THE AMBISONIC ALTERNATIVE

Attempts to improve on stereo have invariably failed to find the popularity dreamt of by their inventors. But Ambisonics, long championed by Nimbus Records, may be set for a revival.

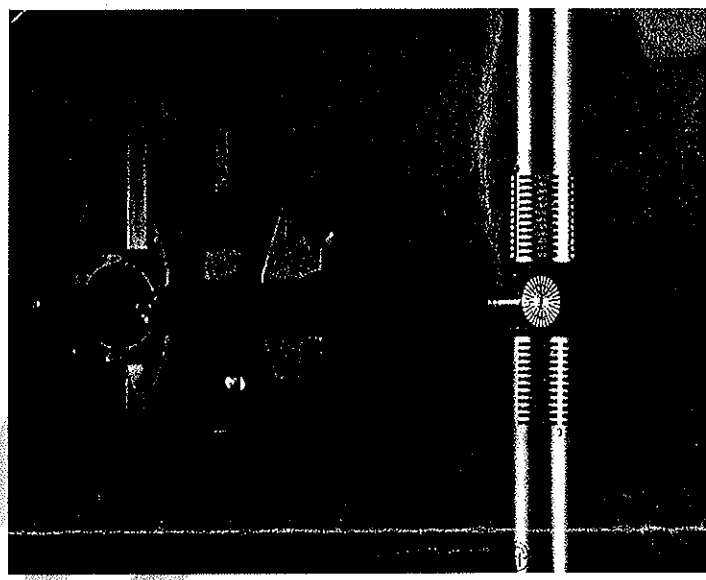
After mono came stereo. And we all listened and smiled, for we liked what we heard. And after stereo? For all the attempts to improve on stereo sound recording and reproduction, none has found widespread acceptance. Nimbus Records, however, have been making their acclaimed Ambisonic record-ings for years, and there are signs that interest in the technique may be on the increase. But just what is Ambisonics? And why does Nimbus persist with a technique that seems so out of step with the rest of the world?

In brief, Ambisonics is a technique that attempts to describe the complete sound field, all of the sound arriving at a point, during recording, and faithfully reproduce this on playback. "The advantage over stereo recording," explains Crac Downes, an engineer and producer with Nimbus, "is that the acoustic of the entire room is recreated – you hear the orchestra in front of you, and reflected sound behind. It's much more involving than stereo." Though ambisonic playback generally requires four speakers, it is import-ant to distinguish between Ambisonics and the justly-maligned Quadraphonic system – ambisonic recordings can be played on a conventional stereo without any problems.

The principles of Ambisonics are fairly simple. A crucial element of the technique is miking, with four coincident mics used in the ideal Ambisonic setup: up/down, back/front, and left/right figure-8 mics, plus an omni in the middle for a 'mid' (pressure) signal. In practice, the up/down mic is almost invariably omitted. The trick with Ambisonics is matrixing those three signals together, to produce a 'stereo' recording that is compatible with both conventional stereo and Ambisonic playback. The encoding method for Ambisonics is known as UHJ.

On a conventional stereo, Nimbus recordings certainly sound impressive – some classical purists would maintain that even without decoding, they are on a par with the best that the classical world can offer. Add a decoder and an extra two speakers, however, and things really come alive, as the extra information is decoded from the matrixed 2-track record-ing, and the 4-speaker configuration (two front and two rear) produces a true soundfield.

"Our mic arrangement for Ambisonic record-ing does seem a little eccentric,' admits Downes. "We use three coincident mics – two Schoeps figure-8s, plus a B&K 4006 omni. The B&K has been a standard part of that setup for at least 5 years, both because of its exemplary sound, and the fact that it's actually small enough to be used in a coincident configura-tion. If you want to position three mics together, they actually have to be quite compact. " Eccentric it may be, but in practice it's simplicity itself. Each of Nimbus' mic configurations consists of a carefully balanced set, requiring no tweaking by the engineer during set-up. "There's a little EQ in the recording box, to balance out the bass, but no active EQ. Just a volume knob on the box."



The most important decision in setting up for a session is there-fore where to position the mics (Nimbus refer to the coincident mic combination in the singular). "The simplest way of miking is to start half way back in the hall, and simply move forwards until the sound of the strings comes into focus," explains Downes. "That's usually about 6-12 feet behind the conductor, pointing towards the orchestra."

