

# ***I Am Sitting...***

## **(a Live BCI Sound Performance)**

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Workshop-in-Exposition – Thresholds of the Algorithmic

### **Description of Work**

The proposed work, *"I Am Sitting..."* is a durational performance and sound installation in which the performer is seated, in meditation and wearing an EEG instrument, in the center of an array of 8 inward-facing speakers. Eight channels of live-streamed EEG data are transformed into a sonic landscape that is both intimate and extraterrestrial. The sounds are spatialized in accordance with the eight electrode sensors of the instrument in order to create the sense of listening to the brain from the point of view of its owner, the performer. The performance space is defined by the perimeter of speakers, and invites the audience to enter the space, move about within it, and become part of an immersive bio-feedback experience. The resultant sound responds to the environment, especially the presence of the audience, by articulating external influences on the brain activity of the performer.

This work is a computationally-derived sonification of live biodata, and uses the open-source OpenBCI platform as a basis for brain-computer interaction. MaxMSP provides an interface for algorithmic data manipulation and sonification, as well as (at times) video generation and manipulation. It has evolved through many iterations to its current form, always relying at its core on natural feedback loops and biometric data.

*"I Am Sitting..."* has been in active development for about 2 years, and during that time has been performed in several iterations: at the University of Maine Graduate Research Symposium (2016 USA), as part of *"Four Aspects of Contemporary Performance"* (2017 USA), at the Black Mountain College {RE}Happening (2017 USA), and as the centerpiece of a self-curated exposition *"Extrospacio/Interfacio"* (2017 Spain). The project was awarded Best in Show at the 2016 UMaine Symposium, and received the 2017 Research & Development grant from Hangar Interactive Labs in Barcelona, Spain. I am actively seeking institutional/financial support for the next phase of research, a two-year community engagement program that involves machine learning and direct BCI-neural net connections.

## Thresholds

This work provides many examples of the threshold at work in our perceptions – of self, of environment, and the distinctions between the two.

In terms of the plausible/implausible, it allows us to explore a virtually-unknowable universe of brain activity, applying a biofeedback mechanism to allow the performer and the audience to intuitively sense the brain's interaction with the world around it. EEG is an established scientific methodology, but still relies heavily on interpretation of data; this work provides an alternative to the rational approach. At the same time, we can hover at the threshold of believing we can control something we do not fully understand.

The work thus can also be examined in terms of agency/non-agency, especially as in a dialectic between author and subject. Do our perceptions and actions generate our world, or are we experiencing a determined universe, an algorithm that is simply playing itself out? This quandary extends from the performer in meditation through the audience experiencing the piece from both within and without and questioning their role at the threshold of influence.

Pertaining to the computable/incomputable, certain schools of thought in cybernetics have argued against modeling intelligence with a (*computable*) top-down blueprint or '*exhaustive encoding*,' opting instead for a scaffolded approach of individual autonomous agents operating on simple, specialized algorithms. They argue it is the combination of these autonomous agents that bring about intelligence as an emergent result of the feedback interactions among them. Using a simple feedback loop of sound<>brain activity, and introducing other agents (the audience) into this loop, this work adheres to the (*incomputable*) logic of artificial life modeling, rather than that of traditional AI.

Finally, "*I Am Sitting...*" hovers in the space between the intimate and the interpersonal. How much of me is you? Can we fine-tune our perceptions to be more, or less, sensitive to our social conditioning? Which signals qualify as communication? The piece puts the audience (and performer) in an active state of testing these thresholds, teasing our intuitive and intellectual senses to dialogue with one another and form dynamic hypotheses about the nature of perception and interaction.

## Reconfigurability

"I Am Sitting..." has existed in multiple iterations, making use of different inputs and outputs, media, and staging styles. There is much room for collaboration and reconfiguration in the way the data is routed and processed. There is a potential for live video generation both within and without the framework of the performance. The EEG data can be live-streamed over WIFI in OSC format, with easily customized formatting depending on the need. I'm very open to exploring the limits of interaction.