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Virtuality Will Save Us All
by Sebastian Berweck

Introduction. Virtuality as Promise and Problem

The idea that "virtuality will save us all" is both optimistic and ironic. It reflects a belief that digital technologies can protect artistic works from technological decay, but it also points to the contradictions of this belief. Virtualization is not simply a technical operation; it is also an aesthetic and conceptual shift. While it offers tools for preservation and reinterpretation, it can reduce artistic works to data, treating them as interchangeable "content." What is at stake is not only the longevity of works with electronics but also how their material, performative, and historical dimensions are reframed by digital systems.
The following text begins with an examination of virtualization as a preservation strategy, highlighting its technical limitations and the difficulties of maintaining older electronic works. It then turns to virtualization as a compositional and performative tool, focusing on key examples by Brigitta Muntendorf, Michael Beil, and Stefan Prins, before drawing conclusions about the artistic potential and the inherent instability of virtual environments.

The Archival Mirage: Virtualization as Preservation

Virtualization is frequently discussed as a strategy to prevent works with electronics from becoming unplayable due to technical obsolescence. On paper, virtual machines and emulations appear to be the perfect answer to the disappearance of hardware, storage media, and operating systems. But in practice, things are rarely that simple.

Connecting a Zip drive made by Iomega today is already a challenge. Physical connectors have changed drastically over the past 30 years, and 30 years ago means 1995 — which is not very long ago, especially when we consider that the music heard in classical concert halls often dates back several hundred years. Even if the old hardware is still available, the operating systems required to read the data may no longer exist, and software tools are often deprecated or locked behind license servers that have been offline for decades. The mere act of installing such software can require hours of research in archived newsgroups and 1980s listservs, searching for workarounds to copy protection schemes that were never designed for longevity.
During performances of older pieces, I often spend more time trying to restore and configure outdated software than rehearsing the actual music. The assumption that a work can be "saved" simply by transferring it into a virtual environment ignores the complexity of these systems. Virtualization does not remove obsolescence; it redefines it.

My work on the restauration of Bernard Parmegiani's *Stries* (1980) illustrates these challenges clearly (Berweck 2016; Mode Records 2021). The survival of such a piece depends on far more than stored files or emulated systems. Reconstructing *Stries* required a detailed understanding of the instruments, signal flow, and aesthetic intentions that shaped its original sound. Virtualization can only translate these aspects; it cannot fully preserve them.

The process creates an archival mirage: it suggests stability while digital ecosystems remain fragile. File formats change, operating systems become obsolete, and undocumented nuances disappear. Working on *Stries* demonstrated that the "virtual" is always partial — not preservation but interpretation. This is as much an aesthetic problem as a technical one, since it affects how we view these works as historical or living entities.

Lessons from the Reconstruction of Parmegiani's *Stries*

The reconstruction of Bernard Parmegiani's *Stries* (1980) provided concrete insights into the difficulties of preserving electronic works. The piece, written for tape and three analog synthesizers, is tied to specific instruments: an EMS Synthi AKS, a