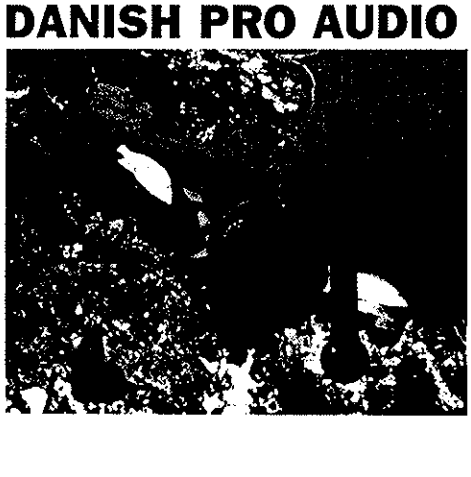
It's standard practice for Nimbus engineers to carry a complete Ambisonic playback system with them as well, in order that the conductor and orchestra can hear the results of the recording. This, it emerges, is crucial to the Nimbus philosophy. "Our role is not to balance or improve the sound of the orchestra – that's up to them and the conductor. The role of the producer or engineer is to capture a performance as faithfully as possible, and that means that it's up to the performers to provide the balance. If they can't get it right for us during a recording, what hope do they have during a performance?" Though that may seem a little harsh, it's clear that this attitude is a result not of bloody-mindedness, but a true appreciation of the transcendent beauty of a great performance – it is this elusive quality that Nimbus seek in their recordings. "With this philosophy comes the requirement that we don't do a lot of editing," adds Downes.

A recent recording of Rachmaninov's piano concerto, with John Lill on piano, and the National Orchestra of Wales, was typical. "We worked in the Branwyn Hall in Swansea, which has a lovely acoustic. Having established the best position for the mic – just above and behind the conductor, as usual – we ran through the first movement to do a preliminary take. We had the conductor, Tadaaki Otaka, and the orchestra listen back to that, and Tadaaki then made adjustments on the basis of that take. We then go for a real take, and a second just as a cover. It's important to get that one take that you're happy with – I don't believe that you can create the illusion of a decent performance by sticking bits of many different perform-ances together. You need the ebb and flow of a single, coherent performance, and if we edit it's just to drop in and fix a single note in a take." With the first movement down on tape – to a Sony 7010 DAT, via a Dream AD-1 converter – it's time to move on and repeat the process with the other movements.

THE FUTURE?

Though hi-fi purists may blanch at the prospect, the current revolution in home cinema may have implications for the future of Ambisonics. Clearly, a multi-speaker system driven by Dolby Pro Logic decoder has more than a passing similarity to a multi-speaker system driven by an Ambisonic decoder. Forget the video roots of the former – the growing popularity of such systems could well prepare the ground for wider popularity of Ambisonics. Pure speculation? On the contrary: both Mitsubishi and Onkyo have signed licensing agreements to use Ambisonic technology, and have launched in Japan and the US (but not Europe) home cinema decoders which include it. More recently Meridian has included Ambisonics in their audiophile 565 Surround Sound Decoder. Perhaps the future of stereo is closer than we think...

DANISH PRO AUDIO MAKES A SPLASH WITH THE DPA8010



and equipment, but the SPLs and ambient pressures tend to far exceed those in air. So, enter the new DPA8010, which applies Ole Sorensen's expertise to this particular problem.

The Hydrophone Type DPA8010 is a 48V phantom powered, waterproof omni-directional microphone designed to excel in just these conditions, ideal for use by anyone making pro-fessional under-water recordings for film or TV, or live under-water sound for live sports broadcasting.

The hydrophone uses a piezo-electric crystal sensing element, which is enclosed within a capsule in order to protect it from high pressures. As a result, the mic will operate in depths of up to 200m without suffering damage or significant changes in

of SPL can be handled with ease.

On a more conventional note, the 8010 uses standard XLR connections, and comes as standard with 10m of cable – longer lengths are available on request.

Though most sound recordists may never have to use a mic underwater, applications for such a mic are many and varied – and contrary to popular belief wrapping a conventional mic in a condom does not guarantee good results! Quite apart from applications in marine biology – studying whale and dolphin communications, for example – many watersports broadcasts are enhanced by the use of live underwater sound. Audio post-production for any film involving underwater sequences may require specially recorded effects, and a hydro-phone