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NEW WAYS
OF THINKING



Spatial Audio: where are we now?

Contribution from Gareth Fry, Carolyn Downing, Gareth Owen, Adrienne Quartly, Matt Peplow, Seb Frost, Luke Swaffield.

Introduction

Spatial Audio has been a marketing buzzword in theatre sound for the last few years, but how has it been to work with? Is it the future of theatre sound or just a gimmick? We asked some ASDP members about their experiences.

What do you think of Spatial Audio?

Gareth Owen Spatial Audio is definitely not a gimmick. The first show that used d&b Soundscape on in the West End won an Olivier Award for Sound Design, and the second show that used it on on Broadway won a Tony for Sound Design. Audience members can hear the benefits, even if they can't quantify them.

Carolyn Downing It's a very powerful tool that can be part of a Sound Designer's toolbox; it's another mode of expression, another way of enhancing or even motivating storytelling. I've always been interested in how audiences experience sound in a space, and object-based mixing

gives us ever more fluid ways to explore this relationship.

What are the benefits? What has it allowed you to do?

Adrienne Quartly For *Playboy of the Western World*, the musical score had stems that sometimes clashed with the vocal frequencies. Object-based mixing enabled me to separate out those instruments and place them further away from the actors' voices onstage, reducing the need to carve out frequencies and reduce the music volume.

We were also able to attach an object to the understudy actor covering the violin track, enabling us to get a realistic sound that appeared to come from the actor onstage, without them playing the violin! Other sound effects were positioned to their physical location onstage in conjunction with a point source speaker, which enabled us to reduce the amount of volume near the actors, but still get enough

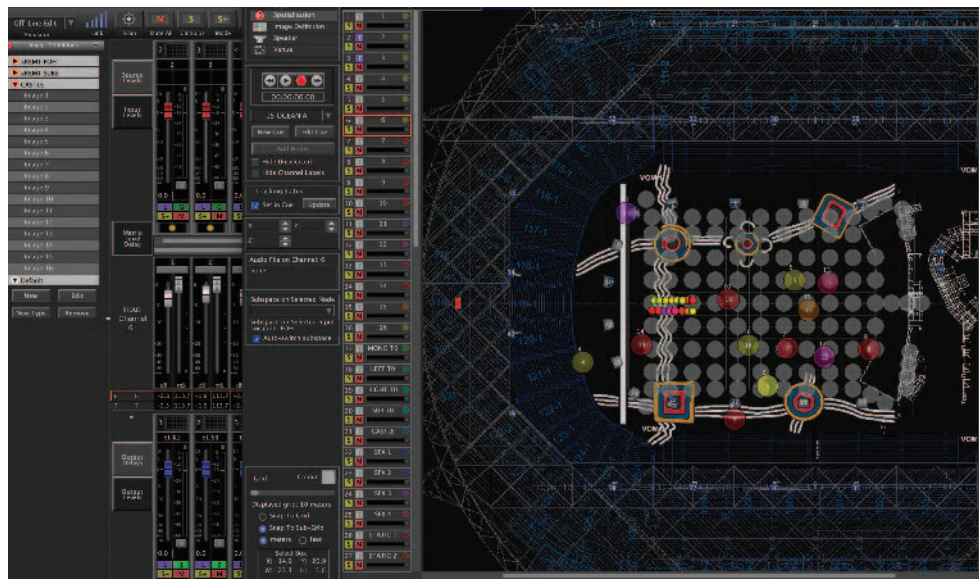


By Helen Atkinson
(she/her)

signal to the audience.

Matt Peplow In the early days of d&b Soundscape I took a multi-track of a show that I knew really well into a demo room, and by spreading the band objects apart, I was hearing things in the orchestration that I'd never heard before. That's where the excitement comes from for me. With stereo systems, you're constantly crunching and dynamically compressing everything to make space for every instrument. With Spatial Audio, you can allow things to breathe, and a lot of that compression and EQ'ing can be lifted.

Seb Frost With a traditional system, the speakers are often on the sides of the proscenium, which can obscure sight lines, particularly in the UK where so many theatres have narrow prosceniums. Having a horizontal array across the top of the proscenium creates better sight lines for the audience. Whilst a few venues on the number one UK touring circuit and in the



West End don't have enough rigging points for a horizontal array, there is still a benefit in using spatialised audio across the front fills and delay speakers.

