

Fulgura Frango: Breath-Extended Harpsichord

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1 PROGRAM NOTES

Inspired by Élisabeth Jacquet de la Guerre's 1694 chamber opera *Céphale et Procris*, *fulgura frango* is a perpetual cycle of swooning and dying, interspersed with divine interventions.[1] As Céphale draws the arrow that eventually kills his love, Procris, the harpsichordist draws in breath, changing the electronics in real-time through a hexoskin vest that captures breath data, creating distortion and tension, repeating drama for eternity.

2 PROJECT DESCRIPTION

fulgura frango is a composition for extended harpsichord and electronics. It is conceptually inspired by Élisabeth Jacquet de La Guerre's opera *Céphale et Procris*, and many of its techniques refer to Céphale's bow and arrow that mistakenly pierced Procris's unwavering heart. Procris is represented by a steady passacaglia reminiscent of de la Guerre's baroque harmonies, and it is interrupted by multiple interventions: bowing of an amplified horsehair tied to a harpsichord string, goose quill glissandos on the upper tuning pins, and e-bow placements on a small psaltery. In this tragic love story, the cycle of bowing and being stricken represents a perpetual shooting and dying and loving and shooting and dying and loving.

In addition, the performer controls frequency shifting parameters through a max patch that takes in breath data as an input. Using textile RIP (respiratory inductance plethysmography) sensors embedded in a Hexoskin Smart

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Garment[2], the performer's thoracic and abdominal respiration is communicated to the patch through OSC (open sound control) communication. Thoracic inhale pitch-shifts up, whereas abdominal inhale pitch-shifts down, so a taking in a breath increases resulting frequency output. Though harpsichord is not a wind instrument, the musician's breath is an interesting and often unnoticed part of the performance. This unconscious breathing pattern is made physical and apparent through its direct relationship with pitch-shifting. The performer is also asked to intentionally manipulate the live electronics with their breath, adding another dimension to the notated composition.

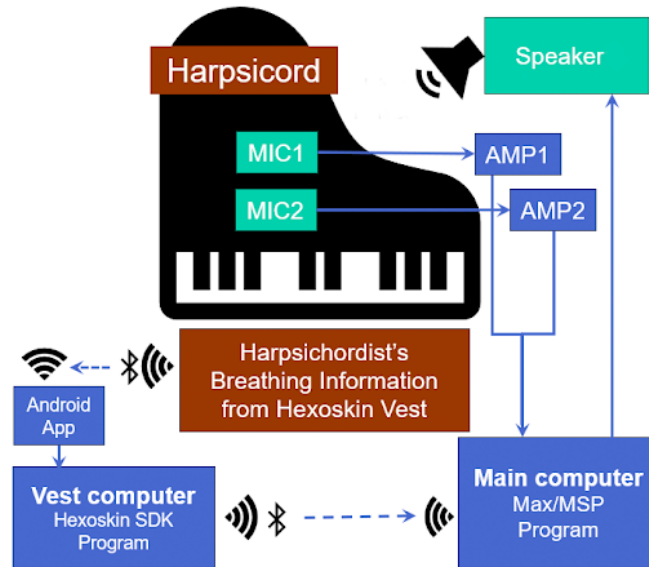


Fig. 1. max patch interacting with hexoskin on harpsichordist

3 PERFORMANCE NOTES

fulgura frango is for harpsichord and electronics. The harpsichordist is willing and able to source an instrument for the performance. Tivoli Vredenburg seems to be the most appropriate venue. We hope the conference can provide a speaker system (stereo or high order) and mixer, with xlr cables for microphones. For a hall that seats 800, we defer to the engineer's expertise on amplifying the harpsichord, but we can provide the following items for amplified and prepared harpsichord, including two microphones, in addition to the Hexoskin Smart Garment for the harpsichordist.

Amplified harpsichord, prepared with/by:

- an AKG C411 on E2, lowest E on the harpsichord
- a cardioid mic pointed slightly towards the higher register - tied bow hair on the E2, with rosin,
- paperclips on E5, C6, D6
- dampeners removed for G#2, A2, D3, D#3, F3, F#3, G3

The Hexoskin Smart Garment communicates with an android tablet that is linked to a computer sending OSC messages to another computer that receives microphone input from the harpsichord through an audio interface.

4 MEDIA LINKS

- Video Submission: <https://drive.google.com/file/d/12getio3ZCOKYr1TIIeM363eOboCr8dTd/view?usp=sharing>

ACKNOWLEDGMENTS

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ETHICAL STATEMENT

The composition *fulgura frango* is an original work. The breath data collected by the hexoskin vest is not stored, as it's only used for real-time manipulation of electronics. All participants wearing the hexoskin gave their consent. The hexoskin vest is proprietary technology by Carré Technologies Inc, and is being used because this artistic project falls under the umbrella of a larger collaboration among the Stamps School of Arts and Design, School of Music, Theatre & Dance and the School of Medicine at the University of Michigan, necessitating a standard, widely available technology.

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