A Synthetic Cicada Soundscape Controlled by Breath in the context of Sound and Interaction Design – Blog Post

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1. Summary

Toby Gifford “describes an interactive installation featuring a generative soundscape with breath control, that aims to capture the feeling of being in a forest full of cicadas”. He bases the interactivity of the installation on breath control, which he got inspired to use, because of finding the “pulsations” of the cicadas to be similar to the breathing of a forest. The sound is generated in a stochastic manner.

1.1. Inspiration and Goal of Installation

Rather than replicating the exprience of a mass of cicadas the installation should be an artitstic and experiental approximation. Thus no field recordings but synthetically generated sound was used, which also leads to more fine grained control over the single sound events.

1.2. Stochastics

As the natural cicadas sound generation is dependent on the proportions of their ‘ribs’ and these aren’t uniform, as well as the body part scraping over these ribs, isn’t moving at a constant speed, the physiology leads to variations between the sounds of one cicada alone. This variation was modeled by offsetting predefined parameters by a random noise.

1.3. Sound

By using a pulse train of raised cosines the sound of the cicadas are approximated.

1.4. Spatialisation

As the installation is presented through a stereo headphone. Delays and gain adjustments are used for each cicada source to create a sense of depth and spatially distributed cicadas.

1.5. Controller

The interaction with the installation is provided by an waist-expansion sensor. Breathing out moves the cicadas further outwards on the sound stage, and inwards while breathing in.

2. Reflection

As this paper is focused on recreating a very subjective experience of standing in a forest, in which one is audibly surrounded by cicadas, it achieves the description of what went into recreating this experience. Still I believe there could’ve been more explanation on the technical side, although the provided code gives insight to people that are familiar with Extempore[1].

Also, when reading the title I thought a breath controller commonly used to control synthesizers as the DX7 for example, was meant, and not a flexing band measuring the expansion of the chest. I had also envisioned a more complex mapping than a simple one-to-many mapping.

In total I think this paper has interested me more in its use of synthesis rather than in its interactivity, but by this disappointment I am of course more inspired to create more interesting mappings, and explorations of them in an artistic context.

2.1. Bibliography

Gifford, Toby. 2025. *A Synthetic Cicada Soundscape Controlled by Breath*. June 19. https://doi.org/10.5281/ZENODO.15698913.

[1] So almost nobody? No, as its lisp based and is thus easily graspable, eventhought the details of the implementation are better understood by Extempore users.