

Resolving DVD

Meridian Audio's **Bob Stuart** talks to **Keith Howard** about DVD – and what happened to the dedicated DVD audio disc he once championed

Two years ago, Bob Stuart – co-founder of and technical impetus behind Meridian Audio Limited and its offshoot companies – was a man with a mission. So far as pushing Meridian relentlessly forward to pastures new goes, he still is – witness the DVD player unveiled at the Las Vegas Winter CES last January and the new 800 series products which for the first time bring a computer-like modular structure to hi-fi electronics.

Back in summer 1995, though, the cause was altruistic, and struck at the very heart of high fidelity's future. Fearing that lossy data compression regimes were about to gain a crucial foothold through their incorporation into the DVD standard, Stuart coordinated, from his position as Chairman of the Acoustic Renaissance for Audio (ARA), the High Quality Audio Disc (HQAD) proposal – a lobbying document aimed at ensuring that the new high-density optical disc medium would cater for the needs of high-quality audio as well as the less stringent requirements of home cinema sound.

Today, Bob Stuart is no longer so concerned about the high-quality audio DVD, which is still under discussion but unlikely to appear for a year or two at best. Anyone who knows his apparently limitless energy will rightly suspect

the finalized DVD specification was not the barrier to high fidelity's continued evolution which it once threatened to be, hence the bespoke audio disc is no longer a burning issue.

"The audio specification for the video disc was upgraded so much that the problem has gone away. My personal crusade in all this was that if DVD was standardized with only AC-3 and MPEG audio [both of which multi-channel coding regimes use lossy data compression] that would eventually mean, if DVD replaced CD in five years or so, that the *de facto* standard of music recording would go down

it also has a spec for uncompressed 48kHz PCM audio at 16, 20 and 24-bit and 96kHz PCM at 16, 20 and 24-bit. The specification also says that you don't have to have a picture, and that you can have eight audio channels. There's even a 'private stream' provision which basically says you can use what you like. If you wanted to, you could make a disc with only subtitles on it which plays for 400 hours or something!

"I'm not exactly clear why this happened; I can say we were part of what was driving



Bob Stuart, the Meridian 586 DVD player (centre) and The Meridian Reference Digital CD Machine from the new 800 series

this is not the result either of defeatism or ennui. Rather, the original concerns about the DVD video disc's capabilities as a high-quality audio carrier have largely been addressed. For whatever reasons – and Stuart's marshalling of cogent arguments on behalf of the hi-fi industry must surely have been prominent among them –

rather than up – we'd end up with something worse than Red Book CD. That, I think, was a very viable scenario had lossy compression been given a monopoly. The ARA isn't opposed to lossy compression, we just don't think it's been finished yet.

"The DVD video disc still provides for lossy compression but

the process. But I also think there are some very smart people in Japan who thought: right, the way round this whole political problem of the audio disc is to include it in the video disc.

"There are things missing which we asked for, but they're not fundamental. We asked for lossless compression ['packing'] so you

could have more channels at 96kHz, but you can fit in eight channels at 48kHz. Flags for Ambisonics are also missing, but we may still get them. Special pre-emphasis at 96kHz and the most important provision for the music industry – the two-sided disc with Red Book audio on one side and high-density audio on the other – haven't been ratified either, though the latter has been proven possible.

"Speaking from an audio purist point of view, which is where I was coming from, the disc they've shown up with is now very much better. The elements missing from what the ARA asked for are important, yes, but not fundamental to the real issue, which is to have a high-quality carrier to put music on to. We have a carrier now which will deliver high-quality music and a picture too. I think that is such an enriching possibility that I'm intrigued – deeply intrigued.

"OK, it's much more expensive to make a performance video, but you don't have to have one. You can put the score on screen or text about the composer – you can use the pictures in any number of ways. They can be still pictures – and of course you don't have to watch them if you don't want to.

