

“Controlled and fine-tuned conversion into 3D”

Interview with Gregor Zielinsky, International Recording Applications Manager, on the 3D sound for “David Bowie is”

With his technical and musical background, graduate tonmeister Gregor Zielinsky worked for 16 years at Deutsche Grammophon. It was there that he won a Grammy in 1992 for the Best Engineered Classical Recording for “Candide”, which was performed by the London Symphony Orchestra conducted by Leonard Bernstein. Gregor Zielinsky is now the International Recording Applications Manager at audio specialist Sennheiser. An algorithm developed by Zielinsky is used at the exhibition “David Bowie is” at London’s Victoria and Albert Museum to convert David Bowie’s mono and stereo material into a multi-channel music experience for the visitors.



The exhibition “David Bowie is” transports its visitors into the worlds of sound created by this exceptional artist. It also employs an algorithm developed by you. What does this algorithm do and where is it used?

This upmix algorithm was developed to automatically convert stereo recordings into simulated 3D. Basically, you can describe it as a “one size fits all” algorithm for 3D surround sound, and it can also be used by consumers in the future.

The exhibition “David Bowie is” uses the algorithm at two places. The first is a large video installation showing David Bowie at concerts and during a performance on Top of the Pops. This impressive projection is enhanced by 3D sound. Due to the nature of the sources available – some of the old material was in mono and in some cases it had simply been recorded from the live mixing console – it took quite a bit of effort to generate a sound that was optimally matched to the exhibition. To do this, I converted the mono sources into pseudo-stereo and then performed a controlled and fine-tuned conversion into 3D. Each song took me about two days in the studio to complete.

The algorithm is also used for a collage of Bowie songs that his producer, Tony Visconti, put together specially for the exhibition. It’s not a kind of medley as you might expect but a sophisticated interlinking of different songs. The familiar

opening of one song, for example, is connected with a hook line from another piece, with the result that Bowie's works start to talk to each other. I must say, Tony Visconti has created a fantastic new work of art with his collage. This time, the audio material was of a high quality and went through the algorithm 1:1 without any reprocessing.

How does the algorithm work?

The algorithm is based on psychoacoustic effects, and its special process is patent-pending. It's not a matter of artificially adding reverb or spatial effects; instead, the algorithm analyses the stereo signal and uses the spatial information that is nearly always available to calculate a 3D sound. One very important aspect is to maintain the balance between the band and the vocals and to ensure that the voice is not being coloured. The algorithm is converted into an impulse response, and the original audio signal is combined with the impulse response by using a mathematical process called convolution. The result is simulated 3D. Home applications in the future will simply use a small chip with the impulse response to convert the signal in real time.

What is the greatest challenge in a 3D algorithm?

The greatest challenge is that the 3D simulation must not be allowed to distort the sound. Other algorithms simply distribute two available channels over nine, with the effect that the vocals sound too nasal, comb filter effects occur and the spectral sound is negatively coloured.

My objective is to make a recording sound better, and to turn a stereo source into an impressive surround signal that maintains the sound of the voice and does not generate any sound colouration. The sound quality must by no means be sacrificed just to produce 3D.

A completely different question: what do you most admire David Bowie for?

I just admire him! He is one of the most important artists on the planet. I grew up with his songs, and what always set him apart from the rest of the musical avant-garde is his quality as a composer and the experimental audio effects that were always present even on his most commercially successful hits. These include unusual instruments such as the Mellotron, which conjures up a certain mysticism in his music. All I can say is: I just admire him. And I really love his new album, which is like

a synergy of 2013 and the 1970s. For me, it is already a classic – just like “Heroes” or “Aladdin Sane”.