

Dynamic interdependence in a hybrid configuration using Spatial Sampler XR

by Greg Beller

In the context of contemporary explorations into hybrid and extended realities in performance art, The Synekine Project investigates how immersive technologies such as VR and AR can reshape the relationships between sound, movement, and space. This is particularly compelling as artists seek new modes of presence and interaction across physical and virtual domains, enabling innovative performance ecosystems that challenge conventional notions of liveness, embodiment, and authorship.

The Synekine Project investigates the artistic potential of an extended musical performance, where sound, image, and movement interact within a hybrid environment—physical, digital, and networked. Through real-time interactive systems, the project challenges conventional notions of stage presence, enabling performers and audiences to be physically or virtually distributed. By reimagining the relationship between bodily gesture, sonic production, and visual perception in a mediated space, The Synekine Project offers a concrete artistic response to the ongoing transformation of musical performance in the digital age. It engages with issues of

spatial fragmentation, shifting performer–audience roles, and expanded reception modes. **SpatialSamplerXR** is an extension of the instrument series of the Synekine Project. In the same way that a sampler is an empty keyboard that is filled with sounds, Spatial Sampler XR uses gesture capture to transform the surrounding physical space into a key zone for indexing, placing and replaying samples. With Spatial Sampler XR, the musician spreads sound around him/her through gesture, creating a spatialized and interactive sound scene. Movement links time (sound) and space. This makes Spatial Sampler XR suitable for movement artists as well, and for various applications.

The **Air Sampling series** questions the notion of stage presence in contexts where performers and audiences may be physically or virtually distributed. A key element is the real-time recording and transformation of instrumental performance, introducing a layer of virtualization at the very core of the act of performance. The sound, produced in the here and now, is captured, modulated, projected, or replayed instantly—creating a temporal (present/trace), spatial (localized/dislocated), and perceptual (de-linearized cause/effect) stratification. This process renders the performance inherently hybrid, blending

physical immediacy with mediated construction.

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explores the tension and interplay between physical and virtual presence through a live improvisation involving two performers and a VR headset. Eunice Martins, plays a prepared piano, generating a rich palette of acoustic textures. Greg Beller, equipped with a virtual reality headset and motion controllers, captures and samples these sounds in real time, placing them within a three-dimensional virtual space using the Spatial-SamplerXR. As the performance unfolds, a formerly empty sampler becomes populated with sonic fragments, constructing a virtual instrument that evolves live on stage.

In its hybrid configuration, The Synekine Project destabilizes traditional models of musical performance by staging a dialogue between physical and virtual agencies. Through the real-time sampling of a single instrument, immersive virtual environments, and live spatial transformations, it raises fundamental questions about co-presence, embodiment, and authorship. What emerges is not merely a coexistence of real and virtual realms, but a dynamic in-



Figure 1. Still from the performance at the Symposium "(Virtual) Presence? Musical performances in hybrid spaces", July 17, 2024 (Berlin, GER). Performer: Greg Beller (XR).

stantly reshaped across temporal and spatial disjunctions. The result is a performative ecosystem in which composition and improvisation, liveness and mediation, instrument and performer all merge into a fluid continuum, offering a critical and artistic response to the evolving conditions of music-making in a networked, post-physical era.

This performative ecosystem develops as performances with different musicians unfold, in a hybrid space of electronic composition based on virtual physicality. Thus, from spatial sampling to spatially located media, the introduction of virtual physical actuators enables the construction of sound sequences based on gestural interaction.