Distributed Synthesis

The Ethics, Technics, and Aesthetics of Co-Located Network Music Performance

Milestone 2: Research Summary

Thomas Capogreco

2025-08-29

Abstract

Browser-based distributed synthesis is a novel, lithe technique for co-located networked music performance that leverages the ubiquity, connectivity, and computational capacity of our personal devices to achieve multi-channel sonic works. It continues a lineage of historical networked and participatory music performance practices that make use of contemporaneous technology to agitate hegemonic, commodified forms of music performance ritual. The paradigm repurposes the substrate of the internet as its artistic materials, aligning the practice with the educational project of creative coding, and entangling it in the messy problematics of surveillance and platform capitalism. This research employs a critical posthumanist frame to clarify an ethical position from which creative work can be produced in this arena, with particular focus on the themes of texture, ritual, and emergence.

Contents

1 Rationale

The rationale is tripartite, with the three categories being *creative*, *pedagogical*, and *sociological*.

1.1 Creative Rationale

To fashion a coalition of cultural and technical scaffolding such that the connective, computational, and transductive affordances of audiences' devices may be leveraged to increase the accessability of networked music performance and multi-channel sonic works.

1.2 Pedagogical Rationale

The pedagogical rational pivots on the project's ability to scaffold cultural practices which foreground the creative control of information vectors through the infrastructure of the internet. The logic is that by making these practices more vivid in students' cultural life-worlds, the project operates at the level of sense of belonging and identity psychology to increase students' intrinsic motivations to learn the specific digital literacies required by this repertoire.

1.3 Sociological Rationale

- To pry open a space for play in the tightly woven normative strictures that characterises our relation to our phones.
- To help, via its *pedagogical effects*, a) cultivate a more digitally literate citizenry capable of holding public discourse to a higher level of technical sophistication; and b) increase the technology-generating capacity of diverse communities.

