MUSIC IN THE ROUND

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With its more substantial construction, superior analog outputs, and reasonable price of $499, the Pioneer DV-58AV is an outstanding candidate for a keeper legacy universal player. Others will have to comment definitively on the values of its video performance, but I found it no slouch in that department either.

Bag End E-Trap

Although acoustically treating your listening room may the most important thing you can do to make your system sound its best, everyone seems to have a reason not to do it. I understand. Décor and significant others usually stand in the way, but also imposing is the sheer bulk of effective treatments, especially those used to tame big problems in the bass. Low frequencies simply demand that effective treatments be several inches thick and cover wide areas. All of this is a lot easier if you're designing a listening room from the studs out, but retrofitting requires cunning and, often, careful negotiation with whoever shares your living space.

This is where electronic room equalization can be a great help. At best, however, room-EQ software is still imperfect. In practice, it works best only over small areas of the room. However, one significant philosophical and practical objection to the practice is that it manipulates the very musical signals whose purity we are trying to preserve.

The Bag End E-Trap ($1500) uses active electronics similar to those in an equalizer to control an acoustic device that acts directly on room acoustics rather than imposing anything on the electronic signal path (footnote 2). The E-Trap is actually rather cute. With its 10" driver, controls, and power amplifier in a box measuring 18" (457mm) H by 13" (330mm) W by 9.5" (241mm) D and weighing 33 lbs (15kg), it looks like a small subwoofer without input terminals. Fore and aft are two small microphones; either one can supply the input to, effectively, two single-band parametric filters (range 20–65Hz) that add targeted resonance peaks to the feedback circuitry that powers the driver. As a result, the input signal at those peaks is amplified and output via the 10" driver but, cleverly, opposite in phase to that of the input. Place the E-Trap in a high-pressure zone, such as the junction of two or three room boundaries, and its output will oppose and cancel the energy in the room modes.

Shaping the filters to match one or two major room modes and adjusting the feedback in the filters—effectively adjusting the Q and magnitude of the E-Trap's response—reduces the total energy in the room at those frequencies. Moreover, a significant advantage of acoustical treatment (active or passive) is that even the decreasing energy of a decaying signal is subject to this attenuation, leading to a steeper decay to innocuous levels. These effects also apply to the harmonics generated by these fundamental modes. Thus, while staying out of the reproduction chain and leaving unchanged the signals emitted by the speakers, the E-Trap attempts to remove the room's low-frequency colorations—sort of like a narrowband bass trap with gain.

You'll find more information here, but you won't find, there or in the E-Trap's shipping carton, a step-by-step guide to how to set it up. Hasn't everyone got an FFT spectrum analyzer with ½Hz resolution in their closet? Bag End recommends the SMAART analyzer, but I used what I had on hand. These tools included: TEF, which is accurate, calibrated, and not cheap; TrueRTA, which is inexpensive and easy to use; and RoomEQ Wizard, which is free and has just added spectrum and RTA displays to its array of tools. Nonetheless, after spending half an hour on the phone with Jim Wischmeyer, president of Bag End, I still was at loose ends about how to start.

First, I turned off the room correction built into the Meridian 861, but left operative the single-band EQ in my JL Audio Fathom f113 subwoofer. I then began surveying the listening room, using TEF's low-frequency spectral display with a bass pink-noise signal from the TEF disc. As I walked around the room with the microphone, peaks grew and shrank, troughs deepened and filled—but one big peak grew even bigger, especially when the mike approached the floor, ceiling, or a wall. At a floor corner, a 47Hz peak loomed like a 20dB Mt. Everest over the pink-noise floor. It had started out at about half that level, but grew as I maintained the signal. What was curious was that I hadn't expected to find such a peak; 47Hz corresponds to a room dimension of 12', but my room measures 14.5' by 26' by 8', with large openings into other spaces.

I preset one of the E-Trap's filters to about 47Hz and put the E-Trap on the floor close to a sidewall in a corner created by a large credenza. Then I placed my measurement mike at the listening position, and turned the laptop to face me so that I could monitor how my settings of the E-Trap's Feedback and Contour controls affected the response. I got optimal results with these set near their midpoints, but the E-Trap's Fine Frequency control, with its range of ±1Hz, seemed to have no effect. Adding a second filter with a slightly lower Q made only an incremental improvement. Perhaps the second filter would have been more useful had I had another significant peak in the 20–65Hz tuning range.

