



## **SENNHEISER AMBEO VR MIC AND MKH SERIES MICROPHONES CAPTURE ‘SYMPHONY FOR A BROKEN ORCHESTRA’ IN IMMERSIVE 3D AUDIO**

**Anaheim/Philadelphia, PA – January 25, 2018 – Pulitzer-winning composer David Lang’s “Symphony for a Broken Orchestra” is an exciting new orchestral work featuring unconventional instrumentation that’s championing the cause of music in Philadelphia public schools. Utilizing the unique sounds of hundreds of damaged instruments sourced from throughout the Philadelphia public school district, the piece was commissioned by Temple Contemporary with a grant from Pew Charitable trusts to draw attention to the plight of these instruments and raise funds for their repair. To capture this unique musical experience, Sennheiser microphones were used to record the two performances in immersive 3D audio.**



David Lang’s “Symphony for a Broken Orchestra” was composed for an ensemble of 400 professional and student musicians to perform on damaged instruments owned by Philadelphia public schools. The performances, which were captured in immersive 3D audio on Sennheiser microphones, hope to raise awareness and raise funds for the repair of the instruments used.

Arun Pandian and Devin Greenwood, co-producers, engineers and mixers, collaborated with audio specialist Sennheiser for the recording. Over twenty Sennheiser microphones, including the dual-channel MKH 800 TWIN and the AMBEO VR Mic, were used to record the two nights of performances at 23<sup>rd</sup> St. Armory in Philadelphia in immersive 3D audio.

### **The ‘tools of the trade’ for immersive audio**

Both Pandian and Greenwood are long-time producers who have worked extensively with Sennheiser microphones throughout their careers. Pandian, who has been studying immersive and spatial audio as part of his studies for a master’s in Tonmeister Studies at New York University, immediately recognized the potential for 3D audio capture when brought aboard the project. “The setup was inherently immersive, with the conductor in the center, the



orchestra surrounding him on the perimeter, and the audience sandwiched in between,” he said. “I realized it was a perfect opportunity for 3D.”

Pandian and Greenwood knew they would need many high-quality microphones to capture every nuance of the performances by the 400 student, amateur, and professional musicians. Ten MKH 800 microphones and another ten MKH 8040 cardioid microphones were supplied via Sennheiser’s David Missall: “There were ten ensembles surrounding the audience, so we utilized one of each of the microphone types in an MS configuration to capture each ensemble, with the MKH 8040 pointing directly at the ensemble and the MKH 800, set to figure-of-eight, covering the floor and ceiling.”



The performance was staged with the conductor at the center, encircled by the audience and with the orchestra encircling them on the periphery. Three Sennheiser MKH 800 TWIN microphones and an AMBEO VR mic were placed at the center near to the conductor to capture a 3D audio image of the room.

### **Achieving exquisite multi-dimensional sound**

Given the unique sonic characteristics of instruments in varying states of dilapidation, Pandian and Greenwood needed microphones that they knew would capture the instruments without contributing harshness. “I have used these same mics in recording orchestral music before, but also in recording a lot of Eastern instruments with very different sonic profiles,” said Pandian. “I know that they will sound good on any source and won’t make it harsh or abrasive.”

The team also procured three MKH 800 TWIN microphones, which they arranged in a three dual-capsule coincident array (3DCC). “The three TWINS give us front and back, left and right, up and down, which is great for soundfield capture,” Pandian said. With each mic providing two channels of disparate audio that can be independently treated and mixed later, these mics formed the core of the recording’s three-dimensionality. An AMBEO VR microphone further supplemented this while serving as a spatial reference. “We had the AMBEO VR microphone right in the center, right where our 360-degree video camera was placed.”



Each grouping of musicians, situated about the perimeter of the Philadelphia Armory, was miked with a Sennheiser MKH 8040 cardioid microphone and an MKH 800 microphone set to a figure-of-eight pickup pattern to achieve an MS stereo configuration. During mixing, these signals will be blended with the 3D microphone array at the center to achieve a detailed and accurate 3D image.

### **AMBEO VR Mic: A new dimension**

The AMBEO VR Mic is another tool Pandian has encountered frequently in his studies. “We use it in almost every Tonmeister recording as a reference, especially because it marries so well with video.” Greenwood deeply appreciates the role that the AMBEO VR Mic takes in making clear and accurate 3D audio recordings feasible. “We’ve tried other microphones that try to achieve a similar thing and the sound quality just can’t compete with the Sennheiser mic. And the AMBEO VR Mic is affordable too, making 3D recording a lot more attainable on a range of projects.”

Greenwood, who already began some preliminary mixes of the recordings, has been impressed with the performance of the Sennheiser microphones in a challenging environment. “As I’m mixing it I’m finding the recording is really detailed and high fidelity,” he said. “There were 400 people in this ambient space and I can still hear everything clearly. I’m really impressed with the microphones and I can’t imagine anything working better.”

### **Damaged but not broken**

While the instruments themselves have since been shipped off for repair following the performance in hopes of being restored to full working order by next school year, the Symphony for a Broken Orchestra lives on. A stereo vinyl recording will be released on Found Sound Records, and the team is in talks with several museums to bring an interactive installation using the 3D mix of the performance to life. “We’re looking to put together a 3D speaker setup in a museum environment to exactly replicate the experience of the original performance as we captured it,” said Pandian.



“Three-dimensional audio is growing really rapidly, and tools like the MKH 800 TWIN and AMBEO VR Mic are a big part of that,” Pandian added. “Even though the idea of 3D audio has been around for a long time, these mics are finally making it possible to create high-quality recordings that translate really well. In addition to being a great cause, Symphony for a Broken Orchestra provided a great opportunity to show just how good immersive audio can sound.”

#### **About Arun Pandian**

Arun Pandian is a producer, engineer and educator based in New York City. He started his career as a lead guitar player performing and touring for the “The Miseducation of Lauryn Hill” album/tour. Currently he runs a studio located in Dumbo, Brooklyn called Signal Corps Recording and has worked with notable artists such as Mumford and Sons, Norah Jones, John Legend, Gabriel Garcia Montano, Gavin Degraw, and Savion Glover. He is also an adjunct professor at Long Island University. <http://www.signalcorpsrecording.com>

#### **About Devin Greenwood**

Devin Greenwood is a New York City-based record producer, filmmaker and musician. He is also the owner/founder of the Brooklyn recording studio The Honey Jar and has worked with artists such as Steve Reich, Sufjan Stevens and Priit Pärn. He is a collaborating artist with the NYC collective Found Sound Nation and his work has most recently been presented at St. Ann’s Warehouse (NYC), National Sawdust (NYC) and the Turku Animated Film Festival (Turku, Finland). <http://www.devingreenwood.com> <http://www.honeyjarbrooklyn.com>

#### **About Sennheiser**

Sennheiser is shaping the future of audio – a vision built on more than 70 years of innovation culture, which is deeply rooted within the family-owned company. Founded in 1945, Sennheiser is one of the world’s leading manufacturers of headphones, microphones and wireless transmission systems. With 20 sales subsidiaries and long-established trading partners, the company is active in more than 50 countries and operates its own production facilities in Germany, Ireland and the USA. Sennheiser has around 2,800 employees around the world that share a passion for audio excellence. Since 2013, Sennheiser has been managed by Daniel Sennheiser and Dr. Andreas Sennheiser, the third generation of the family to run the company. In 2016, the Sennheiser Group had sales totaling €658.4 million.

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