2 Research Situation

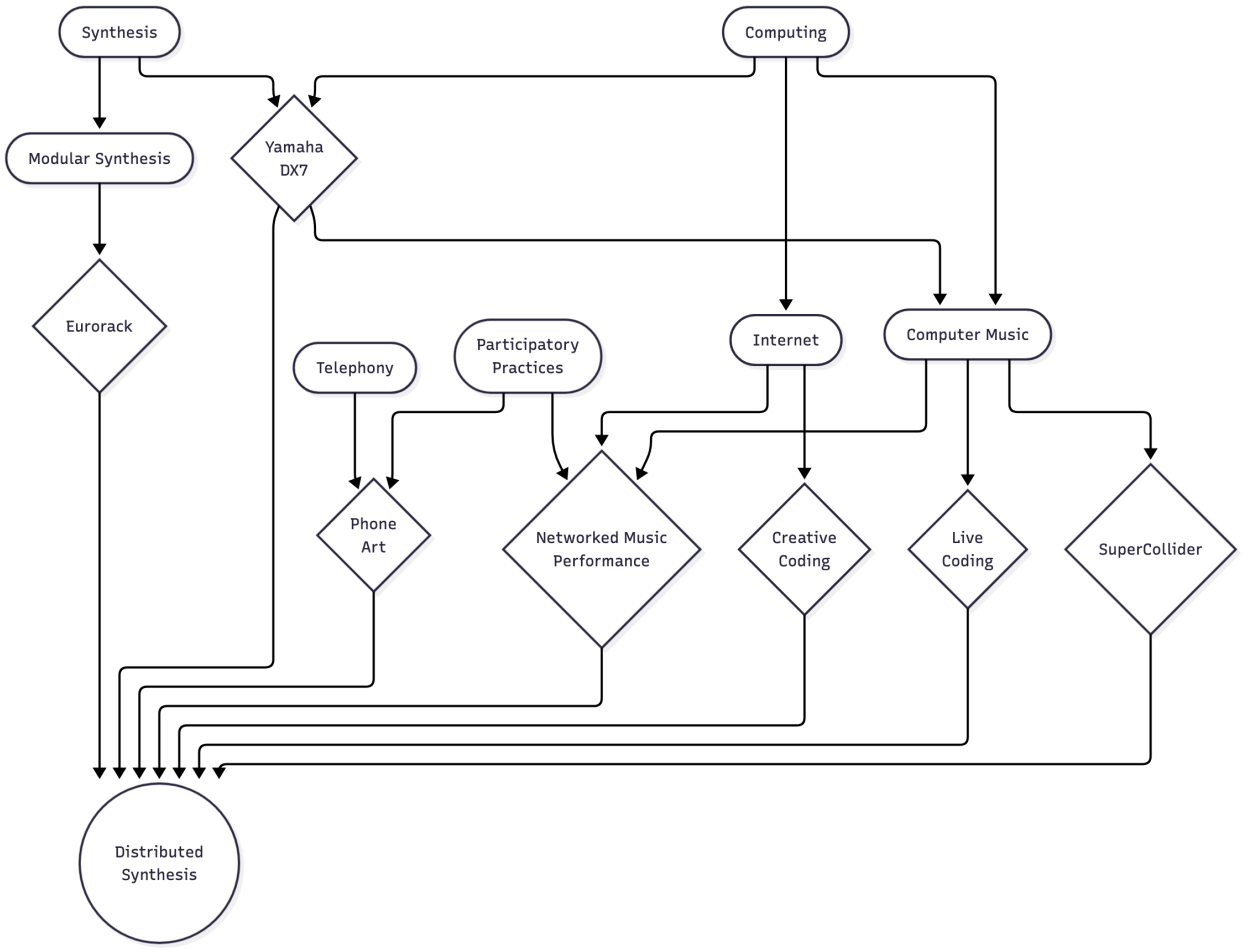

Figure 1: Distributed Synthesis Genealogy Chart

My sonic practice of distributed synthesis inherits from a variety of cultural lineages – see *figure 1.* Particular importance is placed on:

- the pioneering work of Chowning in developing frequency modulation synthesis, and which led to the production of the highly impactful Yamaha DX7. (1977)
- SuperCollider – an open source programming language and environment for digital signal processing and algorithmic composition, founded by McCartney. (2002)
- TidalCycles, and the efforts of McLean (2018), Cox (2013), Blackwell (2014; 2022), Collins (2003), et al. in establishing a world-wide community of practice for live coding.
- the esablishment of the Eurorack standard for modular synthesis in the mid 90s, and

the community of practice which has grown around it since then (Bjørn, 2018; Jenkins, 2020)

- the efforts of Maeda (1999, 2004), Reas & Fry (2007, 2018), Shiffman (2015, 2024), McCarthy (2018; 2015; 2019, 2020a, 2020b), Tarakajian (2020b), et al. in establishing a world-wide community of practice for creative coding
- the array of thinkers and practitioners who have, over the years, attempted to investigate, understand, and agitate our entangled relation to the telephone (Dolar, 2006; Kittler, 1990; McLuhan, 1994; Ronell, 1989)
- the

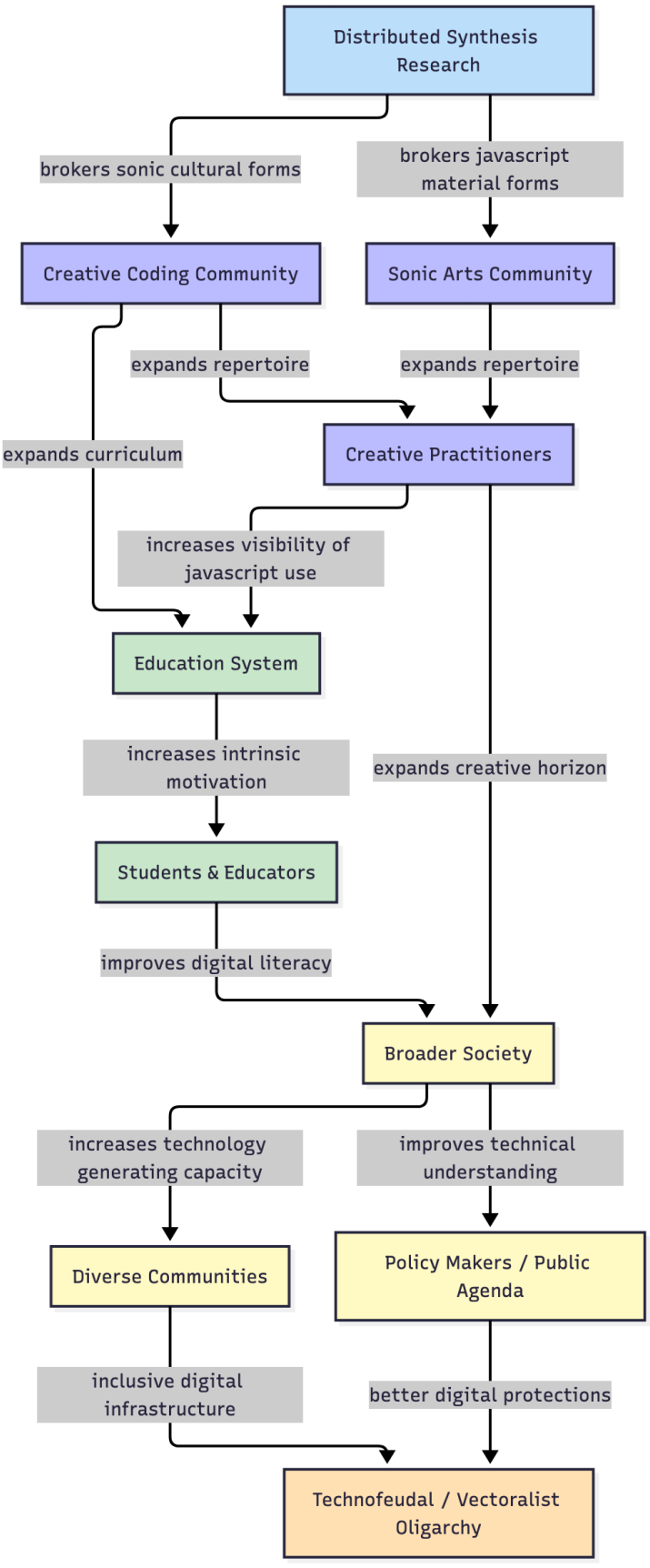

Figure 2: Distributed Synthesis Stakeholder Impact Chart

3 Methodology

- Mycelial Creativity
- Iterative Design
- Diffractive Reading

4 Key Readings

- Pink Noises (Rodgers, 2010)
- Social Dissonance (Mattin, 2022)