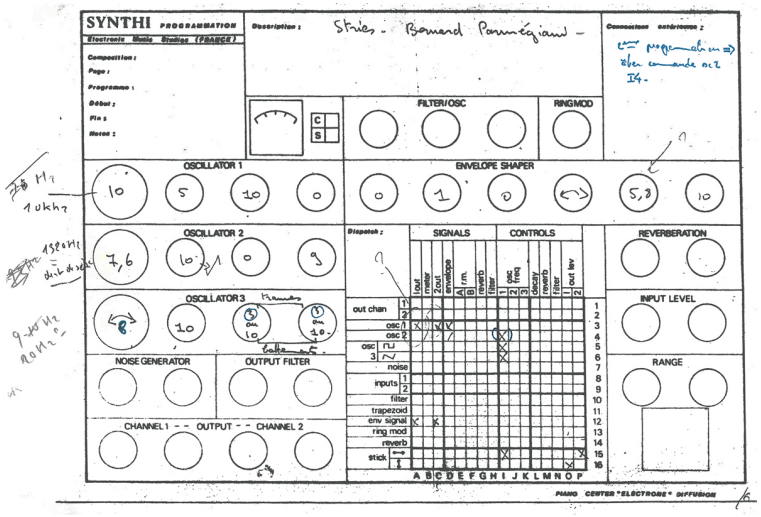

Figure 1. The original patch by Bernard Parmegiani for an EMS Synthi A

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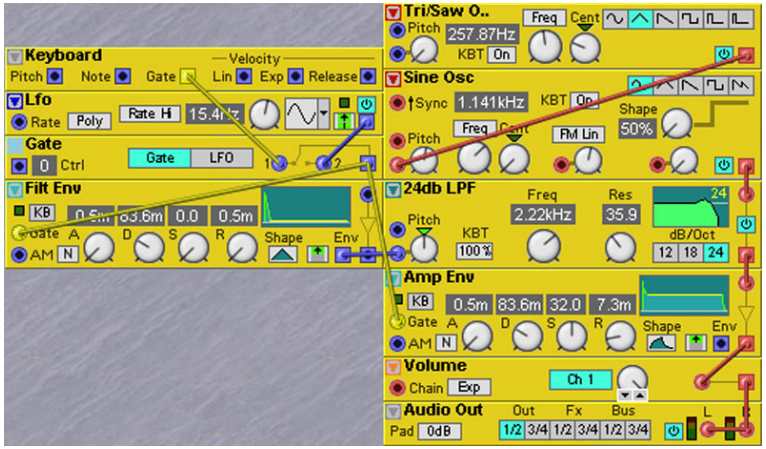

Figure 2. The transcription of the same patch for the virtual modular synthesizer Clavia Nord G2

Yamaha CS-40M, and a Roland System 100M Set D combined with the keyboard of the Roland System 100. These instruments are now museum objects, rare and costly, and each required technical restoration. Components such as capacitors degrade over time, and without maintenance the instruments are no longer functional.

From this work, four key observations emerged:

1. Impossible without the originals. The characteristic sounds of Stries cannot be reconstructed without reference to the original instruments. They serve as the only reliable point of comparison for timbre and dynamics.

2. Notation limitations. The score refers to parameters that are specific to these analog synthesizers — for instance, a marking of "3" on a filter knob gives no indication of the actual frequency (Parmegiani 1980). Karlheinz Stockhausen's Oktophonie faces a similar problem: conceived as a live performance rather than a fixed tape, it is now practically impossible to reproduce because the original software has vanished, leaving only ambiguous numerical references (Bernardini and Vidolin 2005).

3. Analog-to-digital transfer. Through careful measurement of filter curves, oscillator frequencies, and modulation depths, we were able to transfer the patches to a digital instrument (Nord Modular G2). The differences between analog and digital timbres were comparable to those between two violins, yet in performance the choice of loudspeakers, the room's acoustics, and the instruments themselves exerted a far greater influence on the sound than the subtle distinctions between the instruments.

4. Notation vs. archiving. The main difficulty was not archiving but notation. If the sound parameters had been described independently of the instrument models — for example in terms of absolute frequency or modulation depth — the reconstruction would have been far more straightforward.

Images 1 and 2 illustrate this translation process from analog to digital.

Virtualization as a Creative Tool: Brigitta Muntendorf, Michael Beil, Stefan Prins

If virtualization fails as a universal preservation method, it is nevertheless an important compositional resource. Composers such as Brigitta Muntendorf, Michael Beil, and Stefan Prins use digital layers — videos, samples, live electronics — not as archival backups but as integral parts of their works.

Brigitta Muntendorf – *Public Privacy #2*

Brigitta Muntendorf's *Public Privacy #2* (2013) juxtaposes the world of YouTube amateur pianists with the concert stage (sebseb3000 2014). The work projects videos of non-professional players performing at home — in living rooms, bedrooms, or practice spaces — alongside the live pianist. These performers open up their private spaces and their playing, exposing themselves to the public gaze and commentary. They are, in a sense, as brave and bold as the "Piano Hero" on stage, and the responses they receive in the comment sections are often as supportive and encouraging as the applause a piano virtuoso would receive in a concert hall. This creates an interesting tension with the cult of the classical soloist, who is celebrated like a gladiator battling with the instrument to wrest beauty from it and to emerge victorious. Muntendorf's work questions this narrative by aligning the virtuosity of amateurs — imperfect, intimate, authentic — with the heroic aura of classical performance.

Michael Beil – *Doppel*

Michael Beil's *Doppel* (2009) places the idea of duplication and mirroring at the center of both visual and musical structure (Beil 2012). The piece integrates live video and audio in such a way that the pianists' gestures are not only seen but also refracted, repeated, and distorted. A rising arm gesture,

Figure 3. A rising hand gesture in Michael Beil's *Doppel*

for example, is echoed by an ascending scale and mirrored on screen, blurring the boundary between the real performance and its virtual double.
The virtual layer is not subordinate to the live action; it functions as an equal and sometimes disruptive counterpart.
Beil employs temporal manipulations — speeding up, reversing, and looping — reminiscent of the time-bending effects of Christopher Nolan's *Inception* (2010). The result is an unstable field of perception, where the audience constantly negotiates what is live and what is mediated.
This deliberate interplay raises questions about presence, authenticity, and agency. The performers and their images are locked in a dialogue that destabilizes the conventional hierarchy of stage and screen. The virtual projection is not simply a supplement to the music but an active, performative element that reveals how mediated images can acquire the same weight as live sound.

