IAR Tomorrow's News Today

Hotline! 76-79

Master Guide to the Best of 1998

— and the Worst!

What to Buy . . . What to Avoid

Take Fred Astaire. In my eyes, he was head and shoulders above other dancers. Why? Because he did everything with a sense of consummate ease.

Lesser dancers show some effort and strain in their performance, whatever the level of that performance might be. This suggests that they are working at or near the ceiling of their performance abilities. In contrast, with Astaire's relaxed ease, we have no idea what or where the ceiling limit of his performance abilities might be. Astaire gives us the sense that his performance abilities easily transcend the ceiling limiting other dancers, even when he might be doing a step no more difficult than the same maneuver done by these other dancers.

Moreover, the effort displayed by lesser dancers detracts from the dance itself. The visible sense of effort is distracting to us the audience, as we begin to pay more attention to the dancer than to the dance itself, wondering whether or how well he'll do the next maneuver. In contrast, we have no such worries or distractions when watching Astaire. He gives us the comforting sense that he can handle anything with ease, and so we soon pay attention to only the dance itself. Thus, Astaire's sense of relaxed ease allows him to disappear as an intermediary human performer with mortal limitations, and brings us more directly in contact with the pure dance itself. To watch Astaire is to see directly through to the pure movement of dance itself, rather than merely seeing some human attempting valiantly to perform the movements of dance.

So it is with the very best audio products reproducing music.

These products are stunning and exciting because they get much closer to the sound of real music than we have ever witnessed before, and by a wide margin. They bring the experience of hearing reproduced music in your home much closer to the live acoustic music experience than we would have ever dreamed possible. They achieve this by being much more transparent than other high end audio products are, or ever have been. And the key to their transparency is the same as Fred Astaire's sense of relaxed ease.

These few audio products reveal much more of the music than other competing audio components, by such a margin that they clearly stand head and shoulders above the competition. But their superior transparency is also accomplished with a sense of relaxed ease. They don't push "transparency" at you in a hi-fi manner, as many other accomplished audio components do. Rather, they step out of the way, revealing more of the manifold rich sounds of live acoustic music, while revealing less of themselves.

Their most significant achievement is not merely that they give you more of music's information, but also that they reveal this added musical information so naturally, so effortlessly, that their extra margin of transparency emerges as a natural servant of the music itself, not as a separate event of hi-fi artifice. Their mastery of handling the wide spectrum and complexity of the signal we call music is so complete that no effort of hi-fi artifice shows — in contrast to other audio components, which seem to be straining with effort at the same task.

That leaves the music free to emerge naturally and effortlessly from these few audio components, apparently unscathed by the trials of its traversal through the recording and reproduction process, with its miles of wire, contacts, solder joints, etc. We hear the music itself more directly, without the distraction of also hearing audio components straining with effort at handling music.

And what music! We (perhaps like you) had assumed that audio reproduction in the home had hit a kind of glass ceiling. Small increments of improvement continually happening, yes. But still a big gap between reproduced sound and the sound of a live musical event. We keep an old guitar around the lab. Not because I can play it (regrettably). But because it's sobering to take it out of the closet once in a while. A single pluck of the guitar string serves to remind this reviewer that we still have a very long way to go between artifice and reality. In particular, the live guitar pluck has transient information and rich, complex after-transient resonance information that today's best audio equipment can't even begin to hint at, let alone reproduce accurately. It's easy to assign possible blame for this sonic shortcoming: digital bandwidth and resolution limits, speaker diaphragms, microphone limitations, the hundreds of IC chips in recording consoles, etc. Taken together, these limiting factors conspire to impose a glass ceiling on what is possible with today's recording-reproduction chain. And, because we could hear audio components straining with effort to reproduce what level of transparency they did manage, it was a logical inference that all these high end audio components were working at or close to a performance ceiling that they could not break through or rise above.

Thus, it was a shock, a very exciting shock, to encounter at CES 1998 some audio components and systems that broke through this ceiling, into a new realm of musical reality and believability. They have opened a new stairway to musical paradise, which is now available to you music lovers for your home enjoyment of music. Their breakthrough is due to a remarkable leap forward in transparency, and especially to the relaxed ease with which they

portray this extra musical information, thereby allowing it to sound natural and that much more real and believable.

For example, simple guitar plucks, heard through these few audio components, took a big step toward capturing some of the elusive qualities of our closet guitar reference: the speed and extension of the transient attack, and the liquid richness of the many subtle after-resonances.

If these few audio components were merely more transparent, that in itself would reveal more information about the guitar pluck, and thereby make it seem more real. But the truly exciting breakthrough of these few audio components is their further achievement in another aspect or dimension: their sense of relaxed ease in reproducing this additional information from their improved transparency. This relaxed ease allows the additional information to sound even more like a guitar itself, rather than merely like a better hi-fi reproducing a guitar.

