

SÉANCE. Ode to Oram.

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Additional Key Words and Phrases: DMI, Daphne Oram, electromagnetic waves, new musical instrument, expression, performance.

1 Program Notes

Composed in occasion of the centenary of the British composer Daphne Oram, this performance for human/s and electromagnetic waves is based on a novel expressive technique for musical interaction which creates a cloud of electromagnetic waves around the main instrument, REBUS, placed on a plinth on stage. The performance explores a selection of samples from the Daphne Oram Centenary Sample Pack to construct an abstract narrative, a sonic exploration of the composer's personality, in a symbolic attempt to attract her presence on stage. The immateriality of the electromagnetic waves, used as a means for connection, contributes to the conducive illusion, constructing the metaphor of a séance. While the musical samples selected by the author, mixed live, are almost untouched to preserve their original qualities, the REBUS controls and recomposes the vocal material: *"veil fragments of Oram's speech emerge between bursts of static, wispy sine tones and bubbling pops of melody then slip tantalisingly away"* [8]. *"Featuring scrambled snippets of Oram talking, the timbre and tone providing more texture than the dialogue. The music aligns itself with the sort of spacious, lightly melancholic soundscapes sure to be familiar to fans of the Radiophonic Workshop palette"* [1]. *"While also referencing the formative moment when a medium told the teenage Oram that she would excel in music, SÉANCE by xname"* [8] rematerialises the wisdom and guidance of a composer whose vision for electronic music and musical instruments deserves no silence.

2 Project Description

Oram's approach to music, mathematics, and machines deeply resonates with contemporary research on electronic music and novel interfaces for musical expression. The British pioneer, who notably invented the Oramics machine, proposed a very visual approach to music composition and envisioned the possibility of drawing sound [2]. Oram also brought to life a very original and feminine conception of technology, intertwining technical invention, affect and subjectivity with that marvellous branch of philosophy called metaphysics, as expressed in the opening sentence of her book: *"We will be entering a strange world where composers will be mingling with capacitors, computers will be controlling crotchets and, maybe, memory, music and magnetism will lead us towards metaphysics"* [3][p.1].

Acknowledging Oram's interests in *magnetism* and spirituality, this performance proposes to stage a *séance*, where the movement in space and the electromagnetic waves that the REBUS instrument emits and receives become a means to connect to Daphne Oram in a quest for guidance (Figure 1).

During the performance, the space between audience and performer becomes increasingly palpable, and while the player explores the sensitive space, modulating the sound with the movement of her hands and the body, the performance suggests a redefinition of the concepts of space, distance, emptiness, void and togetherness.

The piece, originally written as a live composition, exists also as a recorded track.

3 Technical Notes

The performance is based on the REBUS electromagnetic musical instrument first described by Oreggia in [6] and illustrated in Figure 2. REBUS is an electromagnetic sensing system for contactless interaction and gestural expression in electronic music, performance, and time-based media art [4]. Emitting and receiving electromagnetic waves, REBUS creates a space where any subtle movement can be detected independently of external light or sound and where invisible affordances can be manipulated with the hands and the body, almost as invisible strings [5].

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Fig. 2. REBUS in the surround studio at Elektro Musik Studio in Stockholm in 2019. Photo by Eleonora Oreggia.

REBUS features stereo input-output and CV (control voltage) output, the latter enabling gestural control of any analogue or digital modular or semi modular synth having CV input. Additionally, the device presents the possibility of controlling a light bulb, also modulated via a voltage controlled output that responds to gesture (Figure 3). The light bulb, along with contributing to the building of the climax, functions as *motor* and input to a light bot, which uses solar panels and light sensors to control simple oscillators based on the CMOS logic gates (see ‘Light’ section in [5]).

A series of custom compositions written in C++ (a programming language), created specifically for the instrument and published as open source software in [9], manipulate samples of Oram’s voice. The compositional techniques implemented vary: for example, mapping the sample to gesture so as to reshuffle the sentence as a result of movement; or affecting pitch and amplitude of the sample in relation to the gain and phase of the electromagnetic field; or slicing the samples as a function of gesture and then replaying the sample bins in a new order according to the performer’s movement.

