



**Pia Van Gelder**

***Psychic Synth II / Apparition Apparatus***

McClelland Sculpture Park+Gallery

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Pia Van Gelder's multimedia practice explores our relationship with technology, using electronics to develop interactive installations and performances. In *Psychic Synth II*, electroencephalography headsets connected to video and sound synthesisers create a feedback loop between the human brain and technology, translating participants' brain waves into colourful abstract projections and sounds. Revealing these phenomena in visual and sonic form, this immersive installation brings together three distinct waveforms: brain waves, sound waves and electromagnetic radiation (light) created by an audio video synthesiser. With the transformation of energy from one state to another, Van Gelder offers an environment where humans and technology become complementary and continuous, influencing and responding to each other's signals.

*Psychic Synth II* explores the artistic potential of telepathy, specifically the idea that psychic energies can be transformed and externalised using electronics. The work is an outcome of Van Gelder's research into electric micro-currents and their relation to science, art and philosophy. Electroencephalography or EEG is a process whereby small ionic currents that flow through the neurons of the brain are measured with probes. The frequency of these currents ranges between 0.1 to 60 pulses per second or Hz, and correlates to different states of consciousness, such as delta, theta, alpha, beta, gamma and mu. Beta waves, found between 16 to 31 Hz, indicate an active, stressed, or nervous state whereas alpha waves between 8 to 15 Hz signal a meditative and reflective state.

EEG was invented in 1924 by the German psychiatrist Hans Berger. While it has been used scientifically for the diagnosis of brain, sleep, and psychology disorders, Berger's invention in fact came from a desire to understand and scientifically measure psychic energies, following a life-changing experience. While serving in the military at the age of 19, Berger had a near fatal accident and survived unscathed. That night his father sent him his first telegram, at the request of Berger's sister who had a sense that he was in danger. Convinced that his sister's premonition was caused by the psychic energy he had produced near death, this incident sparked Berger's ongoing interest in the electronic possibilities of telepathy and led him to discover a way of monitoring psychic activity.<sup>1</sup>

Preceding Berger's discoveries, a number of writers and artists had explored the relation between thoughts, images and sounds through occult or esoteric concepts. London theosophists Annie Besant and C.W. Leadbeater produced the book *Thought Forms*<sup>2</sup> in 1901, linking psychic and visual faculties in an important way. The book maps the relationship between colour, form and psychic states, illustrating phenomena that appeared to the authors in clairvoyant visions. Proposing that thoughts have substance and presence in the external world, Besant and Leadbeater describe a visual mode of understanding and interpreting them.

These thought-forms had a strong influence on modern artists, most notably the Russian painter Vassily Kandinsky, who would become seminal in the development of modern abstract art. Kandinsky

Image: *Psychic Synth II* 2019 (still detail), electronics, video, sound, electroencephalography, wood, dimensions variable. Courtesy the artist.

produced thought-forms of his own and his treatise *On the spiritual in art* establishes a spiritual relationship between thought, creation, colour and sound.<sup>3</sup>

The transfer of energy in Van Gelder's *Psychic Synth II*, from brainwaves to audiovisual phenomena, addresses these parallels between art and spiritual science throughout the 20<sup>th</sup> Century, specifically the concept of thought having a perceptible and recognisable form. In the 1960s, new technology allowed artists to expand on earlier experiments using thought itself as a medium. With the rise of cybernetics, correlations between biological life and technology became more pronounced. Biofeedback processes were increasingly used to measure and control biological responses with technology, and became particularly useful in medical therapy and meditation.<sup>4</sup> However, EEG biofeedback, later called neuro-feedback, also allowed artists to forge a more direct link between thought and the creation of images and sounds.

In 1965 American composer Alvin Lucier with the assistance of physicist Edmond Dewan, wrote *Music for the Solo Performer*. Lucier's brainwaves were recorded with EEG, amplified and channelled to loudspeakers set up against reverberating instruments.<sup>5</sup> In 1971, Polish-Australian artist Josef Stanislaw Ostoja-Kotkowski experimented with EEG in the hope of being able to create a four-dimensional moving image performance. While he did not succeed, he was aware that future artists such as Van Gelder would soon be able to realise this vision.

The historical interactions between science, technology and art, particularly in the fields of experimental and electronic music, inform Van Gelder's approach. From 1965, American composer Tudor was interested in allowing objects and electronic devices to reveal their own characteristics, rather than using them as traditional instruments to be played manually. His concept of 'composing inside electronics' suggests working on the instrument or objects' terms, with a focus on processes and relationships.<sup>7</sup> Importantly, Tudor considered technology not as a tool but as a collaborator, and in the same way Van Gelder allows her *Apparition Apparatus* to reveal its self-determined sound and image creations.

*Apparition Apparatus* is an autonomous audiovisual setup featuring an early digital video mixer. The audio and video outputs of this device are plugged into their corresponding inputs, to produce an internal signal loop that emits a constant stream of abstract

electronic phenomena. Van Gelder bypasses the unit's intended use to reveal its inherent creative potential, allowing it to 'perform' and communicate in its own language.

The DIY, open-source and hacking counter-culture that has developed alongside new consumer technologies is an important part of Van Gelder's practice. She is the Overlord of Dorkbot Sydney, part of a global network of artists, engineers, designers, scientists, inventors, and individuals doing experimental things with electricity. Hackers have long been constructing or repurposing technology as a form of subversive intervention, with large communities often guided by ethical and political motivations based on personal freedom and resisting consumerism and capitalism. For example, American hacker Mitch Altman created the *TV-B-Gone*, a pocket sized universal television remote with only one button, 'off'.<sup>8</sup>

Many electronic devices are now more affordable and information on their construction more easily accessible. Inexpensive EEG headsets have recently become widely available, spurring a new wave of experimentation with biofeedback and customised setups. A Californian group known as the 'Consciousness Hackers' is a global community 'exploring technology as a catalyst for psychological, emotional and spiritual flourishing',<sup>9</sup> reminding us of the emancipatory potential of electronics today. In the same way, Van Gelder allows a collaborative and open-ended relationship with technology, making us more attuned to the energies that circulate within and around us.

- 1 David Millet, 'Hans Berger: From Psychic Energy to EEG, Perspectives in Biology and Medicine', Volume 44, Number 4, Autumn 2001, The Johns Hopkins University Press, pp. 522-542.
- 2 Besant, Annie and Leadbeater, C.W. (Charles Webster), 1854-1934, *Thought-forms*, Theosophical Publishing Society, London, 1905, originally published 1901.
- 3 Wassily Kandinsky, *On the spiritual in art*, Solomon R. Guggenheim Foundation, New York, 1946.
- 4 David Rosenboom, *Extended musical interface with the human nervous system*, Leonardo Monograph Series, San Francisco, CA, 1990, pp. 9-25.
- 5 See Douglas Kahn, *Earth Sound Earth Signal: energies and earth magnitude in the arts*, Los Angeles, CA, University of California Press, 2013, pp. 83-105.
- 7 See Nicolas Collins, 'Composers inside Electronics: Music after David Tudor', *Leonardo Music Journal*, vol. 14, 2004, pp. 1-3
- 8 See 'Cornfield Electronics: Useful electronics for a better world' website, <https://cornfieldelectronics.com/cfe/cfe.main.php>, Accessed 10 March 2019.
- 9 See Nellie Bowles, 'An evening with the Consciousness Hackers', *The New Yorker*, June 23, 2015, <https://www.newyorker.com/business/currency/an-evening-with-the-consciousness-hackers>, Accessed 10 March 2019.