"The specification for the dedicated audio disc is still being ground, but I think deliberately very slowly. It will not emerge until it's clear that DVD video is successful. We can already make great sound with the video disc. Sampling at 48kHz is better than sampling at 44.1kHz and resolution can be increased to 20 or even 24-bit. This has huge potential and it is going to take a while for the record companies to catch up with it. I believe the audio disc, when it does show up, will have a spec very like the video disc but with lossless compression included. It will be a minor evolution of the video disc – and the audio disc will still carry pictures. ➤

Audio

"A number of traps we pointed out in the ARA proposal unfortunately haven't been avoided. For example, when CD came out there was already a flag you could set on the disc for four-channel recording. But because no first-generation player could play four-channel, nobody ever made a four-channel disc. One of the risks we run with DVD is that there is no industry standard at the moment for exchange of multi-channel PCM. There's no interface standard, no connector; the first generation of DVD players are out there and no one knows how to access this information. Consequently nobody is making multi-channel DVDs. That's a worry – the necessary standard should have been there from the beginning."

On the increasingly controversial issue of whether DVD will be a commercial success, Stuart has little doubt. "DVD has been a nightmare in many ways – Hollywood, copy protection, regional coding, it's all been a major confusion. I imagine the people at the core of the DVD Consortium are hugely irritated by the film industry. Hollywood has changed its mind over its requirements and been accommodated at every turn, yet some of the big studios still say they'll wait and see if the medium's a success before they'll issue any discs.

"But DVD is going to happen because the computer industry will make it happen. I think it will be successful as a computer storage medium irrespective of the video side, and that will enable all the hardware and the disc manufacturing processes. With CD it was the other way round: CD Audio came first, and six years or so later CD-ROM. Now their sales volumes are about the same. With DVD I think it's going to be the other way round."

Bob Stuart's ardent opposition to lossy data compression systems is legendary, and inspired his whole campaign to have DVD's audio specification uprated. But he is equally ardent about multi-channel surround sound, and the benefits of the latter, he contends, can sometimes outweigh the failings of the former – provided the right compression regime is used and it is afforded sufficient data rate.

"It is possible to design a lossy compression scheme where the sound quality doesn't get better when you allow it more data rate; equally it's possible to design one which does. MPEG and DTS are both scalable in this way.

"DTS is intriguing because it is potentially very transparent. There are DTS recordings available now which are delivering five channels of 20-bit/48kHz audio, and the company is working on a 96kHz

version which stores in a 48kHz slot. DTS can scale all the way from lossless right down to extremely lossy compression, but in the central region it delivers what I consider to be transparent sound in the context of audio that's been through a typical mastering process. If you take a straight microphone feed through any lossy compression system you'll hear it. If we are talking about a recording, though, then DTS has the ability to deliver a degree of transparency that rivals averagely made two-

channel PCM recordings – but with the benefit of surround capability. DTS is getting great results with five channels encoded at CD data rate. And all this comes down the existing S/PDIF digital interface, so it's accessible in first-generation DVD players.

"That's the great thing about the DVD specification now: it's so flexible. You can choose any compromise you like from a basic home cinema audio specification upwards. We didn't expect it to be so enlightened." **G**

Audio disc update

On 30th May, six weeks after this interview was conducted, the International Steering Committee – a body set up by the RIAA, IFPI, IAJ and six major recording companies to represent the record industry's views on the DVD audio disc – announced that it "expects to have a final draft specification for a DVD music disc by December 1997. This timetable should allow for a new DVD audio system to be launched in the marketplace within two years."

Three primary requirements have been identified:

- DVD audio discs must play on CD machines (to provide backwards compatibility and obviate the problem of double inventory in record stores – of course, the improved performance of the DVD audio disc will not be available when used this way).
- The extra data capacity "must be used to achieve a high-quality multi-channel surround sound that is vastly superior to current CDs."
- Current and improved anti-piracy measures must be incorporated.

As part of the process of compiling the draft specification, listening tests will be conducted worldwide – probably in recording studios in New York, Los Angeles, London, Berlin and Tokyo – wherein various proposed technologies will be assessed and compared.