



BACK TO THE FUTURE...

by Anthony H. Cordesman

In the last issue I posited the need for the high-end to take room correction seriously and waxed lyrical about the analogue room correction approach adopted by Richard Vandersteen in his 5A and Quatro loudspeakers. However, before I get into the details of those room correction features, I should stress that the Vandersteen 5A is an exceptional high-end speaker in other ways too.

Vandersteen Audio has long been one of the most respected names in US speaker design, and Richard Vandersteen was one of the pioneers in combining advanced technical measurements with listening to advance speaker design. Like Dunlavy and Thiel, Vandersteen Audio was one of the first firms to get serious about time alignment in drivers and the use of first order crossovers, and Vandersteen has a long tradition of keeping its models in production for years – offering upgrades to keep up with advances in technology.

The Vandersteen 5A is now Vandersteen's top of the line speaker, and it is a well-proven design. It builds on the Vandersteen 5, which went into production in 1997, but it offers a much more powerful amplifier for the sub-woofer and a much better power supply. It also uses improved drivers to produce something approaching a coherent point source at real world listening distances.

This speaker has a musically natural timbre. Some audiophiles may find it slightly soft or rolled if they compare it to other speakers that seek to deliver “flat” frequency response like Thiel, TAD, and B&W. There is, however, no one way to define or measure flat response in loudspeakers, and I feel that if you want musically realistic timbre - and musically realistic upper midrange and treble energy - the Vandersteen 5A has the more realistic sound. No matter how well speakers with a different timbre may measure, the end result is more upper midrange and treble energy in reproducing classical music and acoustic instruments than I hear in live performances. It also results in music that is at least slightly bright or hard with today's close miked and overproduced recordings.

Worse, in an era where most pre-amps have no tone controls,

and far too many interconnects and speaker cables seem to be tuned to emphasize upper midrange detail rather than neutral sound, strings, woodwinds, and piano become overaggressive and lose their natural sonority. Brass bites too hard, and female vocals can acquire a slight edge – particularly given the growing tendency of far too many female pop singers to “chew the mike” in mid song.

The 5As control dispersion in ways that affect the impact of room reflection at the listening position, while the speaker also has a tweeter mounted on the rear that allows you to add the exact amount of additional, dispersed treble energy you want.

The vertical dispersion of the Vandersteen 5A is a mixed

blessing. It is limited in ways that can reduce the problems with floor reflections. One also notices in standing up that the high frequencies go away minimizing high frequency smear from the ceiling. At the same time, it is important to use the feet of the 5As to adjust their tilt to the listener's ear height, according to a chart in the owner's manual. Because the Vandersteen 5A uses multiple stacked and displaced drivers there is a focal point ± 3 inches to accommodate posture and listeners of different height. Not enough tilt and the speakers will sound forward because the tweeter frequencies arrive first.

Too much tilt and they will sound dark and slow.

Horizontal dispersion is a different matter as the alignment is correct anywhere as long as the listener is seated. This, however, means that – like virtually all speakers other than dipoles, the Vandersteen 5As should be kept away from the side walls or some form of absorbing material will be needed to keep the resulting reflecting from slightly muddling and hardening the sound. (Dipoles introduce a separate set of problems because of the need to adjust the distance from the rear wall to get the smoothest bass and avoid excess rear wall reflections.)

Like all speakers that have careful phase and time alignment, the Vandersteen 5 needs to be carefully set up to provide the best “point source” effect at a given listening distance and



► height. (This is a case where “RTFM,” and actually following set up instructions, are critical.) The result, however, is an extremely detailed sound stage with excellent imaging, width, and depth, and the kind of resolution more often associated with electrostatics and full range ribbons.

There is little practical need for room treatment to deal with such effects, and speaker placement is much easier. The choice of a focused listening area also does not mean the kind of “beaming,” or narrow listening area that occurs with some ribbons and electrostatics. This is not a speaker where every head motion shifts the sound stage and there is definitely seating room for a significant other.

