

What is sound spaces?

It all started with an idea that I got when I first heard Auro-3D and Dolby Atmos at a demo.

I was stunned by the impact it had on me, being surrounded by full range speakers able to deliver reasonably high sound levels.

In film, however, most surround sounds are not recorded in true surround stereo, but are made by combining two track stereo recordings and mono sounds, panned out in the surround channels. It's very much like the way stereo pop recordings are made, by panning out mono sounds to create an artificial stereo field. This works fine as long as you're listening in the "sweet spot". As soon as you start moving sideways, the stereo image moves with you, and if you move closer to the speakers, or away from them, the stereo image widens or narrows.

The same problem occurs with surround sound in a cinema. The spatial effect only really works if you're sitting in the middle of the theatre.

How can I create a large consistent stereo sound field?

I would like to allow every listener to share the same sonic experience, and even to move within the sound space.

So I tried another method, one that the pioneers of stereo, among others Alan Blumlein had tried. I record my soundscapes with eight omnidirectional microphones spaced at 4 meters in two rows of four.

To reproduce the recording I play it back through eight omnidirectional speakers arranged in precisely the same pattern.

The idea behind this is to maintain the phase relations from the recording, thus creating a more consistent stereo field.

Technical challenges

To record 8 tracks of sound with omnidirectional microphones is no big deal today. I use a ZOOM F8 and eight Oktava MK12 mikes.

An omnidirectional loudspeaker however is a more complicated issue. I consulted Max Edkvist, a technical wizard at our university, and he designed and built these speakers for me, after trying a few different designs.

Each speaker cluster is made up from 6 sealed cubes, each containing a Monacor SP4/60 PRO 5" wide range driver.

There's one Monacore IPA-25D amplifier for each driver, thus enabling us full control over how much sound is radiated in to reflective surfaces close to the speakers.