In this issue's show report, we will be praising many audio components as being very transparent. They tell us a lot about the guitar pluck. But they still don't sound like a guitar pluck. They pass a lot of information about the guitar pluck, but they also superimpose a sense of strain or effort in handling this musical information (for example, they artificially harden the attack transient of the pluck). It is audibly apparent that these audio components are struggling close to or at their limits, in revealing as much of the complex, wide bandwidth music signal as they do.

But then we will also single out a few truly great audio components, which reveal just as much quantitative information about the guitar pluck (indeed more), but also do not add any sense of strain or effort, and because of this relaxed ease they achieve a huge margin of musical verity and believability over other audio components that are merely transparent.

These few components stand head and shoulders above other very fine high end components in the same way, and for the same reasons, that Fred Astaire towers over other dancers. They reveal more of the music, yes. But their real ace in the hole is that they do it with such relaxed ease, so they sound more like live music and less like artificial hi-fi. Their performance limits extend far enough beyond the demands of the complex, wide bandwidth music signal so that their limits are not audible when playing music, just as Astaire's limits are not visible when performing his repertoire. They conquer the sense of strain and effort that lesser components evince, just as Astaire did compared to lesser dancers, and thus they bring you more directly in contact with real live music itself, without an artificial intermediary. This is the stunning breakthrough that we find so exciting, that shatters the glass ceiling formerly limiting what was possible, and opens up a new stairway to paradise for you enjoying music in your home.

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Loudspeakers

Class 1

Vandersteen Model Five

The Vandersteen Model Five is easily the best buy among true high end speaker systems. When we surveyed our CES exposure to literally hundreds of speaker systems — the great, the near great, and the not-so-great — only two speaker systems clearly stood out above the rest. They alone made it into class 1. Indeed, their sonic prowess, and their clear margin of performance superiority over other speaker systems, literally define class 1.

For $9800, roughly a third the price of the Venture La Perfection, the Vandersteen Five takes an honorably close second place in the sonic areas where La Perfection is strongest, and it actually surpasses La Perfection in other sonic areas, and it stands head and shoulders above all other competing speaker systems.

Let's start with transparency. Even though its drivers are pretty conventional, the Vandersteen Five achieves a true musical transparency far superior to other systems using similarly conventional drivers. In fact, the Vandersteen Five is as transparent as the best electrostatics (the large Sound Labs, Martin-Logan, and new Inner Sound), something that many would consider an impossible achievement for conventional cone drivers.

Even more remarkable is the Vandersteen Five's lack of colorations. It is actually less colored than electrostatic speakers (which have a subtle but pervasive twannng from their edge-clamped diaphragms being plucked). It is far less colored than other speaker systems using similarly conventional cone drivers. In comparison, the cone drivers of other systems have easily audible cone cry, midrange honks or squawks, treble spit or sizzle, and various diaphragm breakups that betray (and add the foreign colorations of) the materials of which the diaphragms are made (paper, metal, plastic, rubber, etc.).

The Vandersteen Five's most remarkable sonic achievement is its sense of relaxed ease. It manages the twin feats of bringing you more music, more transparently and also with less coloration, than other speaker systems, and it performs these twin tasks incrementally better than any other system (save the far more expensive Venture La Perfection). So it wins both these races against other speaker systems. But what really sets the Vandersteen Five apart from these other systems, and puts it in a class by itself above these other systems, is that it isn't even breathing hard from finishing first.

What does this relaxed ease do for your musical enjoyment? As discussed above with our Fred Astaire analogy, this puts you in more direct contact with the music, with less distraction from the speaker system as an intermediary. It also has further benefits in musical enjoyment. For example, there are a number of large speaker systems on the market with very good transparency and dynamics (e.g. the premium efforts from Thiel USA, ProAc, Infinity, etc.). But their version of transparency is to push musical information at you, in a slightly hard, aggressive, hi-fi showoff manner. While we can objectively admire all the information provided by such speaker systems, we don't find ourselves really enjoying the music itself. The speaker system keeps intruding as a hi-fi showoff intermediary. Furthermore, their slightly hard, aggressive, bright presentation actually causes our ear/brain hearing mechanism to involuntarily partially shut down, in the same way everyone's hearing mechanism automatically does to lessen any obnoxious, loud sound. This partial aural shutdown also effectively shuts out part of the music itself, thereby lessening the effective transparency of the speaker system. Not to mention the listener fatigue that sets in, replacing what should

be relaxed enjoyment of the music.

In contrast, the Vandersteen Five seems to invite you in, to hear even more of its remarkable transparency. We find ourselves opening our hearing mechanism more, instead of shutting it down, in order to drink in even more of the music that the Vandersteen Five offers. We find ourselves more directly in touch with the music itself, and paying even more attention to the sounds of instruments and voices themselves, as we cease being aware of any loudspeaker limitations, colorations, or straining effort intervening between us and the music.

