

MODULAR PROCESS MUSIC

KRZYSZTOF CYBULSKI

1 ABSTRACT

Modular Process Music is an improvised performance with a set of self-devised and built electronic instruments. The instruments communicate with each other through the sound - each instrument has a speaker and a microphone, so they can listen to each other or to any other external sounds. The instruments are designed to make their interactions clearly comprehensible to the audience via their visual appearance.



Fig. 1. Modular Process Music

Licensed under a Creative Commons Attribution 4.0 International License (CC BY 4.0). Copyright remains with the author(s).

Music Proceedings of the International Conference on New Interfaces for Musical Expression
NIME'20, July 21-25, 2020, Birmingham, United Kingdom

2 PROJECT DESCRIPTION

Modular Process Music is a concept / set of instruments designed to create improvised music in a new way. The title can be understood in 3 ways:

- "process music" - a method of creating the music where a composer/artist doesn't create fixed piece; rather he's designing a process which, in turn, generates the music;
- "modular process" - a process that could be redesigned on the fly by changing the order and relationships of several sound modules;
- "modular music" - a piece of music comprising of modules, or parts, which can be reassembled and rearranged freely on the go.

The instruments communicate with each other through sound itself, in the same way as improvising musicians do. Unlike a typical modular synth, rather than connecting the modules with patchcords, each instrument has a speaker and a gooseneck microphone, so they can listen to each other or to any other external sounds. Some of the instruments are controlled only with sound, other could be also controlled manually. The instruments are designed to make their interactions and the process of creating sound clearly visible and comprehensible to the audience - visual feedback is provided by mechanical movement of the elements.

3 TECHNICAL DESCRIPTION

The project consists of 6 instruments. Each of them can work independently, but they could also be combined together in a number of different ways:

- Tape Sampler is a digitally controlled analog tape recorder, with the ability to sequence tape speed and direction of movement; the analog part consists of a tape mechanism harvested from Telefunken black box, the digital part is based on Teensy 3.2 board, with additional elements such as motor controller and numerical display;
- Memo/move is a midi controller with 3 motorized faders, which can loop the actual fader movements, rather than the sound itself; it is based on three SparkFun Slide Pots, Teensy 3.2 board with additional elements such as motor controller and numerical display. In current version Memo/move controls a granular sampler based on Bela Mini running custom Pure Data patch, allowing for capturing and manipulation of the sound on the fly;
- Igafon and Igafon Pro are lo-fi samplers, Igafon Pro's sound can be also triggered by external sounds. Both instruments are based on ISD 1820 sampler board, while Igafon Pro also utilises Arduino Nano with volume sensor for additional control;
- Rhythm Box V.2 creates ever-changing rhythmical structures, complexity of which is based on the volume of external sound;
- String Box V.2 creates harmonies based on notes detected in external sounds, it can be triggered by short percussive sounds.
- Rhythm Box and String Box were created in 2016 as "Feedboxes" and presented at NIME 2017 as a demo [1]. Both instruments consist of an Android smartphone running custom Pure Data patch, closed in a plywood box together with a gooseneck microphone and amplified speaker.

MODULAR PROCESS MUSIC

4 PERFORMANCE NOTES

Modular Process Music had been presented in a live performance form on numerous occasions. Duration of the performance can be anywhere from 5 to 30 minutes, depending on the circumstances. As the instruments have their own speakers and no other audio output, the performance is amplified by the means of condenser microphones (2 – 4) in a similar fashion as with an acoustic instrument such as a vibraphone or dulcimer.

5 MEDIA LINKS

- Video documentation: <https://vimeo.com/323458762>
- Description on author's website: <http://krzysztofcybulski.com/modularprocessmusic.php>
- Sound recording of live performance: <https://soundartforum.bandcamp.com/track/modular-process-music>

ACKNOWLEDGMENTS

Rhythm Box and String Box are using Chris McCormick's PdDroidParty [2] to run Pure Data patches on Android smartphones.

REFERENCES

- [1] Krzysztof Cybulski. 2017. Feedboxes. In *Proceedings of the International Conference on New Interfaces for Musical Expression*. Aalborg University Copenhagen, Copenhagen, Denmark, 509–510. <https://doi.org/10.5281/zenodo.1176348>
- [2] Chris McCormick. 2013. PdDroidParty. <http://droidparty.net>