Carbon Based EM Fields

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1. PROGRAM NOTES

BANDNAME is composed of three womxn NAME, NAME, and NAME and guests who use the physical properties of the electromagnetic spectrum to create installations, performances and recordings. Using electronic feedback, audio speakers, various kinds of microphones/pickups, and resonant objects of all shapes and kinds, we summon the feminine spirit of electromagnetism, aka the Goddess of the Electronic Medium aka the ElectroMagnetic Goddess. We have a flexible membership inclusive to all peoples who are willing to open themselves up to this spirit. In terms of current trends in audio technology, we invoke a feminist response to the masculinization of the music industry, audio engineering, and to the artistic spaces of sound arts in general.

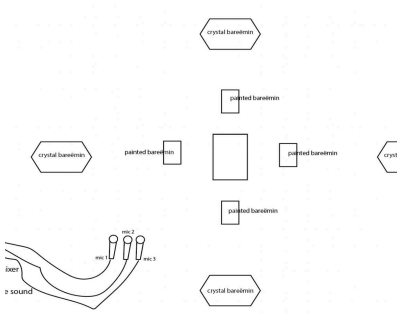

Fig. 1 Stage plot

2. PROJECT DESCRIPTION

Our latest project is playing graphic scores that function as instruments, and simultaneously embedding these scores within acoustic stringed instruments. Our current practice is inspired the circuit diagrams as scores such as Gordon Mumma's *Mesa* and Max Neuhaus's *Max-Feed* and Christina Kubisch's Electrical Walks. Our performances are distinct from Enrique Tomás' inherent scores where it is the performer's role to reveal instances of the musical work inherently integrated in the circuitry [1]. They are closer to the idea of a composed instrument where the performer's role [is] to reveal instances of the musical work inherently integrated

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in the circuitry [2]. We are revealing not only instances of the musical work integrated into the circuity, we are also revealing the acoustics of a space through the combination of microphones, speakers and instruments. We often perform with NIMEs we call Bareëmins: boiler-plate Arduino-based theremins with antennae made from carbon paint in the form of pages, icons, and sculptures. There are folded paper Bareëmins that look like crystals suitable for an electromagnetic altar, Bareëmins made from devotional strings of beads, and our latest Bareëmin—two dimensional score paintings. These score/paintings balance the affordances of score, instrument, and object in a single device. The pages are painted alternately with conductive carbon paint and non-conductive paint. When the area that is conductive is activated it produces sound, the non-conductive area does not. When attached to an Arduino system using alligator clips, the score sounds when the circuit is completed. By alternating painted and not painted areas in an aesthetic way, a score can be embedded into the very instrument itself. In our performance we use three separate Arduino systems with a stack of conductive paintings. The paintings then activate the circuitry, somewhat like the Shawn Greenlee's Augur system where he uses the "conversion of previously composed graphics as instructions for sound synthesis [3]." However, here the paintings themselves activate the circuitry, while the page serves as a graphic score. Multiple Arduinos can be connected to a single page, or a single performer can connect multiple pages with a series of wires. Complicating matters, we also use acoustic string instruments, such as pianos, harpsichords, harps, and kotos, as both sounding sources and effects units by attaching alligator clips to the metal strings. Each of the Arduino systems has a small speaker, and each performer has a small wireless microphone that sends an amplified signal (of the Arduino speaker or the acoustic instrument) to larger speakers.

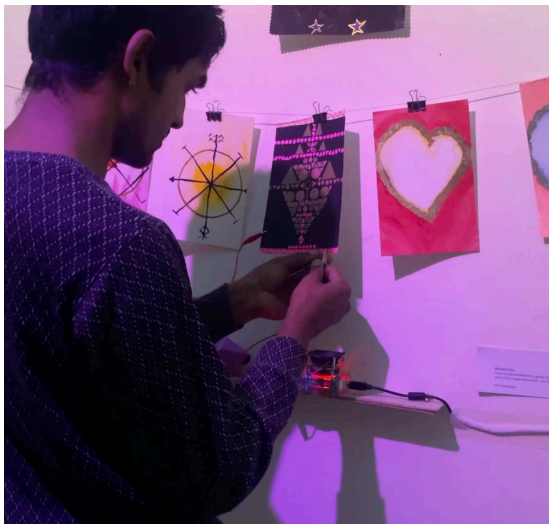

Fig 2. Using a Bareémin

3. PERFORMANCE NOTES

We combine our resources with a mandala-like setup of instruments, microphones and speakers creating a feedback systems to create a physical compositional/ computational space in which we improvise. By moving through the traditional layers of a mandala—from the chaos outside, and increased order cycling inwards, we summon the electromagnetic goddess-head at the center, revealing the organizational structure of the entire piece. The wireless microphones are used to amplify whatever section of the mandala the performers are playing at the time. All components of the mandala are mobile; the Bareëmins run off battery packs, and the speakers each have a single long cable which provides power and signal. We deliberately create an unpredictable and complex sonic environment where we can explore nodes, eddies, and whirls of electromagnetic and sonic feedback.

4. MEDIA LINK(S)

Video: Painting a crystal Bareëmin https://youtu.be/E9819KCuAE8
Video: Interacting with Score Bareëmins https://youtu.be/oMcxaM2UErs
Video: Performing with Score Bareëmins inside https://youtu.be/YAD-F68Ntl4
Video: Performing with Score Bareëmins outside (with birds!) https://youtu.be/tQ4rbipt1RM

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ETHICAL STANDARDS

Please note, that if any elements of the submitted work involve research with people or animals, authors should include a section "Compliance with Ethical Standards" before the References, including (if relevant): information regarding sources of funding, potential conflicts of interest (financial or non-financial), informed consent if the research involved human participants, statement on welfare of animals if the research involved animals.

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[1] E. Tomás, "Musical Instruments As Scores: A Hybrid Approach", in Proceedings of the International Conference on Technologies for Music Notation and Representation, 2016.

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[3] Greenlee, Shawn E, "Erratic interpretation: drawn sound in augur." Brown University, 2008.