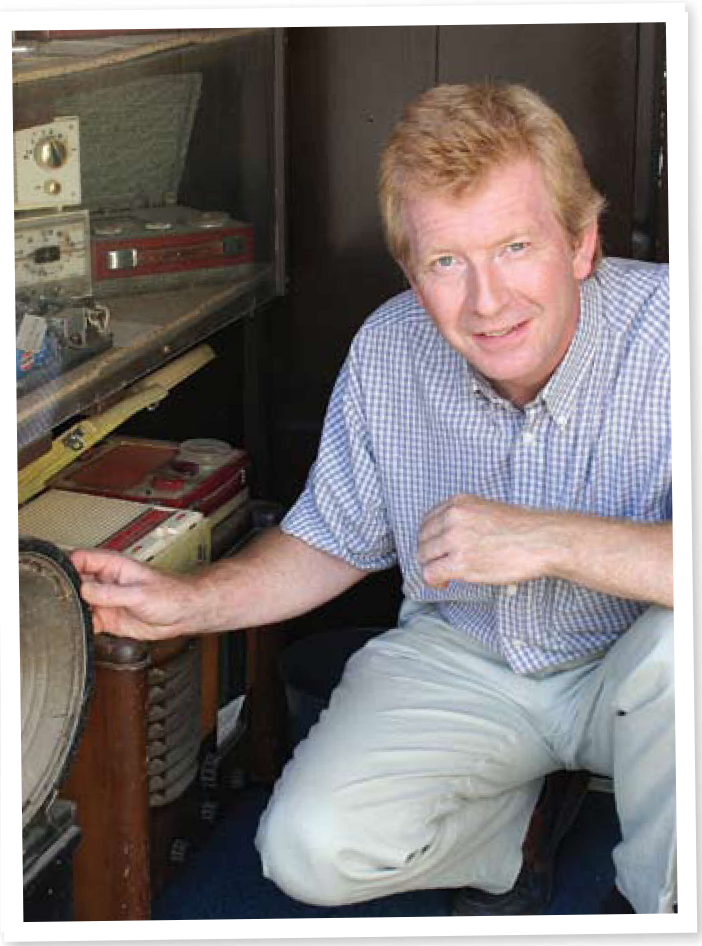

Interview with Alan Shaw

PS: It's rumored that you never really liked the LS3/5a and that one reason you made the HL-P3 is to improve upon the original design.

AS: Before answering that, I'd like to say that I have the greatest respect for the LS3/5a, especially when you consider *when* it was designed. But after the euphoria of becoming a BBC-licensed supplier around 1988, I didn't really listen to the 3/5a for a couple of years. Then I made recordings of my daughter and was quite disappointed how colored she sounded on it in the presence area. Far, far too much energy. So I designed the P3 to reduce that overall intensity.

PS: One of your LS3/5a criticisms concerned its inability to stay in spec over time.

AS: The performance of the LS3/5a bass unit dramatically changes with time, and after about twenty years a peak of around 5–10dB centered on 1300Hz is very typical. It's related to chemical degradation in the rubber surrounds used in the original 3/5 (PVC in the later—and all Harbeth—computer-optimized ones).

PS: You seem to have used some of the LS3/5a's "tricks," however, like the upper-bass boost to suggest weight and warmth.

AS: To my way of thinking this was mandatory to stand any chance of selling the P3. But the interesting thing about the bass hump is it's a hump only to the eye on the graph. In reality, it's a perfectly executed Butterworth second-order alignment. What's more interesting is what follows the hump: a shallow contouring of the drive from 120Hz to about 1000Hz. The way the ear works, this 125Hz stands out against the general contour and this is what gives the apparent weight. The voltage plots on our Web site show what's going on in detail.

PS: I also hear a bit of a rise in the presence region, albeit rather more subtly applied.

AS: Yes, a little, but that's essential. It lifts the perceived loudness of the speaker, it draws attention away from the "sound of the cabinet," it enhances stereo imaging, and it brings the soundstage forward, clear of the box as it were.

PS: Why don't you use your RADIAL compound in the P3?

