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Classic Gear: Tannoy Dual Concentric Drivers

Rob Halliday takes a nostalgic but instructive look back at the tools that have shaped the industry . . .

Sometimes, thinking outside of the box really does mean doing exactly that. Take the challenge presented to sound designer Martin Levan by Andrew Lloyd Webber for the original *Phantom of the Opera* in 1986: the composer wanted the sound to appear to come naturally from the stage rather than sounding like a bunch of loudspeakers around the proscenium. Levan's solution: to take the loudspeaker drivers out of their boxes and use them naked, open, exposed to the air . . .

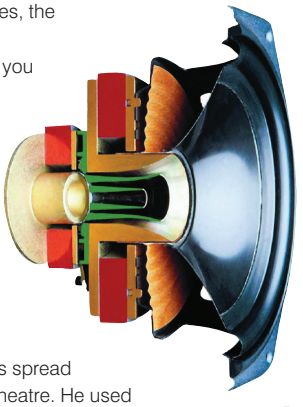
It's one of those ideas that probably shouldn't work, yet somehow gloriously did - mainly because he was using a very particular driver, already established as a classic in the audio world, particularly in studio monitor loudspeakers, but which following *Phantom*'s success found a new life in theatre sound reinforcement: Tannoy's Dual Concentric Driver.

Most standard loudspeakers, those using magnets driving cones to move the air and make the sound, actually divide the audible frequency range between separate drivers, each optimised for a different section of the frequency range, a 'woofer' for the low notes, a 'tweeter' for the high ones. Because each driver is a distinct, separate device each has to be mounted in a separate location on the loudspeaker's front panel. This means that different sounds actually emanate from different physical locations on the speaker, and may not quite be in phase with each other. The speaker is not actually achieving the hypothetical ideal of creating one coherent waveform, an exact reproduction of the soundwave being replayed.

A few loudspeakers attempt to use a single driver to cover the entire audible frequency range as a solution to this. Tannoy, founded in 1926 and long a household name for its public address loudspeakers, took a different approach. Their Dual Concentric driver, launched in 1947, still used separate low- and high-frequency drivers, but the high-frequency driver was positioned in the centre of the low-frequency driver, effectively firing through it - the bass cone had a hole in the middle to let the sound through. All of the sound appeared to come from one point, a coherent, in-phase wave regardless of the material being played or the listener's position.

Of course, in their loudspeaker ranges Tannoy still mounted the drivers in wooden boxes, traditional style to load and control the drivers. The Dual Concentrics were, and still are, used in their domestic and pro audio speaker ranges, the latter found in many prominent recording studios. They currently produce Dual Concentric drivers in sizes from 4" (100mm) up to 15" (380mm) diameter, and have recently created a revised, single-magnet design.

Above: The drivers on *Oliver!, 1994.*



For Martin Levan's purposes, the advantage of the Dual Concentric driver was that you could remove it from its box and mount it open without needing separate rigging for the high- and low-frequency drivers, with the two retaining their designed relationship to each other - and with the point-source useful when creating sound for listeners spread across a wide area like a theatre. He used the big, 15" Tannoy drivers, hidden within scenery around the proscenium and supplemented by bass units to make up for the bass roll-off caused by the lack of boxes. The concept worked; the speakers seemed to just energise the air and the resulting sound felt like a natural development of the theatre's acoustic (just louder!) rather than being amplified audio. Levan repeated the setup on subsequent shows, and other designers have followed suit, the Dual Concentrics appearing on Broadway as recently as last summer.

Tannoy: > //tannoy.com

Dual Concentrics on Aspects of Love: > //plasa.me/oi01y

. . . and on Oliver!: > //plasa.me/4sz8z