5 Progress

- cicade.assembly.fm
- string.assembly.fm
- voice.assembly.fm

6 Changes

- more orientated towards original work

References

Bjørn, K. (2018). *Patch & Tweak Exploring Modular Synthesis*. BJOOKS.

Blackwell, A. F., Cocker, E., Cox, G., McLean, A., & Magnusson, T. (2022). *Live Coding: A User's Manual*. The MIT Press. https://doi.org/10.7551/mitpress/13770.001.0001

Blackwell, A., McLean, A., Noble, J., & Rohrhuber, J. (2014). Collaboration and learning through live coding (Dagstuhl Seminar 13382). *Dagstuhl Reports*, *3*(9), 130–168. https://doi.org/10.4230/DagRep.3.9.130

Chowning, J. M. (1977). The Synthesis of Complex Audio Spectra by Means of Frequency Modulation. *Computer Music Journal*, *1*(2), 46–54. https://www.jstor.org/stable/23320142

Collins, N., McLean, A., Rohrhuber, J., & Ward, A. (2003). Live coding in laptop performance. *Organised Sound*, *8*(3), 321–330. https://www.proquest.com/docview/215098471/abstract/270E6D81CD440A6PQ/1

Cox, G. (2013). *Speaking code: Coding as aesthetic and political expression*. MIT Press.

Creating art with open source. (2018). https://medium.com/read-write-participate/creating-art-with-open-source-77b24b1608c

Dolar, M. (2006). *A Voice and Nothing More*. MIT Press.

Jenkins, M. (2020). *Analog Synthesizers: Understanding, Performing, Buying: From the Legacy of Moog to Software Synthesis*. Routledge.

Kittler, F. (1990). *Discourse Networks, 1800/1900*. Stanford University Press.

Maeda, J. (1999). *Design by numbers*. MIT Press.

Maeda, J. (2004). *Creative code*. Thames & Hudson.

Mattin. (2022). *Social Dissonance*. MIT Press.

McCarthy, L. (2019, December 8). *Making Space for the Future of P5.js*. Medium. https://medium.com/processing-foundation/making-space-for-the-future-of-p5-js-d3c6bd3da9ac

McCarthy, L. (2020a, March 31). *P5.js 1.0 is Here!* Medium. https://medium.com/processing-foundation/p5-js-1-0-is-here-b7267140753a

McCarthy, L. (2020b, May 28). *You, Me, and My Computer* [Free Webinar]. https://youtu.

be/_gaXHCdGilk

McCarthy, L., Reas, C., & Fry, B. (2015). *Make: Getting Started with P5.js. [Electronic resource]* (1st edition.). Maker Media, Inc.

McCartney, J. (2002). Rethinking the Computer Music Language: Super Collider. *Computer Music Journal*, *26*(4), 61–68. https://www.jstor.org/stable/3681770

McLean, A., & Dean, R. T. (2018). *The Oxford handbook of algorithmic music*. Oxford University Press.

McLuhan, M. (1994). *Understanding Media: The Extensions of Man* (Reprint edition). The MIT Press.

Reas, C., & Fry, B. (2007). *Processing – A Programming Handbook for Visual Designers and Artists*. MIT Press.

Reas, C., & Fry, B. (2018). *A Modern Prometheus*. Processing Foundation. https://medium.com/processing-foundation/a-modern-prometheus-59aed94abe85

Rodgers, T. (2010). *Pink Noises: Women on Electronic Music and Sound* (Illustrated edition). Duke University Press Books.

Ronell, P. A. (1989). *The Telephone Book: Technology, Schizophrenia, Electric Speech*. University of Nebraska Press.

Shiffman, D. (2015). *Learning Processing: A Beginner's Guide to Programming Images, Animation, and Interaction* (2 edition). Morgan Kaufmann.

Shiffman, D. (2024). *The Nature of Code: Simulating Natural Systems with JavaScript*. NO STARCH.

Tarakajian, C. (2020a). *A P5.js Web Editor for All*. Processing Foundation. https://medium.com/processing-foundation/a-p5-js-web-editor-for-all-64aaa3f9d767

Tarakajian, C. (2020b). *Accessibility Improvements for the P5.js Web Editor*. Processing Foundation. https://medium.com/processing-foundation/accessibility-improvements-for-the-p5-js-web-editor-3d76b7c68c6d