What did have a big effect was the choice of microphone: Activating the one on the front of the E-Trap (about 15" from the walls) gave a tiny reduction in the peak on the RTA, but activating the mike on the back (only 4" from the wall) caused a drop of about 10dB. Not only that, but a smaller peak at about 98Hz—probably the first harmonic of the 47Hz fundamental—almost disappeared into the roiling surface of the RTA display. Now, the smaller 98Hz peak is probably much more audible, as the threshold of audibility at 47Hz is, for most people, about 20dB higher than at 100Hz. Nonetheless, compared to its measured effects, the E-Trap's audible effects seemed subtle. And with that, I turned my attentions to other things and didn't think about the E-Trap for about a week.

In the interim, my system sounded great. The ripeness around 100Hz that had long plagued my room seemed to have disappeared, an improvement I at first attributed to my having switched from the Bel Canto Pre6 to the Meridian 861 and inserting the Ayre V-6xe amp to power my B&W 802D speakers. In fact, I had assumed that I'd turned the E-Trap off.

But no. The E-trap was on the whole time and, when I when I discovered the fact and bypassed the filter, the old, familiar 100Hz ripeness reinfected the sound. This thing worked.

I tried some organ recordings, and they sounded wonderful. *Ajoutez la trompette! French Romantic Organ Music for Organ & Brass Quintet*, a new SACD by organist Elmar Lehnen and the International Brass (Audite 92.556), is recorded somewhat distantly in a highly reverberant basilica. The insertion of the E-Trap impressively removed the superimposition of my own room's modes, and let the low brass and the organ's low bass cut through the ambience, as they probably did in that venue. Other telling tests were: the infamous "Cosmic Hippo," from Béla Fleck's *Flight of the Cosmic Hippo* (CD, Warner Bros. 26562), in which the descent into the deep bass was no longer accompanied by tonal woolliness; and the delightful plucked bass strings in the opening of Boccherini's *La Musica Notturna delle strade di Madrid*, from the Stuttgart Chamber Orchestra's *Die Röhre—The Tube* (SACD, Tacet 074), which now were tight as rim shots on a snare.

Because the E-Trap was working the entire room, it had a similar effect whether I used the speakers full-range, with the LFE fed to the JL Audio Fathom f113 sub, or used bass management. It was also equally effective whether I listened to two or many channels. Perhaps most remarkable was that the E-Trap even reduced the effects of some ambient noises that had bugged me for years. I live 11 stories above Manhattan's Third Avenue, and have learned to tolerate or wait out the noise of City Transit buses idling below. As soon as I heard the offending bus noise, I jumped up and turned the E-Trap off—and found that it had been substantially reducing that pernicious hum. Will wonders never cease...

The Bag End E-Trap is a small but effective way to remove one or two frequency peaks in the 20–65Hz range. It won't do anything for nulls or reflections, nor will it provide a complete EQ or acoustic treatment for an otherwise boomy or lively room. It lacks the tools and instructions needed for setup; it would be nice if it came accompanied by a simple acoustical measurement tool, such as the XTZ Room Analyzer. On the other hand, it can be concealed in places where it will minimally affect room décor, and where it will effectively complement reflection-control and broadband bass traps without offending the visual sensibilities of significant others. In fact, while the appearance of the E-Trap is generally not noted, its effect on room acoustics is substantial.

Next Time in the Round

I'm giving up trying to predict what's next. Often, an anticipated device fails to arrive in time for a decent assessment. Often, I'm distracted by another product (or real life) and can't get to something I've promised. What I can tell you is what I have in-house right now, so you'll know my options; all will be dealt with in due course.

The multichannel amp promised last time, the Ayre Acoustics V-6xe, is cooking in the big system right now. I received the Rives sub-PARC bass equalizer and power amplifier, which came with a Talon Audio ROC subwoofer. I've also just taken delivery of the Anthem D-2 preamplifier-processor, which includes ARC, Anthem's new EQ system (briefly described in my May column). Both the Rives and the Anthem are going into the weekend system as soon as time permits. Finally, at the 2008 Consumer Electronics Show, I discovered the neat and inexpensive W1 Premium Wireless Audio Adapter from Audioengine, and have already been playing with it in my office and den setups. I've held off writing the report because the column seems to fill so quickly, and because a competitive product, the WPA24 Digital Wireless Transmitter/Receiver System from Acoustic Research, is on its way; I'll take the opportunity to compare and contrast them.

Footnote 2: Keith Howard examined the topic of active room mode cancellation in January 2008 and Robert Harley reviewed the Phantom Acoustics Shadow, an early device to operate in the same manner in the E-Trap, in December 1989.—**Ed.**