In fact during the performance, using a button which constitutes the only control that the player can use beyond interacting with the electromagnetic field, REBUS cycles through an audio loop granulator, where the magnitude of the detected electromagnetic wave controls length, and the phase of the wave controls the starting offset; another granulator based on gesture mapping, where a training process associates gestures with sound in the first seconds after launch and then gesture input plays the sound with best-matching gesture. It also uses a sample player where the performer’s gesture is detected to modulate the amplitude and the pitch of the sound, echoing the tradition of the very first contactless musical instrument, the Theremin, although that instrument exploits the physical behaviour of the electric field other than the electromagnetic field [7]. Another example is an adaptation for REBUS of a multi sample streamer that is part of the Bela Library, which allows multiple payback of large files at the same time, creating a sort of sea wave effect where Oram’s voice appears to be coming from different – yet simultaneous – time-spaces.

3.1 Technical Details

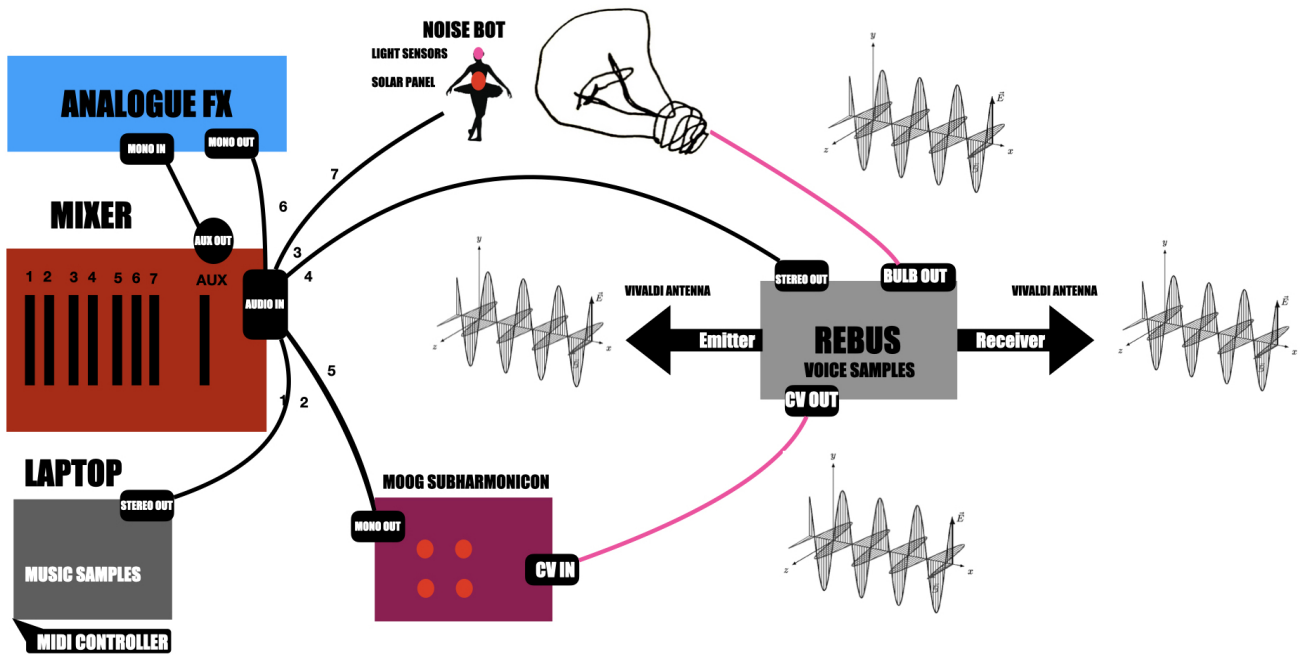


Fig. 3. SÉANCE performance graph and signal flow.

4 Media

- Video: <https://xname.cc/video/SEANCE/>
- Audio: <https://nonclassical.bandcamp.com/track/seance>

5 Ethical Standards

The electromagnetic (micro)waves emitted by the REBUS instrument respect the Ofcom broadband regulations which dictate the use of the electromagnetic spectrum in the United Kingdom. The magnitude of the waves emitted are consistent with everyday electronic devices and do not pose additional risks to the performer or the spectators.

The use of selected samples from the Daphne Oram Centenary Sample Pack has been granted to the composer via a royalty free and non-exclusive license agreement signed by The Daphne Oram Trust and the composer on 8 April 2025.

The parts involved have been informed prior to writing this proposal and are acknowledged in the next paragraph.

This project did not involve participants other than the author and meets ethical standards. There are no observed conflicts of interest in this project.

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Fig. 1. SÉANCE performance at the Barbican in London. Photo by Izzy Offer, 4 december 2025.