AS: The P3 predates RADIAL, and tooling-up for a Radial driver would cost around fifteen to twenty thousand dollars. Since the performance of the P3 is well known and liked, especially in professional circles, and the speaker continues to sell very well, this can hardly be a priority for a company the size of ours.

PS: Can you tell us something of how you go about designing speakers? I know you use a combination of exacting measurements and intensive listening. When you start listening, what are you adjusting? The crossover, the cabinet, the parts? What are you listening for?

AS: This really is a first class question that I've not been asked before. I need a little time to give you an answer.

In about a week, he wrote me the following reply:

AS: My heroes were all at the BBC. In a quasi-government, engineering-based organization like the BBC, where public money is being spent, there is no room for pure subjectivism. There is a hierarchy that ensures solutions are 100% engineering-based, repeatable, on budget, documented, thoroughly critiqued, and then published. So it was with the BBC's work on loudspeakers in the Sixties. The beauty of the prose, the elegance of the arguments, the simplicity, the logical progression of ideas and concepts, and perhaps above all the *approachability* of the subject to even the schoolboy gripped me then as it does now.

So I work in a way which gives me the documentation to

illustrate to peers the design process, including all the meanderings, the dead-ends, the time-wasting but which slowly builds toward the final design. I record my observations in meticulous detail in logbooks, accompanied by the appropriate computer graphs, annotated for my ongoing learning—very deliberate and painfully slow. I have these scrapbooks for every model. The Monitor 40.1, just finished, fills about 150 pages. I hope that long after I've gone, these will be of use to future designers.

The very word "coloration" sends a shiver down my spine. It's not a hard-engineering word. It smacks of failure: of uncharted sonic turf between real science and emotions.

The actual process is this: First, perfect the drive units. Absolutely mandatory. Fix all drive-unit issues at source, mechanically; do not rely on electrical fixes in the crossover, as they always leave a sonic signature, the cure often worse than the illness. Second, build the box to the final size. Third, mount drivers in the box. Once the drivers are mounted, take careful frequency-response measurements over a wide arc, process them, and feed them into HALNet, our own loudspeaker crossover-design simulator.

Then, take a break for a day or two! I have been designing by simulator for nearly twenty years now, and I have great confidence in the model versus the actual, but—*big* but—while the built circuit measures exactly as the simulation predicts, it does not tell you anything at all about how it *sounds*.

This is the really challenging part: How to balance what the simulator tells you is a good frequency-response with what measures well in-room with what your ears tell you sounds "right." You have to work all three *together* and you have to guard against being pulled by your ears into something that sounds very seductive but measures terrible or—more usually—sounds terrible but measures great.

It offends me if the measured response is not flat, or knowingly deviant from flat. There has to be, in my mind, justification for shading the system response, as the simulator can give you a dead flat response in minutes, so why not just use it? But this is the core of the job, which transforms the task from product design into an all-consuming 3-D chess challenge.

Experience tells me that two sorts of audible issues loom out of extended listening: Those you can—eventually—attribute to some wiggles in the measurable, hence simulated, response, and those you can't. Those we call "colorations." The very word sends a shiver down my spine. It's not a hard-engineering word. It smacks of failure: of uncharted sonic turf between real science and emotions. But once my subconscious locks onto a coloration (perhaps fifty-plus hours listening in to the design)—I dread this stage—I find myself going round in circles for weeks pushing the response here, pulling it there, moving the crossover up or down in level or frequency, more listening, more eureka moments late at night which the next day aren't. Every time I swear that I'll find a hard-engineering path from this random phase to a solution, but every time I resort to (a) going over the notebooks in ever more detail hunting for clues, (b) slowing down, taking the pressure off to get a result, and (c) trusting my ears above the test equipment. It comes good eventually! I should add here that I have no interest in fancy components—standard polyester caps and wire-wound resistors on good quality fiberglass boards are all you need to get a great sound.

As to what am I listening for, I'm listening for coloration that breaks down the illusion of "being there." For me, speech/vocal quality is the real arbiter because the human voice-box just doesn't produce the sort of colorations that speakers do. It's soft, wet, highly damped tissue and it can't produce spitty, gritty, beaky, wiry, quaky, hollow sound—all those are speaker colorations. Because of its emotional content, music is less revealing of coloration than speech and voice. **TAS**