

Opaque Technology and Contemporary Network Arts: Artistic and Technological Strategies

by Juan Parra Cancino

Introduction Vintage Materialities

Period performance technologies are commonly associated with instruments such as pianofortes, gut-stringed violins, and valveless trumpets, as well as other instruments from the early music movement. Yet vintage is not limited to centuries long past, nor does performance technology pertain solely to music. Historical technologies and experimental musical instruments confront us with issues of material reconstruction and performance practice/production.

In this context, my work focuses on the relationship between composers and the tools and techniques used in the electronic music studios of the 1950s, 60s, and 70s, highlighting the tension between creative intention and technical affordance. I focus on identifying those elements, and the performative and experimental actions conducted in the studio during the creative process (loop manipulation, filter operations), to inform performative renditions of these early “fixed” works.

In this translation from aural analysis to physical reenactment, from fixed to dynamic, I put

special emphasis on the design of the instrumental interface for a reimagined performance. The controls that enable recall of performative choices and articulate the negotiation with the limits of the tools at hand are what determine the physical resistance. Whether from a knob, a fader, a button, or a switch, it is this resistance that enables aesthetic effects (and affects) on the performative outcome. A further layer of experimentation between the historically informed and the current is manifested by the incorporation of network technology for the realization of some of these performances. This not only allows the addition of a layer of mediated agency, in a live context, that was only present in the recorded works; it also serves as a reminder that technological means, then and now, leave their sonic imprint even in aspects where they are meant to act as “transparent.”

Virtuosity in Electronic Music Performance

The performative nature of these experimental interpretations invites us to take a closer look at the performer of electronic music. Building on this foundation of historical materialities, it becomes clear that the role of the electronic music practitioner constitutes a hybrid set of skills, a complex interplay of compositional, performative, and techni-

cal affordances. Starting from the notion of the electronic music practitioner as adopter of this hybrid role, I have experimented with the practice of interpretation and performance with electronic media using different strategies (Parra Cancino, 2014). These strategies allow for an experimental approach to interpretation that moves beyond traditional reproduction, opening possibilities for new creative outcomes in performance.

Over the years I have developed three categories to frame these interpretative modes:

- **Gloss:** interpretation informed primarily by compositional insight, reappropriating creative factors to solve musical problems in performance.

- **Analogy:** interpretation grounded in performative skills, reinterpreting a work’s challenges to suit the electronic media used.

- **Simulation:** interpretation based on technical skills such as digital lutherie, reconstructing the technical features and constraints of original setups to preserve their creative friction.

Although useful for research and for the framing of tasks during the development of a project, it is evident that these strategies are often in flux. It is rare that a single aspect of the skill sets required for electronic music performance is sufficient to fully explore the potential of a musi-

cal work. They rather serve as points of intensity that can vary over the course of the process of creating a new experimental interpretation.

Developing a sensibility for navigating and “playing with” these different interpretative skills is what I call virtuosity in electronic music performance, an adjective that transcends its conventional use in traditional instrumental performance, which tends to focus on an analogue of athleticism.

The development of this hybrid performer also presents the challenge of finding a suitable repertoire that either demands or invites such hybrid expertise. Particularly, works that either explicitly involve electronics or allow space for creative electronic reinterpretation (Impett & Parra Cancino, 2020).

Network Technologies: Contemporary Tools and New Possibilities

As electronic music continues to evolve, so do the technologies that shape its performance. A natural extension of this exploration is the use of current network technologies, which introduce new forms of technological friction and creative opportunity. I have engaged with these technologies in two complementary ways: first, as updated tools for reconstructing and performing early electronic repertoire; and

second, as a medium for original works that highlight the aesthetic implications induced by network idiosyncrasies. This dual approach acknowledges how network technologies—through latency, glitches, and spatial distribution—become integral to the creative process. The following case studies exemplify how these contemporary tools reframe seminal works within a telematic context, revealing new dimensions of sonic and spatial complexity.

Case Study 1: On Stockhausen's *Solo(s)* — Realizing Timbre Complexity Through Telematic Performance

Karlheinz Stockhausen's *Solo* für Melodieinstrument und Rückkoppelung (1965/66) holds a pivotal place in electronic music history for bringing tape delay into live performance. Our rein-

terpretation, developed in collaboration with music technologist Jos Mulder, is entitled *Solo(s)*. It builds upon Stockhausen's original concept by leveraging telematics networks to expand the work's timbral and spatial dimensions. While the original setup involved physical tape delays and three separate technicians' roles, our telematics approach condensed these into a single performer operating a digital system enriched by remote collaborators. By introducing live contributions from networked musicians whose gestures are unseen and sonically transformed, we embrace the coloration and latency inherent to digital media as creative resources rather than flaws (Parra Cancino & Mulder, 2018). This telematics version extends Stockhausen's exploration of instability and risk, preserving the fragile interplay between control

