

Inside View

THE BRAINS BEHIND THE BUSINESS

Recently listed in the Who's Who of American Businessmen hasn't diluted Bill Dudleston's passion for making some of the finest speakers in the world. NISHANT PADHIAR talks to the founder of Legacy Audio and uncovers some facts...

➡ Clearly you have dedicated your life to Legacy Audio and its various interests but have you ever consulted for any other audio brand?

➡ I performed some development work for Allen Audio involving speaker systems and applications for an early 8 x 8 digital processor, and consulted on larger scale projects for auditoriums, recording studios and the like. Most of the proprietary work I have done outside Legacy required confidentiality agreements, so unfortunately I can't elaborate on those.

➡ The Legacy speaker range is quite small and streamlined. Is this part of the strategy to focus on limited designs and perfect them?

➡ Absolutely. Most companies start with three drivers and build permutations from these three



elements with each box progressively longer or taller. They might offer a dozen stair-stepped models covering a wide range of prices with the fewest inventoried components. In contrast, Legacy is defined by performance in the most absolute sense. For example our Classic has been refined for nearly 25 years. It is the smallest tower in our line, but benefits from drivers developed for the Focus and Whisper.

➡ Most of your designs are large and consume a lot of wood. Have you considered using different materials for construction, not only for environmental purposes, but even sonic advantages?

➡ In order to provide optimal damping, Legacy uses five different densities of composite fiberboard in our cabinets ranging up to 1.5" in thickness. Computerized CNC routing allows us to fabricate these enclosures very precisely, and machine strong interlocking braces. The key benefit of fiberboard is that

"We are not so affected if the product has a well known brand or not. A brand without a good product is the wrong way to go"

its uniformity is very high from the use of finely ground recycled wood fibers and glue resin. It has no directional grain. Waste is readily utilized. The outer skin is of course select veneers and hardwoods. We have built fiberglass resin prototypes and steel and aluminum test baffles. Both retransmitted vibration from the aluminum driver mounts more readily than the LDF, MDF and HDF fiber materials we use.

➡ Legacy Audio speakers are renowned for their imaging and bass response. Is there a textbook method of achieving the "showroom sound" once you bring the speakers back home?

➡ Speaker toe-in angle and listener distance are important factors we cover in our manuals. Imaging

accuracy is proportional to uniformity of directivity over a system's frequency range. While diffuse speaker designs can generate a false sense of soundstage, true imaging requires preservation of interaural differences. Visualize your left speaker "illuminating" your left cheek and ear. The important counterpart to this signal is a defined acoustic shadow of your nose into your right ear. A diffusive design cannot accomplish this because it is scattering multipath information. It does not give the brain enough information to "lock on". On our website, you'll find a white paper on The Imaging Index. It describes a method to actually measure and quantify imaging ability of a speaker system. I literally invented the method out of necessity.

Getting the bass right is a room is about simple experimentation. The key is to understand that no matter where you place your speakers or your chair, the room will exert a consistent behavior regarding standing waves. The room boundaries are fixed, so they don't change. When you move your chair, it's like playing a sliding trombone; different resonances will be heard at different locations due to the relationship between frequency and wavelength. You want to make sure you are getting solid 40Hz without a big peak at 80Hz. We design speakers that are boundary friendly, especially our Whisper design.

➡ In your experience, what has been the best way to reproduce accurate bass – open baffle, reflex loading, passive radiators or acoustic suspension?

➡ Wow! I use all of these methods, but none of them in the traditional sense. For example, Helix combines a sealed box omni response with a dipole to create a cardioid pattern with great transient ability. Focus HD uses a second-order high-pass filter to augment the vented alignment. Distortion is quite low with remarkable extension. We use a slightly overdamped driver to keep the bass tight. Whisper applies a differential alignment in a push-push configuration to create greater low frequency steering capability. On

Legacy's Xtreme HD subwoofer, a passive radiator with a dual suspension is weighted with a heavy steel slug, while the active driver employs dynamic braking to improve the waveform trace.