Gareth Owen One of the key demands of *Paddington* is to make the audience believe Paddington's voice comes from the bear, rather than from an off-stage vocal booth.

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This would be far more difficult and time-consuming to achieve without tracking and object-based system design. In *Mamma Mia! The Party*, the cast and audience all occupy the same space with the goal being to have the sound come from the performers. I'd be hard-pushed to make this work without Spatial Audio.

Carolyn Downing It felt key to use d&b Soundscape on the RSC's *BFG*. It was exciting to have a system that could be very precise with localisation, as the sound is an integral part of the puppetry and needs to be subtle, nuanced, and transparent.

Luke Swaffield The first time I used a spatial system, it was amazing how quickly I

adapted to use space as another tool, often jumping to alter an object's position or to add more distance to source rather than grabbing the fader.

Seb Frost On the Edinburgh tattoo we have used TiMax since the early days when originally everything was in one object. In the days where they weren't even called objects, and the ability to move that object around made a huge difference. It was an even greater difference when we went to full object-based audio in later years, and with the advent of tracking, where I could put trackers on everybody, we could have dozens of objects.

What have the different spatial audio systems enabled?

Adrienne Quartly On *Gunpowder Immersive*, we had two rooms where the sound design was leading the story, and we used ambisonic workflows with different encoders such as SPARTA AmbiEnc, DearVR, Rapture 3D, and used various impulse responses to create as much dramatic realism as possible with not necessarily optimal speaker positions.

Carolyn Downing I've used L-Acoustics L-ISA in my work with Marshmallow Laser

Feast. I enjoyed the interface and the creative freedom that it gave me; I felt like I was able to play the sound system, almost like a musical instrument. As well as QLab, I am also enjoying exploring object-based mixing using game audio tools like WWise, Unity, and Unreal, especially for environments and events that are theatre-adjacent as they give me lots of creative storytelling potential.

Matt Peplow *Kiss of the Spider Woman* is the first time I've actually ventured into the object-panning element of QLab. Surround sound is integral to the show, as we wanted it to be cinematic and immersive. We went down different routes of whether to use a spatial audio engine, but for this show, QLab could do almost everything we needed, and it worked really well. We used a Fourier transform engine for some reverbs, and very quickly, we had a setup that was very powerful and effective. It's almost imperceptible for the audience, but it draws them into the show.

Gareth Fry For *Grease: The Immersive Movie Musical*, we have eight or so main stages spread out across a large warehouse space. The band may be in one place, and the actors another, with the audience

between them. TiMax allows a lot of manual tweaking, compared to the other systems, which meant I could optimise for each scene in a very difficult space. The software is really mature, and I know I can get a TiMax system up and running from scratch in about 30 minutes.

Luke Swaffield For *Chat Noir: The Lost Estate* we had multiple performance areas in the round, in an acoustically challenging space. We wanted the Sound to be discreet so the whole show felt as close to the era as possible whilst still meeting the expectations of a modern day audience regarding sound reinforcement. The show is a cabaret, so there is a lot of devising and experimentation, which meant I needed to be able to work and respond quickly. For that reason using Yamaha Sound XR in conjunction with DME7/DM7, with all the flexibility that allows, meant we could respond to creativity in the space without having to say 'no'.

Seb Frost Using Atlas in conjunction with a Spatial Audio engine can dramatically speed up the programming process, and provides a much-enhanced user experience that pays dividends during the production period.

What are the drawbacks? Do you use it on every show?

Seb Frost I avoid using Spatial Audio on anything that's really quick or anything that doesn't have much money. Often, the amount of time is more of a factor than budget.

Matt Peploe Adding Spatial Audio means you're adding DSP engines, amplifiers, speakers, weight to trussing, and, most importantly, time. To make it work well, you need to put a lot of time into it, and you need to have an associate who can programme, and make sure trackers are working correctly – it's a full-time job.

Gareth Fry Some shows warrant it more than others. A play in a narrow theatre where the actors are blocked to be never more than a few metres from downstage centre has little to gain from being spatialised.

Carolyn Downing I've always loved the process of tuning a system, and I'm wary that it could take that away: the ability to shape a sound system and an environment not only for practical needs but also to one's unique taste.

