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AuroSION: Eroding Sonic Landscapes with the Internet Audio Cyclotron

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Abstract

The authors describe AuroSION, a performance piece utilising ‘the largest feedback loop in the world’, the Internet Audio Cyclotron. Using field recordings, they subvert compression algorithms to explore emergent devolution.

<1>The Process

The Internet Audio Cyclotron, or IAC, is an information-destruction system and a de novo musical instrument, conceived and designed by the authors to subvert the functionality of networks and compression algorithms (technologies normally used for storage, reproduction, or dissemination). The IAC considers the ideas of Metzger, Attali and Lucier [1–3], among others, pertaining to memory and repetition, auto-destructive art, and non-linear, generative creation.

Seed audio is introduced into the system and encoded using a compression algorithm. The encoded signal is then transmitted, via the Internet, to a distribution server and streamed to listeners. An instance of this decoded audio stream is reintroduced into the encoder. Interaction with the signal, via mixer interventions and the introduction of further seed audio, forms the performative element of the instrument. Each cycle alters the seed sound and introduces a matrix of delays, compounded and layered, with each subsequent round.

Repetition, time lag, compression artefacts and introduced noise become integral to the mastery of the IAC ‘instrument’. Understanding how these parameters interact fosters a connection between the musician and the system. As a means of performance and composition, the IAC offers a method for the creation of dynamic indeterminacy. Chafe [4] writes that ‘path delays... can... be used to constitute network sound objects... Recirculating echoes are used to create instrument tones... One can, in fact, "play the network" '. The simplest seed can take on a life of it's own, conjuring up sheer glee in the musician, as they send motifs through the global networks, to be returned evermore destroyed and recycled, scrambled, altered and reinvigorated, spurring new inputs and interactions.

The choice of the MP3 codec (encoder/decoder) is deliberate, although the use of other algorithms (such as AAC or Ogg Vorbis) is possible. The MP3 system is, as Sterne [5] writes, 'tuned to... the hierarchy of taste cultures that are still so central to medium aesthetics.' It is salient to note that 'no gongs, no distorted guitars, no polyrhythms or backbeats were used in the original tests' carried out by 'earwitnesses' during the development of the codec. Mono-cultural perception, and the subjective definition of what can be acceptably compressed, is digital hegemony, and it is this hegemony that we knowingly subvert or undermine with our performance(s), by aiming to re-frame these ‘earwitness’ decisions in the context of noise rather than that of reproduction.

<1>Aurosion

‘Aurosion: Eroding Sonic Landscapes with the Internet Audio Cyclotron’ [6] was a collaborative, long-form studio performance by the authors, broadcast on June 6th 2016 by the radio station ResonanceExtra, in Brighton, UK. The piece, whose seed material consisted of field recordings from locales as diverse as the laboratory and a tropical mangrove forest, lasted six hours and utilised an IAC configuration spanning 15,000 kilometres (from London to Dallas, Texas). The

piece was loosely divided into ten sections, each with collections of samples from specific locales. Each piece was gradually seeded, then 'played' until artefacts emerged to shape the piece, before decaying naturally.

During Auroson, many noise artefacts were introduced, both algorithmic and artist-generated, resulting in an unrepeatable microstructure, with elements distinct from the seed sounds, and which became more prominent over time. For example, in the section 'River', emergent sounds were reminiscent of a heavy body being dragged along the ground, or perhaps a hydrophone sunk deep into a stagnant pool of water. In the section 'Devon' the output became pre-anthropocenic, Jurassic, larvaic; a devolution of signal, a regression in time, winding back the code.

<1>Summary

The IAC can be seen as an act of organic rebellion against the tyranny of the algorithm. However, as Metzger states, auto-destructive art is '[n]ot interested in ruins, (the picturesque)' [7]. The point of the process is to demonstrate other possibilities: cumulative audio seeds and mixing interventions create mutable sonic landscapes with prehistoric or unworldly atmospheres. By the end of an IAC piece, an infinitesimal fraction of the original signal remains, the vast majority having been discarded by the encoding algorithm, but cumulations of compensations for data loss create new signal. The IAC, in practice, presents the artist with both a method for the destruction of audio and, simultaneously, a method of creation.

References and Notes

1. G. Metzger, *Damaged nature, and autodestructive art* (London: Coracle, 1996).
2. J. Attali, *Noise: the political economy of music* (Minneapolis, MN: The University of Minnesota Press, 1985 [1977]).
3. A. Lucier, "I Am Sitting in a Room,"
<http://en.wikipedia.org/wiki/I_Am_Sitting_in_a_Room>, accessed 10 May 2015.
4. C. Chafe, "Tapping into the Internet as an Acoustical/Musical Medium," *Contemporary Music Review* 28, No. 4, 413-420 (2009).
5. J. Sterne, *MP3: the meaning of a format* (Durham, NC: Duke University Press, 2012).
6. 'Aurosion' is archived at <<https://www.mixcloud.com/resonanceextra/aurosion-6th-june-2016/>>, accessed 1 July 2016.
7. See Metzger [1] p. 64.

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