

The British-developed Ambisonics surround-sound system was sidelined by Dolby surround: but the two can co-exist

inally, we are getting what we could and should have had ten years ago, if only the people handling consumer electronics at the British Technology Group (formerly the NRDC) had got a better grip on the subject.

NRDC/BTG controlled the patent rights on the Ambisonics surround sound system. Despite many false dawns, Ambisonics never progressed past niche market, mostly classical music software support (mainly from Nimbus) and low volume hardware production (mainly from Minim).

Dolby surround decoders started to reach the domestic market in the 1980s. At first they were simple devices, without any logic steering, and often no built-in amplification. Only a few video buffs could be bothered to get involved in the tangle of switching and wiring needed to integrate a hi-fi system, VCR and TV set.

But it was clear from the outset that Dolby surround sound would sooner or later be made simple to use, and turn into the big business it has now become with integrated decoders and AV amplifiers.

The reason was simple. Dolby had cornered the cinema market and the movie studios were making virtually all new films in Dolby stereo with surround. At the same time the video industry had adopted VHS Hi-Fi as the standard for software duplication. So it was inevitable that every new video release would eventually come with a Dolby surround stereo track.

I tried hard to get NRDC/BTG talking with Dolby about what seemed to me to be the blindingly obvious next step. If the manufacturers of Dolby decoders could be tempted to build in Ambisonics circuitry, along with surround sound synthesis from stereo, then they would be building a logical path to a surround sound future for both audio and video. People would buy decoders to use with video software and in Trojan horse fashion this would create a park of Ambisonics decoders in homes which would encourage a wide range of record companies to issue Ambisonics CDs.

There were a few negotiations between Dolby Labs and NRDC/BTG, but they broke down. Dolby did not need Ambisonics, and the NRDC/BTG people could not see why they needed Dolby. The decoder-makers shied from the idea, because Ambisonics and Dolby surround circuits are so different that a dual standard decoder is effectively a black box with two completely different decoder circuits on board.

Two things have made the dual standard decoder easier to achieve. Nimbus has taken over the rights to Ambisonics from BTG/NRDC; and the ready availability of digital signal processing chips makes it possible to construct the decoder from software rather than hardware. Onkyo used DSP to build an Ambisonic decoder, but it did not have Dolby surround.

Meridian Audio looks likely to be the first on the market with both Ambisonics and Dolby decoding built into a home theatre digital surround sound system. Expect the 565 to be available by the time you read this. The Meridian processor will have a new feature: the Ambisonics setting will generate a centre channel similar to that used for Dolby surround.

Dolby says it is happy for anyone to combine DSP and Pro Logic, provided the DSP effects (like adding 'church' or 'stadium' acoustic) can be switched out to leave the raw Pro Logic system working according to Dolby's spec.

This uses the Dolby MP four-channel matrix, which provides a harder centre front and better front/rear separation than the modified Sansui QS matrix which Dolby used in its first surround sound systems. The rear channels must also be decoded with B type noise reduction, and add slight delay to disguise any slight leakage of dialogue from front to rear. (Thanks to the so-called Haas effect the ears and brain lock on to the first arriving sound, so if the rear sound is slightly delayed, front sound dominates.) Also the Pro Logic circuit must steer

sounds, to accentuate localisation.

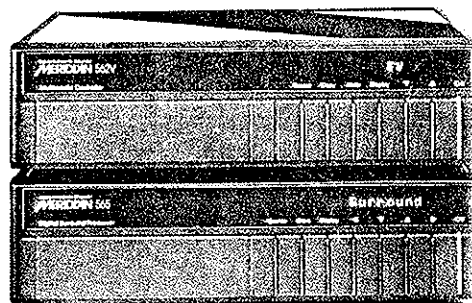
The next step for home decoding will be to follow the cinema market, into digital surround. Dolby and Pioneer have already announced a joint venture to use Dolby's AC-3 digital coding system (which is at the heart of the SR-D digital cinema sound and the USA planned digital HDTV system) with Laser Disc. This will provide five discrete audio channels, with an extra sub-woofer channel (known as 5.1 coding). The AC-3 decoder will also have a matrix output, so that it can feed a standard analogue surround signal into any of the 10 million plus Dolby surround decoders already in use worldwide.

The main advantage of going digital is the better separation between channels. The system is 18-bit capable so also offers very wide dynamic range. But this can be a disadvantage.

In its present form the AC-3 system can only be used with NTSC format LaserDisc while retaining compatibility with existing Laser Disc players. This is because NTSC Laser Discs have room for both PCM and FM analogue soundtracks and the AC-3 digital code is recorded in the space normally occupied by the right hand FM analogue stereo channel. So one disc can have the same sound as AC-3, PCM or FM analogue (mono).

PAL Laser Disc has room only for PCM or FM analogue, not both. All PAL LDs now have only PCM sound. So, on the face of things, there is no hope of launching AC-3 on PAL Laser Disc, without sacrificing compatibility with all existing LD players.

Pioneer would be well advised to make a clear policy statement, either explaining how AC-3 can be grafted into the existing PAL LD system, without loss of compatibility, or denying or clarifying plans to launch an incompatible second generation LaserDisc with AC-3. The world is now too small for a company to promote the promise of a new system in one country without reassuring consumers on the compatibility issues it raises in others. ↵



Meridian's 565 processor offers Dolby Pro Logic and Ambisonics processing