

A total conversion

Alvin Gold has had some rather unusual visitors in the shape of Meridian's £7,000 D6000 'digital' loudspeaker system. Could this be the future of hi-fi?

Hi-fi isn't always exciting. Most advances are made by standing on the shoulders of others, and using the extra altitude to gaze a little further into the distance. Most products are refinements of what already exists, not that there's anything inherently wrong with that. The Meridian 6000, however, is original. *Seriously* original. Original to the point where even some of its most familiar components work in surprising, unfamiliar ways.

However, nothing in the D6000 could be described as unprecedented. Most people are familiar with digital audio as a tool for storing musical data, as in CD. However the idea of using digits to completely reshape the architecture of a hi-fi system, or to reinvent such common everyday features as the balance control is rather less common. The D6000's significance is that it introduces a number of such ideas to the market for the very first time, albeit at what for most people will look like science fiction pricing.

Hyperactive

The 6000 is a fully active loudspeaker, with built-in electronic crossovers and power amplification. It also performs key functions expected of a preamplifier, and in addition it acts as the seat of the system's 'intelligence'. It is addressed directly by a system remote control which transfers commands back to the source components where called for, though the system can also work with 'dumb' source components, record players or non-Meridian CD players for example, which cannot understand commands from the remote control. When used with 'intelligent' components - a Meridian CD player or tuner, say - the messages fly in both directions, and information such as track

numbers and FM station preset IDs are relayed to the display on the front of the two speakers. The display also gives a wide variety of rather tersely presented status information - input, volume level, absolute phase and so on.

All this is unusual enough, but what makes the 6000 unique are two factors. The first is that no analogue inputs are provided whatsoever. The system is driven through one or more of its two optical and two electrical (coaxial) links from one or more digital sources, or

operate mainly in the digital domain. It is the D6000 which introduces the ideas of digital signal processing - DSP - into the home.

Preamplifier functions include a very sophisticated part digital, part analogue stepped volume control with a 1dB action and an almost complete absence of step switching noises, though the complication is aimed not at this but at increasing dynamic range across the complete volume range.

Acoustic Design & Equalisation

The acoustic design of the 6000 is nothing less than fascinating. Most of the output - everything above about 200Hz in fact - is handled by the small, trapezoidal, self-contained, downwards spiked enclosure that sits on the main pillar, making a structure over 130cm tall. This enclosure, connected electrically with the pillar by an umbilical cable, consists of a 170mm synthetic cone bass/midrange unit and a metal dome tweeter, the latter being a high grade custom specified unit made by SEAS. The enclosure is complex in construction because of the angles involved, boxes being easier to make when all the angles are right angles. The materials used are of unusual quality and the result is extremely solid.

And so too is the main pillar, which contains the digital electronics, power amplification and bass section of the system. To handle the bass there are four similar 210mm units, two on each side, each pair operating in phase with the other so that there is no net rocking moment on the enclosure to upset stability, which is further enhanced by extremely solid build quality. The enclosures are spike coupled directly to the floor.

Separating the two parts of the enclosure has a number of benefits. The mid/top enclosure can be designed for good dispersion and for strength, and is almost



The Meridian's bass drivers are hidden away on the side of the panels

analogue sources that have first been converted into the digital domain. At its simplest, and a number of systems are said to have been sold in this form, the D6000 is driven by a 602 CD transport, one half of Meridian's complete 602/606 CD player. The second factor is that everything upstream of the power amplifiers, and this includes the electronic crossover and all preamplifier related functions,



speaker to keep the image correctly centred off axis as well as on. As a result it is possible to sit at the foot of the loudspeakers, or for that matter anywhere else in a room, sitting or even standing, and still achieve a level of performance from the speaker comparable to what would be expected from a 'normal' listening distance. The means by which this is achieved by the user however are not entirely straightforward; I'd like to see the digital steering accomplished by something like a joystick or rockerswitch with two planes of movement.

Powering up

The power side of the D6000 is taken care of by two 150watt amps for the bass and two 75 watters for the midband and treble, giving a total wattage which is simply too frightening to contemplate. The design of the

amplifiers follows established Meridian practice, featuring DC coupling and servo control to eliminate DC offsets. There is some sharing of power supply components, and of course the amps are connected directly to their respective loads, eliminating the usual problematical loudspeaker wiring.

The tall, lanky appearance of the D6000 when viewed from a typical listening position belies the stature of the enclosure which is determined in large part by its very considerable depth. The front of the pillar is black and covered in a glass sheet, which can take on the appearance of its surroundings, helping it integrate into at least some traditional surrounds almost as well as it works in a more modern setting. The mid/treble enclosure has a black gloss finish to match. Subtle feature lines link the two components. The effect is striking and, in my opinion, startlingly effective, but I've heard a diversity of views on this. Either way it's strong meat.

Using the D6000

Installing the D6000s is a procedure best handled by a trained dealer, and involves

completely insulated from the high levels of low frequency ambient 'noise' in the bass enclosure.

No attempt has been made to produce a flat acoustic output from the driver complement in the usual way, ie by adjusting the characteristics of the drive units so that they match. Instead, this task is handled by active equalisation in the digital domain.

This would have been almost inconceivable and certainly musically ruinous had it been attempted by passive equalisation; the construction of complex multipole filters is one area where DSP is clearly superior to analogue. The bass for example is extended downwards to provide an in-room response curve flat to around 20Hz.

Meridian's propensity for extended bass and very sharp out of band rolloffs has led to a rather tight, dry 'ringing' LF quality with some of their previous designs; here the designer (Bob Stuart) has been able to indulge himself, and provide the extra benefits that accrue from the extra bass extension, without the usual compromises.