➡ Your foray into amplifiers has been limited to just one model (PowerBloc). Any plans to expand the electronics part of Legacy Audio?

➡ Yes. In May of 2009, Legacy will release in the United States a 7 channel power amplifier and processor. The amp weighs about 100 pounds, and the processor will incorporate the new HDMI standards. We also have several new algorithms for our 4 input x 8 output Wavelaunch processor. For years we have been incorporating wave termination systems in our installations. I nicknamed the method "pitching and catching". In short, we can maintain a natural traveling wave behavior at low frequencies in a bounded room by placing sequenced woofers at the rear of the room. It involves terminating the initial front launch with a delayed and inverted proportional signal. You no longer have to wait for the room to pressurize and die out.

➡ How do you counter time-alignment issues with so many drivers in your designs?

➡ Our four-way Focus is essentially a two-way with an optimally placed crossover. There is no crossover hand-off in the regions we perceive phase. We then augment this two-way with a subwoofer and super tweeter. All of our designs are phase continuous (linear). They are zobel compensated to counter inductive reactance and polar patterns are optimized forward radiating. Speakers using the Wavelaunch processor can be aligned in the most absolute sense.

➡ Do you believe the future of home-theatre lies in more channels or more resolution?

➡ I would like to see Dolby and DTS agree to a future 8.2 standard and stop there. Improvement for the music lover is in the bit rate, not more

channels. We have been recording in 24 bit for about ten years. When I have to mash my recordings down to 16 bits to share them with someone with only a CD player, it saddens me. But this technology is a quarter century old – no wonder vinyl is making another comeback!

➔ **Would Legacy Audio ever get into the mid-level 5.1 speaker package business?**

➔ No. This arena does not allow enough degrees of freedom as a designer. I come to work every day to build the best speaker conceivable – not to supply the most speakers possible.

➔ **Which 5 CDs would you like to take along with you on the proverbial island?**

➔ *Jazz:* I'd have to take Miles Davis' Kind of Blue, Oscar Peterson's Night Train

Classical: certainly Mstislav Rostropovich performing Bach's Cello Suites

Blues: I'd sustain on Hans Theesink and Terry Evans Visions

Folk: Van Morrison's Back on Top, Bruce Springsteen's Ghost of Tom Joad

Essential others: All the lyrics of Leonard Cohen, Tom Waits and John Hiatt but hopefully with someone else to sing them.

➔ **How much faith are you putting on the possibility of music shifting from CD to Blu-ray?**

➔ While I think the potential is certainly there as a format, I am concerned Blu-ray is a 'bit' late arriving. With a terabyte of storage now running merely \$100, and streaming video paving the way, music lovers will utilize these capabilities to archive concerts or download high resolution recordings at will. Overall this is good. While CD sales have dropped, there is a plethora of acoustic recordings available for download. High resolution will grow out of this.

➔ **Give us a glimpse into the labs of Legacy Audio and what can we expect from you in the year 2009?**

➔ Beside the processor and 7 channel amp we are working on several professional products, one of which is a tower using three 15" drivers. It has a sensitivity of 100dB, goes down to 20Hz, while maintaining extraordinary off-axis linearity. It can be used in the Studio, on stage, or in the home (some customers already have placed orders).

➔ **What comprises your own system at home?**

➔ In my two channel room, I have an original Elite stable platter transport with a copper chassis that weighs about 35 lbs., an Alesis Masterlink 24 bit recorder, a Benchmark DAC, a pair of our Powerbloc amplifiers, a Wavelaunch processor, and Legacy Whisper

HD speakers with a pair of Xtreme HD subs.

My theater room has Focus HD, a Marquis HD center channel, a pair of Phantom HD on the sides, with Studio HD on the rear, the processor and amplifier are our new Legacy units. I use a Sony BDP S550 Blu-ray player. I use Helix daily at Legacy's Acoustic Avenue studio.

Bill Dudleston
with the Whisper
speaker