Richard Vandersteen explains the use of the rear firing tweeter as follows: “Extensive R&D and live vs. recorded experiments have led me to leave the main tweeter flat minus of course the natural attenuation that occurs when sound travels through air to the listener. What then to do about a room that is a little dark or over damped or when compared with most high-end speakers today having exaggerated high frequencies? I have found it to be more natural to add a precise amount of energy in the reverberant field or one can adjust to taste. This method leaves the first arrival of the tweeter reproducing the overtones of many instruments in sync with their fundamentals.”

There are a number of other speakers that have a rear firing tweeter, but the Vandersteen 5A allows this tweeter to be defeated and has a unique mix of rear panel controls to adjust a its frequency range and loudness. This makes a major difference in adjusting the Vandersteen 5A to a given listening room.

The manual recommends that the rear tweeter should not be used in most listening environments. My own experience is different. I recommend setting it to provide at least some high frequency information at very low levels. Just a touch can add a bit of air that is missing in a pure point source sound, and a sense of added space. “First, do no harm,” should be your guiding principle, and the other speakers I’ve tried with rear firing tweeters don’t provide enough options.

Now, to the core of the Vandersteen 5A’s ability to provide analog room correction. The Vandersteen 5A is the first full range speaker I’ve listen to that actually succeeds in integrating a true active sub-woofer into a full range speaker. Far too often, you can hear discontinuities in timbre, speed and resolution between an active sub-woofer and the other drivers. It takes time and listening to get the level and the “Q” of the sub-woofer exactly right (again, read the manual!), but the end result is more than worth it.

Deep bass is one of the joys of music, and the Vandersteen 5A has a sub-woofer capable of producing house vibrating deep bass without losing tightness and definition. The 5A has a 12-inch woofer assembly mounted horizontally in the bottom. This is not a conventional driver, but a massive push-pull design with a powerful magnet or “motor” on either side of the curvilinear aluminum cone, similar in layout to the unit used in the Wilson Benesch Torus. Each motor can provide more than

an inch of linear excursion. The lower section of the enclosure that contains the dual-motor subwoofer driver and its 400-watt amplifier is constructed of an advanced 1-inch to 2-inch thick constrained layer-dampened material. It has elaborate, heavy bracing and reinforcement to provide superior control of resonance. If you are into home theater, the Vandersteen 5A can deal with even the most excessive sound effects as well as any separate sub-woofer I’ve tried – at least at levels that will not do active damage to your hearing. I’m not a fan of the “make your ears bleed” school of audio.

What is far more important than cannon fire and car crashes, however, is that this sub-woofer is intensely musical at anything approaching a realistic volume. It can handle even the most complex deep organ passages, reproduce bass guitar with total realism, allow you to hear everything a synthesizer can deliver, and deal with percussion like the Kodo drums (or Telarc’s bass drum spectaculars) with the kind of detail, control, and apparent “speed” that equals the best woofer columns and room filling massive designs. This is not a speaker with “small” or limited bass, or that substitutes bass energy for musical realism. You can push jazz, rock, or Saint Saen’s *Symphony No. 3* to any reasonable limit.

Moreover, the sub-woofer level control on the rear of the 5A increases or decreases the overall level of the deep bass without changing its character. There is also a low frequency contour control that adjusts the “Q” of the sub-woofer to accommodate different rooms, listening tastes, or system modes. Technically speaking, “Q” is the product of a complex mathematical equation derived from driver, electrical, and enclosure parameters. In practical terms, it defines the sound character of the bass response. A low “Q” sub-woofer sounds tight and controlled. A high Q produces a full, warm bass with more energy in the most audible bass range.

But what is really important is that you can do more than set the sub-woofer level and “Q” to your taste. The Vandersteen 5A can be placed in the best location for imaging and soundstage and – barring major standing wave problems – be adjusted to eliminate the audible impact of the “peaks and valleys” in low bass response that are inevitable when a speaker is placed in a real world listening room.