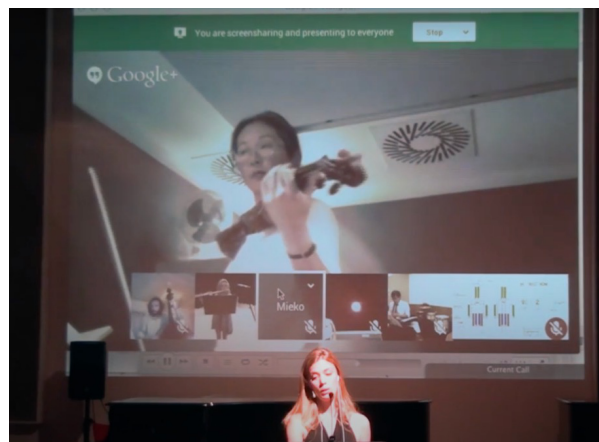


Figure 1. Still from the *Solo(s)* performance during the 2014 Re-search Festival of the Orpheus Institute, Ghent (BE). Performers: Elise Caluwaerts (voice, Ghent, BE), Seikyo Kuroda (shakuhachi, Tokyo, JP), Shoji Wataru (electronics, Tokyo, JP), Mieko Kanno (violin, Glasgow, UK), Brice Soniano (double bass, Vrads, DK), Kirsten Smith (flute, Perth, AU). Live mixing & diffusion by Juan Parra Cancino (Ghent, BE).

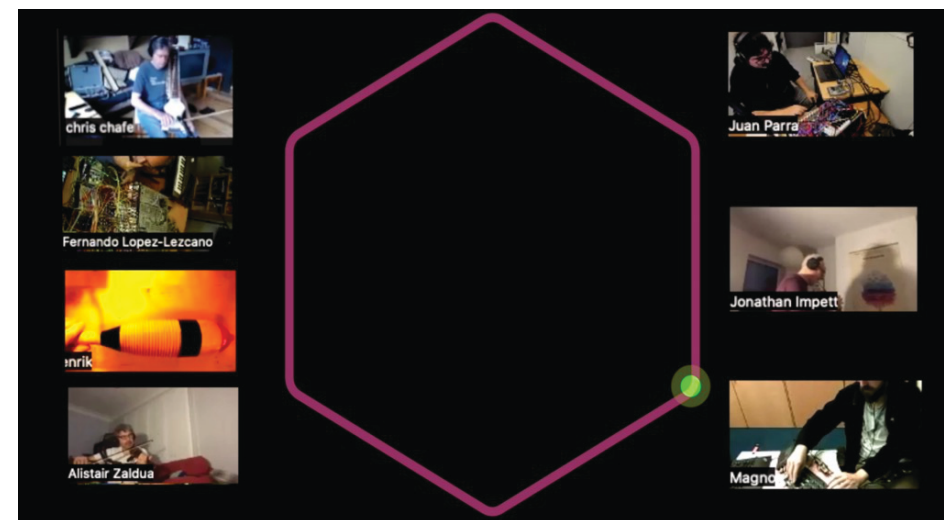


Figure 2. Still from *Second Structure*, NowNet Arts Conference (online), November 1, 2022. Performers: Magno Caliman (harmonica & synthesizer, Brussels, BE), Chris Chafe (dilruba, California, USA), Henrik von Coler (electronics, Berlin, DE), Jonathan Impett (trumpet & electronics, Norwich, UK), Fernando Lopez-Lezcano (modular synthesizer & electronics, California, USA), Juan Parra Cancino (modular synthesizer & network coordination, Ghent, BE), Simon Waters (bass guitar & electronics, Belfast, UK), Alistair Zaldua (e-violin, Manchester, UK).

and chance that defines *Solo*, while creating new sonic assemblages shaped by the network's unique artifacts.

Case Study 2: Rzewski's *Second Structure* — A Telematics Version

Complementing this exploration of historical works through network technologies offers an investigation into time, improvisation, and compositional thought within the ethos of *Musica Elettronica Viva* (MEV). Formed in

Rome in 1966 by, among others, Alvin Curran, Frederic Rzewski, and Richard Teitelbaum, MEV took inspiration from Tudor and Cage, using contact mics to amplify and expand the sonic palette of a variety of instruments and sounding objects. These were further expanded with a home-made synthesizer and one of the first Moog synthesizers in Europe. According to Alvin Curran, "In the name of the collectivity, the group abandoned both written scores and leadership and replaced them with improvi-



Figure 3. Still from *Artifacts of Not-Here*, NowNet Arts Conference (online), November 7, 2021. Performers: Magno Caliman (analog synthesizer, Brussels, BE), Daniela Fantechi (SuperCollider & piezo microphones, Florence, IT), Nicholas Brown (monochord & electronics, Dublin, IE), Jonathan Impett (trumpet, Ghent, BE), Juan Parra Cancino (electronics & network manipulation, Ghent, BE).

sation and critical listening” (Curran, 1989). MEV’s radical rejection of rigid performer-composer hierarchies and embrace of collective improvisation resonates with contemporary telematic performance practice (Rzewski & Verken, 1969).

