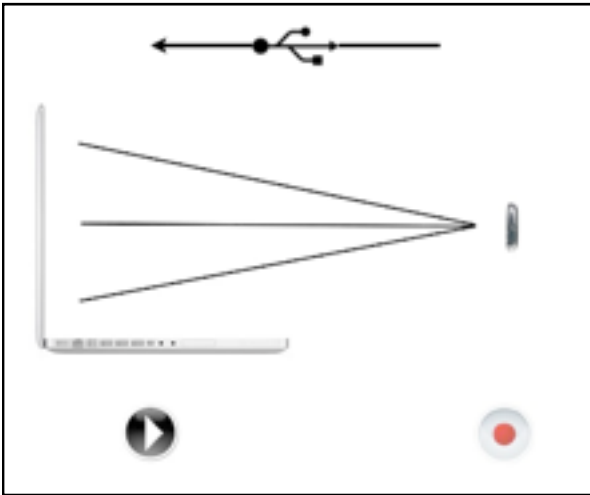


The video messenger was intended for use in 'a communicative loop' between people in a domestic setting. A person could record a message (max. 30 sec.) by using the camera and microphone, and then put the Viddy somewhere in the house. Another person could then turn up, find the messenger and by pressing a button play back the message. This is

a simple closed loop of data being processed and becoming part of domestic sociality. The technology was a remediation of earlier technologies like a note and a pen. What the Viddy introduced in the loop was a recorded audiovisual dimension utilising digital data.

The Viddy also featured a usb-port, making it possible to transfer the recorded video clip to a PC. This hints at another part of the marketing of the Viddy: "YouTube your life: upload messages to the Internet" (<https://youtu.be/em8RWWWZTqs>). This feature was however nothing unique at the time the Viddy was introduced (around 2010). It could hardly compete with the audiovisual quality provided by smartphones or other kinds of networked devices. A smartphone offered immediacy between capturing film, sharing and socialising in a worldwide network that the domestic Viddy could not match. Instead the simplicity offered by being a low profile "fridge magnet video messenger" with a quite straightforward "press one button"-interface probably was a better marketing hook. However, The Viddy turned out to be quite unsuccessful on the market.

This device, the domestic Viddy, was the main tool used in the making of *Close to Nature*. I used most of its still limited features, including the possibility to transfer files to another device. I also wanted to stay with the idea of a closed loop, intrinsic to the main concept of the Viddy, making it possible to relate to Lucier's *I am Sitting in a Room*.



I used the camera of the device to record a view of a marshland in northern Finland. The quite shaky and pixelated 30 second clip was characterised by the limitations of the Viddy. The composition consisted of the leaves and branches of a birch tree in the foreground, with the marshland and a remote forest under blue skies stretching out behind.

The recorded clip was exported to a laptop. It was played back, while the image on the screen was recorded with the Viddy, bringing the image slightly closer to the viewer.

Here the limitations of the Viddy were utilised. The re-recording created noise, distortion and glitches that made the image start breaking and cracking, forming patterns and evoking colours not visible in the first clip. This procedure was iterated eight times, bringing the image closer while it also became more abstract. Each time the procedure was repeated the clip was transmuted between different formats or conformations, between digital code, between data, electric currents, algorithms and the analogue world of light and matter outside the electronic circuits. This iterative loop is a kind of counterpoint to the social domestic loop intended for the Viddy. Trees, moss, grass and the open sky replaced people, was turned into data, output, reiterated into a new stream of data. The question then is, to what extent did the data become more or less broken during the process?

When is it meaningful to define data as breakable? It depends on the specific context and the aim with the processing of what has been categorized and framed as data.

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