Gareth Owen Some shows work better in

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Spatial Audio than others. *Come From Away* works really well: the object mixing allows for more spread, width, and better definition. My more delicate orchestral shows live and breathe better in this format too. *Bat Out of Hell* works much better as a big proscenium rock and roll system. Perhaps when we hear an orchestra, we expect it to seem like each sound is coming from each instrument; but we are so used to hearing rock and pop in stereo that Spatial Audio can seem somehow out of place on rock shows. That said, MJ is far superior as a Spatial Audio version.

Gareth Fry It can be a big conceptual leap away from how we've traditionally mixed music, and it's important to ensure the music department is onside with working in

The Nederlander Theatre in Chicago set up for *Harry Potter and the Cursed Child*.



this way too. Most people are excited by it, but for some it can be a hard adjustment.

Luke Swaffield I find myself leaning towards using some form of spatial audio, especially when it comes to playback sources. Using the spatial audio in QLab or software such

as Timax panLab has become the norm for me and my workflow as it allows me to think visually. Regarding Live Spatial Audio, not every project requires it, it very much depends on what I as the Sound Designer am trying to do to tell the story of the show.

Do you use tracking systems?

Seb Frost Adding a tracking system to an spatial audio system is the way to go. It adds extra cost, although you can sometimes share that cost amongst other departments. Even if I can't put trackers on everybody – I'll use them on the principals and the chorus blocking is programmed using cues.

Matt Peplow There are shows that tracking is really beneficial for helping to keep the show in time and the vocals locked in. When tracking works, it works well. When it doesn't work, it causes difficulties and distractions for the audience. This is usually as a result of not enough time or resources to make it work effectively. I am always careful to ensure I can do it justice and that the show doesn't suffer elsewhere due to the additional resources required.

Luke Swaffield *Chat Noir* was my first foray in trackers. We would not have had the budget to afford them but they were already being used in the lighting department as an alternative to follow spots. It was a very quick process to collaborate with the lighting programmer and 'plug in' to their positioning data on OSC and have Sound XR respond. It

allowed the cabaret performers freedom to work the audience, without having to have set blocking.

Gareth Fry *Harry Potter and the Cursed Child* has about 35 characters and a large revolve. Plotting that actor blocking using a traditional delay matrix and desk cues would have taken weeks. With tracking and Spatial Audio, we could fully support those artistic choices with no detriment to the sound quality.

Carolyn Downing Trackers and object-based audio provided a workflow that enabled me to stay 'in the room' with the director and the other creative collaborators, to remain a vital part of the creative conversation and be available to be responsive as the storytelling evolved.

What have you discovered from your experiences with spatial audio?

Seb Frost I've used d&b Soundscape for a few tours, and whilst it requires a huge amount of preparation, it makes the setup on site a lot quicker. To make it work, you need accurate plans of the theatre to put into ArrayCalc and some planning. You tour with more amplifiers and cable, but overall, it can reduce the system tuning and setup time.

Gareth Fry A Spatial Audio system needs a higher density of delay speakers than a conventional system. The whole premise of spatialisation is that any member of the audience must hear sound from at least two speakers to be able to detect directional information. Where you could previously cover the back rows with a line of eight speakers, now you probably need more like twelve.

Will you use Spatial Audio in the future?

Gareth Owen We'll only spec a spatial audio system if we have the resources to make it work which is a long way from being a given. As a general rule we only use it on about half of our Broadway and West End shows, around a quarter of our international shows, and not at all on our touring shows.

Seb Frost It will become the new normal for playback of recorded sound, especially with the introduction of Spatial Audio into QLab. I do consider using it on every show now. It's less a question of if, but what level of object-based application will I use.

Matt Peplow I have opted not to do much object-based mixing in my own designs, primarily to prioritise the budget elsewhere,

or not having the time or personnel to do it justice. But I often aim to make a 3D immersive experience for the audience using surround sound effects and atmos.

Carolyn Downing I think it will become an integral part of system design as we go forward, though it is very much budget & resources dependent.

Luke Swaffield 100% it's always a consideration on every project now. For me, it just depends on what the right tool is for each particular project.

Adrienne Quartly To me, this is a new way of mixing. These techniques will soon be part of my everyday toolkit; it's just a question of budget. I believe it gives you a new, fun way of being creative. ●