Stefan Prins – *Piano Hero #1*
Stefan Prins' *Piano Hero #1* (2011) replaces the traditional piano with a MIDI controller that triggers video samples of pianist Frederik Croene playing his piano démécanisé — a deconstructed grand piano stripped of its mechanism.

The live performer operates the video as though performing a kind of virtual puppetry, controlling both the sounds and the visual fragments of Croene's recorded performance.
Yet this illusion is broken by the fact that the performer is physically present on stage, his gestures and body exposed to the audience's gaze. The piece emphasizes this tension: the performer is simultaneously manipulating a virtual double and being observed as himself, shifting between operator and performer.
Midway through the piece, this relationship is complicated further when a live video camera captures the performer from behind, including the first rows of the audience. These images are projected onto the screen, effectively placing the listeners themselves into a performative role. The audience, who until then were observers, suddenly become part of the staged visual layer, their presence mirrored and mediated like that of the performer.
Although the software for the piece is not overly complex — the Max patch essentially functions as an audio and video sample player mapped to the middle register of the keyboard, with controls for sample playback speed in the upper register and two commands for the camera in the lowest keys — it still

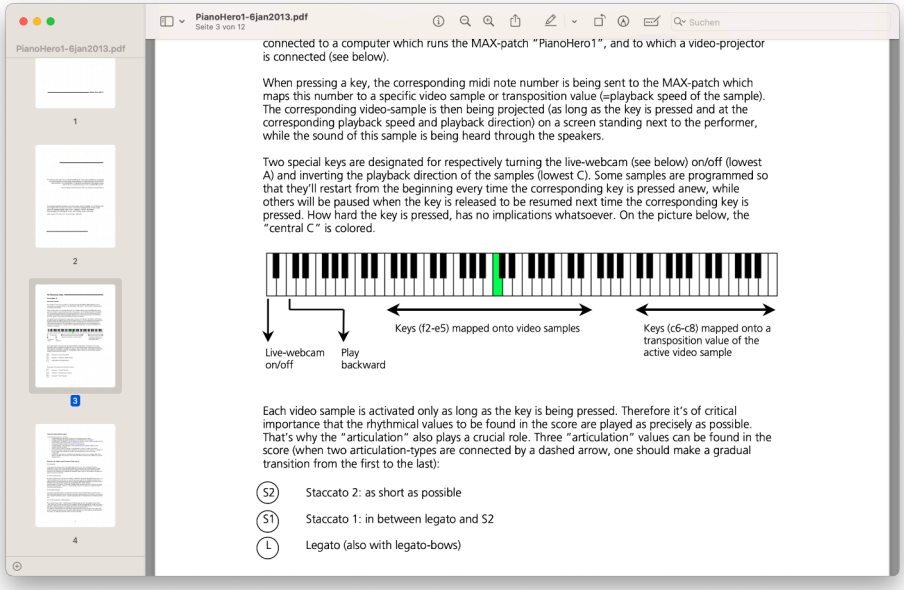

Figure 4. The MIDI keyboard assignment for Stefan Prins' *piano hero #1*

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falls into the same trap as older electronic works. Prins works closely with a programmer to maintain the technical setup. The performers regularly report problems to Prins, who then communicates these issues to the programmer. The programmer sends back a new version of the patch, which the performer tries out. This is an iterative process that never works the first time around. Prins must revisit the Max patch almost every year: changes in operating systems, audio drivers, and hardware layers alter the behavior of the work. An OS update might introduce latency, a driver change might disrupt routing, and new hardware may break parts of the patch architecture. The computer is not a static instrument; it is a fluid environment that evolves continuously, often requiring adjustments to keep the piece performable.

Conclusion

Virtuality will not save us all, at least not in the sense of securing the future of electronic music. It cannot guarantee that a work will remain playable in 10, 20, or 50 years. Older works, especially those built on obsolete systems, require substantial effort, technical expertise, and interpretation to remain performable. The solution to the problem of preserving old pieces lies not in the archives or in "permafrosting" old works within virtual spaces, but in a notation that allows their revival and reinterpretation — similar to the way we approach the works of Beethoven or, within our own field, contemporary music written for acoustic instruments.

However, as a creative resource, virtuality opens possibilities that extend beyond preservation. It enables composers to work with the interplay between live performance, mediated presence, and technological transformation. The challenge is to use virtualization critically and artistically, while acknowledging its limitations as a preservation strategy.

Music

Brigitta Muntendorf (2013), *public privacy #2* (premiere), S. Berweck: piano
Permalink:
http://mediathek.slub-dresden.de/vid90004388.html

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Media

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