Active equalisation is not restricted to the bass. Similar curve flattening is performed in the mid/treble area, which presumably has allowed other aspects of the design to be optimised without needing to worry about response shaping. The crossover points are also handled digitally, and with slopes that would cause severe headaches were they carried out in the analogue domain: -36dB/octave at the 200Hz crossover point for example.

Even this isn't the extent of the D6000s DSP capabilities. Digital equalisation is also employed to provide a 'tilt' facility, and a loudness contour which operates in near textbook fashion because SPL levels for given volume control settings are 'known,' the only important variable being room size. In addition, and this is unprecedented in any loudspeaker to the author's knowledge, the listening axis can be varied by controlling the crossover phase responses to account for different listening angles, whilst in-band responses are varied to counteract the usual polar response changes that occur off axis. Related to this, the balance control employs digital delay of the signal to the nearby

programming a whole series of defaults, extending from which speaker acts as 'master,' the number and nature of source components connected (eg Meridian or non-Meridian) through to the volume setting when the system is turned on. Meridian recommends using the coaxial inputs over the optical alternatives, and this is good advice, at least until Meridian implements AT&T optical connectors, which I understand is on the cards.

During my spell with the 6000, I had access to a Meridian tuner, the 204, and an A/D converter, the 607, which was connected to the output of a conventional Meridian preamp and fed in turn by a record deck, the *Rock Reference*. This sounded absolutely marvellous. No other record deck I tried was able to stand up as well as the *Rock* to the unblinking bass analysis provided by the Meridian. Combined with its other good qualities, records are far from being the poor relation in this system, despite the excellence of the 602 CD transport, and despite having to be converted to digital form before being restored back to analogue.

The 6000 is some cookie. It has its faults for sure, and they're serious enough to take notice of. They may even be serious enough to turn some people off. The faults are tantalising in their way: the rest of the system runs somewhere between amazing and miraculously good on a routine basis, and this makes any residual shortcomings, however small, all the more objectionable. But the things that make the *D6000* good are hard to do without, and in some cases just cannot be matched.

The most important of these is the system's amazingly wide dynamic compass. I routinely test big amplifiers and expensive, capable loudspeakers with power ratings measured in the hundreds of watts, but I can think of no system I have used in the last decade that can match the ability of the *D6000* to play wide ranging music at realistic sound pressure levels, peaking if necessary well into the pain threshold if it was sustained for long. Of course any number of loudspeakers can be made to play loud enough given a suitable electric shock up the backside, but the ability to make useful music whilst doing so is an altogether rarer and more precious commodity. Much rarer than you might suppose in fact.

Although most loudspeakers can be coaxed into playing loud, they almost always change in sound radically as they do so. The bass usually becomes drier and more limited, and dynamics shrink as the

music becomes louder. These paradoxical constraints don't apply here: as the *D6000* goes louder, the sound retains its original generosity and openness, and astonishingly the headroom available above even the loudest sounds seems to be practically limitless.

Signs of compression, especially in the bass, with normal speakers, are often not heard for what they are, but still mark the sound as artificial. The *D6000* on the other hand simply swells to accommodate the music in a manner devoid of strain or compression, with the result that it has a peculiar rightness about it at almost any level.

Captain Morgan

It was Bob Stuart of Meridian who suggested an organ transcription of Mussorgsky's 'Pictures . . .' which has the

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most astonishing LF extension as a means of showing what the system could do. I rounded up a copy forthwith and proceeded to use it to make the listening room's window frames rattle, though they couldn't be moved by hand, which was good fun.

The bass output truly goes down to the point where it is almost possible to feel each wavecrest separately, but more astonishing still is the utter lack of 'ringing' of the kind that eliminates or changes pitch relationships, and the complete lack of overhang. The Meridian bass has a truly vice like quality: it starts and stops quickly, and is both uncoloured and open.

The Meridian's bass, which in my opinion sets new standards for domestic reproduction, is not a blunt instrument, but a subtle one wielded with utter precision. Radio speech, which often sounds chesty via hi-fi systems, was perfectly controlled with no hint of this problem, though low frequency noises from the studio that usually escape attention could be heard from time to time.

The rest of the system turned out to be utterly consistent with what I've said

about the bass. Again there is that wide open, airy quality, the utter control, the enormous dynamic range and the absence of most forms of coloration. Stereo soundstaging benefitted immeasurably from the consistency and clarity of the design, and the result was the ability to support a massive soundstage with a great sense of physical presence, even when listened to from a considerable distance.

The down side

The shortcomings I alluded to earlier are confined to the upper midband (more correctly perhaps upper harmonics that affect the perception of the midband) and the treble itself, and take the form of a degree of intrusiveness or obviousness that at times inhibited the system from sounding completely transparent.

Rather breathy sounding vocals, an occasionally astringent string tone and a closeness with some material almost as though the performer is leaning over you whilst performing were the main shortcomings. These were occasionally severe enough to cause the suspension of belief, though it's worth restating that few speakers are good enough for such retrenchment to be even a possibility.

Generally the effect was to sharpen up transients and increase the forcefulness of the sound, leaving some Sixties EMLs sounding like Deccas from the same period, and some of the latter sounding like late Eighties DGs: slightly confused and stringy in tone.

There is some suggestion from conversations I have had with Meridian since the *D6000*s were sent back that the pair I had may not have been typical in their treble behaviour. Meridian is not claiming that they're faulty though, and this is one area that clearly needs working on as the product develops. If and when a new filter algorithm or a revised tweeter is eventually called for, existing owners will of course be able to have their *D6000*s upgraded.

None of this detracts from the main gist of my argument which is that the *D6000* sets standards in certain important areas, and that the shortcomings, such as they are, are minor. The DSP development work carried out by Meridian is soundly based and coupled to fine audio engineering in other areas to produce a remarkable system that for once benefits from innovation, and which therefore acts as a pointer to the future.