impuls academy | festival

February 23rd 2025 | 14.00 + 16.00

IEM CUBE, Inffeldgasse 10/3, 8010 Graz

Speculative Sound Synthesis

Presentation of results of the Special Program
Speculative Sound Synthesis
coached by **David Pirrò**, **Martin Rumori** and **Leonie Strecker**

with participants of the impuls Academy 2025
Benedikt Alphart | Ted Apel | Francesco Dal Rì | Emanuele Grossi | Georgios Marentakis | Mike McCormick | Nicolas Speda | Justyna Tobera | Lars Fabian Tuchel composition, electronics

The Speculative Sound Synthesis workshop, set up at the impuls Academy 2025, is addressing sound artists, computer music composers and performers who are committed to critical, speculative approaches at the intersection of art and technology, and who are engaged in practices that question, challenge, criticize, deconstruct, recompose, reformulate, shift, dislocate, endanger or reject established standards of sound synthesis and (music) technology. The workshop is part of the artistic research project “Speculative Sound Synthesis”. The aim of the project is to rethink and recompose the relationship between technology and artistic practice in an attempt to unleash aesthetic potentials of sound synthesis that would otherwise remain unknown or hidden within the technological apparatus. In this aesthetic destabilization of analog and digital sound technologies, speculation is the primary method.

During the workshop, each participant developed their own speculative instrument. As a further step, different approaches towards opening up the instruments for receiving and sending sound and data from and to the other instruments were probed, to ultimately create an interconnected, shared agency when playing the instruments together.

Benedikt Alphart’s instrument is based around a simulacrum-type “physical model” of a singing dune. Singing Dunes are a rare geophonic phenomenon, in which giant heaps of sand produce booming bass drones reaching up to 120dB in volume. The model allows him to mimic its behavior and push parameters beyond their natural range, using his custom built “Mozzarella”-controller.

Ted Apel’s algorithm uses a spectral representation of sound to manipulate the phase spectrum of sound for unique time manipulations of other performers’ sounds. The amplitude envelope of the resultant sound is controlled by OSC messages from other instruments.

Francesco Dal Rì’s instrument is centered around three types of feedback: acoustic, signal, and data. The main software component consists of two identical pipelines, each containing a digital multitimbral synthesizer and a neural network, trained to estimate parameters for the synthesizers to emulate input sounds. Using a hardware mixer as main control interface, the behavior of the system is influenced via multiple feedbacks approaches, achieving both stable and chaotic states.

Emanuele Grossi's instrument consists of a granulator with per-grain spatialization and stretched parameter possibilities meant for working with large prerecorded field recordings, in this case adapted to record material and use parameters coming from the other musicians' instruments.

The NSFW ('Nuther SuperCollider FrameWork') is a software developed for highly dynamic and expressive control of digital synthesis and processing algorithms in performance. During the Speculative Sound Synthesis workshop **Mike McCormick** has developed a new module for the system – the NS_StripRegressor – which allows him to control many modules at once through a simple interface by using a neural network to perform regression on higher dimensional parameter data.

The instrument of **Georgios Marentakis** couples live-camera input from a mobile phone to sound synthesized and played or streamed in real-time by the device. This is done based on a series of user-adjustable mappings that shape the timbre and the dynamics of the generated sound. The intention is to explore serendipitous sonic outcomes and emphasize them through gestural performance.

Nicholas Speda receives sound from another participants' speculative synth and live-codes complex and chaotic effects for it to pass through. Whenever he evaluates code to make adjustments or additions to these effects, the input source switches to a new (random) participants' synth, making it impossible to predict the outcoming sound beforehand, thus turning every modification of the code into a speculative endeavor.
In addition to this, data from typing out his code (e.g. statistic of used keys) is sent out to other participants to further influence their speculative synths (e.g. use as envelopes).

Justyna Tobera's instrument is a sensor that reads hand gestures and processes sound, distributing it across a multichannel system. It allows for real-time interaction, where subtle movements influence the spatialization of sound. At the same time, it generates and transforms visualizations based on movement, creating a dynamic audiovisual experience.

By combining techniques from granular, concatenative, and waveset synthesis, and incorporating cutting-edge linguistics software, the speculative sound synthesis system stack named *mund*, created by **Lars Tuchel**, generates rich textures and intricate (a-)rhythmic patterns. The smallest sound elements – the grains, the waves, the phonemes – are layered and combined to reveal a voice hidden within diverse sound corpora.

The project "Speculative Sound Synthesis" is funded by the Austrian Science Fund (FWF) within the program for arts-based research (PEEK) - PEEK AR 713-G. It is hosted by the Institute for Electronic Music and Acoustics (IEM) at the University of Music and Dramatic Arts in Graz. | Benedikt Alphart and Lars Fabian Tuchel are supported by the Ulysses Platform, co-funded by the European Union.

FWF Österreichischer Wissenschaftsfonds

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23.2. | 18.00 | Theater im Palais . Bühne **Strings . Double Bass in Dialogue**
23.2. | 20.00 | MUMUTH . György-Ligeti-Saal **Joy Time Ride**

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