

Conference

- Innovation In Music 2025
- New Beginnings: From Tabula Rasa to Rip It Up And Start Again
- 20-22 June, 2025 Bath Spa University, Bath, UK
- Link to conference: <https://www.inmusicconference.com/inmusic25>

Title

Composing with the IKO Loudspeaker: Altering the relationship between sound, space, and listener

Abstract

In conventional listening, reflections are 'controlled out' of spaces. Concert halls, performances venues and electroacoustic spaces which house large loudspeaker arrays, or recording studios which are precision-designed to be acoustically optimised for control, all aim at an 'ideal' sound which forms the pretext for the intrinsic architectural properties of a space, and the place of listeners. Such exactitude directs us toward an abstract neutrality in the relationship between space and sound, as well as uniformity in listening. Space, and the mechanisms of reproduction (the loudspeakers) are ignored, not present. The vacuum created by their absence separates listener, technologies and space. Only the work is valued, as if it exists autonomously. With the IKO loudspeaker, space cannot be ignored.

The IKO loudspeaker (a 20-faced loudspeaker using higher order ambisonics to create immersive 360 degree sound) answers previous calls to "...encourage and open up spaces for novel, diverse and as yet unforeseen articulations between subject positions and technological assemblages in digital music and sound art"[1].

The IKO offers an 'inside-out' system, in contrast to the customary 'outside-in' multichannel speaker systems (such as BEAST, ZKM, Sonic Lab at SARC or the Acousmonium). This reversal fundamentally alters the relationship between sound, space, and listener. Evocatively, the IKO's beams activate the spatial properties of the environment, and bring to life the materiality of space, in relation to the materiality of sound and listening bodies.

Creative processes are altered because the IKO requires space to be treated as a compositional parameter. This means that the physical environment (place) becomes part of the creator's materials, allowing for a listening journey which unfolds in space.

This paper will explore current methods and insights into composing with the IKO loudspeaker. It will examine compositional techniques involving beamforming and beamsteering technologies, the use of the 64-channel eigenmike and IKO loudspeaker for sampling physical spaces, and spatial feature extraction. Additionally, the paper will address broader considerations for performance and audience presentation.