The sub-woofer amplifier has 11, dealer-adjustable compensation controls that modify its response to precisely counter room and placement induced nonlinearities at frequencies centered around 20, 24, 30, 36, 42, 50, 60, 72, 84, 100 and 120Hz. When the speakers are initially set up in the owner’s home, the dealer uses a low frequency analyzer to set the compensation controls for the most linear bass response at the listening position. Once the dealer has set these controls, they do not need to be readjusted unless the speaker placement or listening position changes significantly. You can do it yourself using warble tones or a Vandersteen test disc, and an inexpensive Radioshack S.P.L. meter. Here, however, I must offer the same ►

▶ caution that I would make about the use of digital room correction devices. Proper set up takes time and experience, and is as much a matter of judgment as it is of measurement.

As any one who has ever worked with parametric equalizers already knows, it is far too easy to overadjust in trying to get “flat” response, or simply to misadjust through inexperience and get the same result. I have also found that very small changes in meter location and height, and relatively small changes in average loudness, affect the measured bass response in most rooms in ways that the ear will not hear in the same way. An experienced dealer, and one who cares about what he sells, will bring judgment and experience to bear and not just technical expertise.

Moreover, this is the one area of the Vandersteen 5A’s instruction book that I find less than helpful. The manual does place the right emphasis on finding at least a good location that is relatively free of standing waves to begin with, and does provide help in finding such a location. However, all of the eleven equalization settings are interactive, the suggested Vu meter is difficult to read and use. It can take forever to get the settings right. It would be far better to have some kind of computer program and a calibrated mike and pre-amp, or sound level meter with an output connection. The right program could prevent both over and under adjustment and suggest ways of dealing with the interaction between the 11 compensation controls.

Yet, once you get it right, you may never go back to a speaker without such adjustment – particularly if you can hear bass problems now or you are getting poor bass measurements below 100 Hz. Getting rid of the worst dips and peaks in bass response, makes instruments sound far more natural. Even correcting for the worst peak makes a tremendous difference in either extending the deep bass frequency response you actually hear or bring up the mid bass and reproducing the full character of the bass viol, grand piano, organ, and drum. Complex synthesizer passages become far clearer, and the bass guitar has more impact.

Equally important, you can hear far more of the low level mid and deep bass in your music, and if you have ever actually measured this with an RTA, you are aware that there is a lot more low bass than you might suspect. This musical information is often lost without a subwoofer, or masked by room resonances with one. Its presence is often barely audible even with a speaker like the Vandersteen 5A,

but it makes a surprising difference in expanding the sound stage and in musical realism.

I realize that there is a “back to the future” aspect in recommending an analogue solution. In theory, any analogue attempt to deal with room problems is inherently more limited than digital technology. In practice, however, the Vandersteen 5A does at least as well as any digital correction I have yet heard in creating a truly high-end listening experience. It does not follow the crowd and allows you to tailor many critical aspects of what you hear to provide a musically realistic listening experience. It may rely on analog



technology, but it is very definitely “back to the future” in terms of delivered performance.

The Vandersteen 5A solves real world listening problems in a speaker that is small enough to actually fit in most (US) listening rooms.* It deals with the reality that room-speaker interaction problems do far more to shape the actual listening experience in most cases than the technical design of a full range speaker that cannot be adjusted to compensate for room effects.

It is also a symbol of the limitations in far too many high-end speaker designs. At \$17172 (including the necessary filter network) the Vandersteen is anything but cheap, yet it provides truly unique value for money compared to the steadily more astronomical cost of other high-end speakers. The \$7233, cloth covered Quatro, which shares the

same bass compensation system, is an absolute bargain. If the only place a speaker can really perform to its best is in a problem-free listening room – something close to a physical impossibility – you are investing in the high-end equivalent of the sound of one hand clapping. ▶+

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* I think AHC might need secondment to the UK in order to get an accurate sense of proportion – room proportion that is. The smaller Quattro is nearer to European size. Ed.