



May 2025

www.avinteractive.com

Markets: Audiences demand more from their live events **20**

AV Essentials: AI tackles your data woes with ease **43**

Buying Advice: Projectors - the latest innovations **54**

SOUND MAGIC

Working with spatial audio

YAMAHA

SUBSCRIBE FOR FREE



INNOVATION /// BUSINESS /// CREATIVITY

AUDIO FOR THE VISUALLY INCLINED

Southbank Centre's *Concrete Voids* project launched its inaugural commissions to a packed house at the Queen Elizabeth Hall last month with everyone, including system creator, and senior sound engineer, Tony Birch intrigued as to how it would sound.

Clive Couldwell finds out more.

Dictated by the venue's voids or negative spaces, *Concrete Voids* serves as an experimental exploration into how we perceive sound in space, with the venue itself acting as a 3D instrument.

Opening night performances featured viola da gamba player, Liam Byrne and fiddle player, Cleek Schrey, followed by a performance by composer and cellist, Peter Gregson with Brett Cox and the Aurora Orchestra. Both performances used the form of the building to bring the audience inside the music or build multi-dimensional soundscapes in realtime.

The theme of utilising the negative space seemed to extend as these performances had no visual support in terms of LED screens or projected surfaces. As the concrete voids supported the audio, so the lack of visual cues – upon which we've come to rely so heavily – provided its own commentary as to what we expect, and how we usually experience our entertainment.

Filling that void were the extraordinarily clear audio clues provided by the movement of the spatial audio around the seated audience. This movement and spatialisation was built directly into each performance with control fully in the hands of the creators.

The discovery of TiMax panLab was a keystone moment in the project, moving the amplified Voids from an interesting experiment to an audio system that could be easily and visually controlled, by

anyone with any level of experience – even Tony Birch's nine-year-old son could translate what he wanted to hear into an audio path (drawn in TiMax panLab).

Project beginnings

The idea for the project that grew into *Concrete Voids* was sparked during the pandemic, through the venue's period of darkness when to make productive use of the closure the air circulation system was refurbished.

It was at this point that Birch came face-to-face with the hidden voids that cocoon the auditorium and add to its auditory personality.

Inspired by the experimental composer Pauline Oliveros – who conceived the 'deep listening' improvisatory approach to music, the sound engineer was compelled to explore the space through sound.

Having initially, and with great success, run the recordings of live sessions performed in the Queen Elizabeth Halls through the reverberant voids to add a deeper resonance to the performances, Birch surmised: "That's not really of any use to society." Leading his natural curiosity towards: "How about we turn the signal on its head? How about we replace those microphones, make the signal go the other way, and what happens if we put the loudspeakers in the space?"



"The way I would rationalise it is that it's complex in the way that a piano is complex. No one talks about the mechanics of a piano, they just listen to the music. And we weren't ever talking about the cleverness that went into this new audio tool, it just felt like another thing we could do."

Peter Gregson
Composor

PROJECTS / CASE STUDY



Tony Birch at the mixing console

The voids above the stage at Queen Elizabeth Hall.



Cleek Schrey playing a piano wire stretched across the stage.



ALL PHOTOS: PETE WOODHEAD

Typically radical, Birch started to install repurposed speakers into the 42 overhead vents and six deep chambers beneath the seats that had recently been vacated of ducting. The positioning of the vents ensured that none of the loudspeakers projected sound directly at the audience.

Instead of forcing the space to behave like a traditional concert hall, Birch let the architecture shape the sound organically. The result was a living, breathing soundscape - one that shifted and evolved based on where the listener was seated.

The sticking point of the system - which in the end included over 80 loudspeakers meticulously positioned and largely custom-designed by Birch - was how could it be controlled. Spatialising the audio in such a complex environment required a level of precision that existing tools didn't easily provide.

Realtime control

The last piece of the puzzle for Birch was the discovery of panLab. In the early stages of its development, the software's creator, Dan Higgott, shared a social media post showcasing his experiments with spatial audio visualisation control for mixing console management.

The notion of controlling hardware already

“The brilliant thing about Dan’s software is that it doesn’t mind where everything is positioned. It’s not locked into a formal setup where the assets must be in a certain position to work. It works with what is there and what you ask of it.”

**Tony Birch
System Creator**

available, as opposed to investing in a complete spatial audio system that wasn't needed for the auditorium, appealed to Birch and so began the symbiotic journey of project and product, between

Birch and Dan Higgott, now hardware and software development manager for TiMax.

The software allowed Birch to control the movement of sound throughout the hall with extraordinary accuracy. Integrated into the Yamaha QL5 console, it enabled a seamless, realtime mix that placed sound sources above, below, and all around the audience.

What once seemed like an impossible challenge - creating a dynamic, multi-layered audio experience in an anti-acoustic space - suddenly became achievable.

Expands Birch: "Although I was already aware of Dan's software, I was looking at my project from the perspective of it being controlled live in realtime rather than as a playback piece. As soon as he built it into a console it made sense for me.

"The brilliant thing about Dan's software is that it doesn't mind where everything is positioned. It's not locked into a formal setup where the assets must be in a certain position to work. It works with what is there and what you ask of it."

For panLab to work completely for Birch, the sound engineer asked if the visualisation screen could match and reflect the actual three-dimensional space of the auditorium. "It was a big thing for me. The whole project is above you, below you



Viola da gamba player, Liam Byrne (left) and fiddler, Cleek Schrey (right) building multi-dimensional soundscapes in realtime.



Cellist, Peter Gregson

and to the sides so I needed to control sound in 3D. A week later Dan came back with a 3D version. It's so clever, yet unbelievably simple," explains Birch.

In 3D, Birch has designed a custom spatial environment of the Queen Elizabeth Hall auditorium by layering multiple 'zones' – or self-contained panners – on top of each other to create a completely bespoke spatial environment.

Based on the output of TiMax panLab's bespoke spatial algorithm, auxiliary and matrix send levels on the venue's Yamaha QL5 console activate the audio through the loudspeakers.

Yet despite the clever complexity beneath the surface of TiMax panLab, simplicity has remained a key driver.

Software set up in five minutes

The software can be set up within five minutes, using existing audio equipment, including QLab, mixing consoles and TiMax SoundHub, to produce spatialised audio.

Advanced spatial audio setups often come with a steep learning curve, but for this project success hinged on making the system artist-friendly. Birch wanted musicians and sound designers to engage with the installation without having to navigate complex programming. By integrating simple MIDI

controls, he ensured that artists could intuitively manipulate sound placement with minimal effort.

Peter Gregson described the ease of working with TiMax panLab as "... a natural extension of what we do." He explained: "The way I would rationalise it is that it's complex in the way that a piano is complex. No one talks about the mechanics of a piano, they just listen to the music. And we weren't ever talking about the cleverness that went into this new audio tool, it just felt like another thing we could do."

By seamlessly integrating with existing infrastructure, the project demonstrates that

cutting-edge AV doesn't have to mean a complete overhaul of a space. Concrete Voids demonstrates how an imaginative approach can yield extraordinary results and by pushing the boundaries of immersive audio and highlighting the way sound behaves in a venue like Queen Elizabeth Hall – they've changed the way we perceive.

For those more visually led, the next commission for Concrete Voids at Southbank Centre explores the unique interplay between music, visuals and augmented reality, in an audio visual performance conceived by multi-disciplinary artist, Jack Warne-GAUNT. ■



Composer and cellist Peter Gregson performing new work for cello, synthesisers and string ensemble, developed in collaboration with Brett Cox and the Aurora Orchestra.