Second Structure uses the grammatical concept of tenses to dissolve the boundaries between past, present, and future, enacting a temporal dialogue where memory and anticipation color each sound. Rzewski’s openness to electronic instruments anticipates the real-time transformations enabled by today’s com-

puter-extended instruments. Our telematics reinterpretation extends this by making relationships with time more flexible and explicit: looping, stretching, and reframing gestures are possible in ways that mirror and expand the piece’s original temporal architecture. Moreover, the telematics network adds a spatial dimension, mapping sound between near and remote locations, distributing the “present” across physical distances. This spatial-temporal reframing continues MEV’s spirit of technological exploration while revealing new layers of *Second Structure*’s imagination.

Case Study 3: *Artifacts of Not-Here* — Embracing Network Limitations as Aesthetic Material

Beyond reinterpreting historical works, current network technologies offer a fertile site for original creative investigation. The glitches, latency, and inconsistencies that arise from the technological limitations of telematic networks constitute a new form of artistic resistance—material obstacles that provoke new sonic gestures and aesthetic forms.

The Artifacts of Not-Here project embraces these limitations, treating them not as failures but as productive affects and novel sound objects in their own right. By foregrounding these technological frictions, we open a dialogue between past and present modes of electronic music-making, where constraints inspire invention. This perspective aligns with scholarship exploring the aesthetics of glitch and failure in digital media (Parra Cancino, 2022). The project’s collaborative networked performances demonstrate how these limitations shape the sonic identity of telematic music today, enriching the palette of artistic strategies available to performers and composers alike.

Conclusion

In retracing the lineage from early electronic music’s material and technological constraints to the expanded possibilities of today’s networked performances, this article has explored how technological resistance and interpretative virtuosity remain central to the artistic process. The interplay between compositional intention, performative spontaneity, and technical mediation—once bounded by analogue electronics and tape—has evolved into complex temporal and spatial dialogues enabled by telematics networks.

By revisiting the act of performance of works such as Stockhausen’s *Solo* and Rzewski’s *Second Structure* through the prism of contemporary technology, we illuminate not only the continuing relevance of these seminal pieces but also the new creative tensions emerging at the nexus of historical memory and digital innovation. These tensions provoke us to rethink notions of presence, virtuosity, and artistic agency in hybrid performance spaces. Ultimately, embracing both the affordances and limitations of current network technologies offers a broad space of potential for reimagining electronic music’s future, where glitches and delays become meaningful sonic artifacts rather than obstacles. The performer’s role continu-

ously adapts in response to evolving materialities.

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Media (Videos)

Stockhausen's Solo(s) performance, mixed and diffused live by Juan Parra Cancino during the 2014 Research Festival of the Orpheus Institute, Ghent, Belgium, October 2, 2014. <https://www.youtube.com/watch?v=SgYO4XutXKw> (last access October 10, 2025)

Rzewski's Second Structure telematic performance at NowNet Arts Conference (online), November 1, 2022. <https://youtu.be/5YYbEwUOcM0> (last access October 10, 2025)

Artifacts of Not-Here telematic performance at NowNet Arts Conference, November 7, 2021. <https://youtu.be/w271ddQZMd8> (last access October 10, 2025)

In-Game Concerts and Ludo-musical Performances: A Brief Historical Overview

by Karina Moritzen

The story of this research (or, dare I say, its lore) begins at an extreme moment of our collective experience in contemporary society; a point in time overflooded with confusion, uncertainty, fear, and at its ultimate stages, grief. Bruno Latour's (2005) insightful theoretical contributions through Actor-Network Theory provide us with the appropriate tools to better understand the changes in sociability taking place back then: this non-human element, the Covid-19 virus, whose origin is still to this point unknown, affected intensely the flow of a vast array of societies, forcing a large part of the global population into isolation in their own homes, which led to a reshaping of the socio-technical networks that reflected their connections to family, friends, music, video games, scenes, work, leisure, and many other aspects related to daily life.

It was also during this time that our online engagement severely increased, many of us desperate to replace the human connections and collective experiences that we were suddenly required to lack. There were various consequences to this, such as the heightening of economic trends

connected to video games, personal relationship dynamics, as well as the reaction by large social media platforms strongly personified by the rebranding of Facebook into Meta. A symbol of Mark Zuckerberg's high investment into the hype cycle of a supposed "metaverse" that was about to overtake every aspect of our lives, this rebrand failed to achieve its goals. The "metaverse" as it was advertised and parroted uncritically around mainstream media and sections of academia did not materialize. Gamers everywhere were left confused by the buzzword coming out of Silicon Valley which ignored the vast history of virtual worlds dating to the very early beginnings of the internet itself, a great part of it connected to gaming. In the words of Elder Scrolls Online creative director, Matt Firor, cited from an interview (Firor and Sinclair, 2024, GamesIndustry.biz):

"That was last year's buzzword, right? This year it's all about AI and nobody's talking about the metaverse anymore. Metaverses, or what I prefer to call virtual worlds, need to be online communities. There's no reason why Reddit couldn't be considered one; it's a text-based virtual world. My earliest games were text-based, with no graphics at all, and they were very much virtual worlds where