Other large speaker systems force you to listen to them; the Vandersteen Five disappears in favor of the music, and with its ease invites you to hear even more of the music. This is a difference in kind, not merely in degree, and this is what places the Vandersteen Five in a class above those other speaker systems.

This sense of relaxed ease also complements, and works synergistically with, the Vandersteen Five's superiority in transparency and low coloration. As noted, the sense of forced hi-fi aggression in other speakers effectively lessens whatever transparency they possess, since the ear/brain partially shuts down to shut out their aggressive artifices. In contrast, the Vandersteen brings you a greater wealth of musical information with its genuinely superior transparency and lack of coloration, and then it effectively enhances its transparency even further by inviting you in to savor every morsel of that wealth of natural sounding musical information.

While listening to the Vandersteen Model Five, we found ourselves time and time again forgetting our role as critical analyst of the speaker, and instead being seduced into enjoying the music itself, savoring all the subtleties of an instrument or a vocalist. Let other speakers bring you hi-fi; the Vandersteen Five brings you music.

Though the Vandersteen Five is not quite as supremely transparent and uncolored as the far more expensive Venture La Perfection, it actually surpasses La Perfection in other ways. The most obvious contrast is low bass. The Venture would require a subwoofer to achieve powerful and deep low bass, while the Vandersteen Five already includes one.

The Vandersteen Five's subwoofer is a true subwoofer, crossing over to the rest of the system at 100 Hz. And it includes a built-in 400 watt power amp. Moreover, it is a truly excellent subwoofer, surpassing most of the dedicated add-on subwoofer products on the market in bass quality, while equalling them in bass quantity. Its bass is deep in extension and powerful in impact, as with the best high quality dedicated subwoofers. But the quality of its bass is far superior.

The Vandersteen Five's deep bass is tight, accurate, and very well defined. There is very little hangover or boom; this allows the natural transparency of the rest of the system to shine through, without being obscured by the lingering bass hangover common in other subwoofers and many full range speaker systems. There's very little box sound or pumping diaphragm effect to the bass, as there is with most other subwoofers; instead, the deep bass from the Vandersteen Five seems to seamlessly integrate with and be part of the music.

This superb quality bass is partly due to the linear push-pull driver design, partly due to the enclosure design, and partly due to the fact that the driver is directly controlled by the built-in solid state amp (rather than being driven indirectly through the control-robbing parts of a passive crossover network). Furthermore, the direct drive bass amp's response can be tailored to make the woofer even more accurate, and the Vandersteen Five also includes further controls to tailor the woofer response to your listening room, to woofer placement in that room, and to your own preferences.

The Vandersteen Five also boasts important technical features missing from the Venture La Perfection. It is temporally aligned, with the drivers properly offset on a staggered baffle. It is phase coherent, with single pole (6dB per octave) crossover slopes putting all drivers in the same phase polarity. And the subenclosures for the several drivers each have minimal front baffle area, to minimize unwanted diffraction.

These technical features are sonically important for achieving the correct coherence for all the transients we call music, both temporal coherence and frequency spectral coherence. All parts of each musical note speak together in time, and in the same phase polarity. This gives each musical note the integrity of tactile presence and harmonic seamlessness. All the temporal parts of the note, from attack to sustain to decay, sound in the proper sequence, without seeming too hard or too soft. And all spectral overtones of the note sound in the proper relationship (including phase polarity) to each other and to the fundamental. These technical features are also important for achieving the best stereo imaging. The subtly recorded aural cues about the hall space are all in the proper relationships to the direct music signal. And the enclosure does not create its own misleading false localization cues by emitting spurious diffraction radiation. With the Vandersteen Five, the music floats free of the boxes, and the speakers simply disappear amidst the floating stage full of music.

Note that most other speaker systems are not phase coherent (even many of those that have a sloping front panel to put the drivers in temporal alignment). These other speaker systems have one driver (say the midrange) in one polarity and the spectrally adjacent driver (say the tweeter) in the opposite phase polarity (some even have severe phase rotations producing polarity inversion within the spectral range of one driver). This means that there actually is no correct polarity cable connection for these other speaker systems, and no correct position for the polarity switch on your preamp or digital processor. No matter which way you connect the speaker or set your polarity switch, part of the musical spectrum will be in the wrong phase polarity. You're stuck with picking your poison; the two possible choices will sound different, but both choices will be wrong.

For example, with one choice the fundamental of a trumpet note will be correctly blowing, but the overtones will sound too soft and phasey, without the correct bite and coherence, because they will literally be sucking instead of blowing, playing in inverted phase polarity. But if you choose the opposite polarity (via speaker cable connection or via flipping a polarity switch), you'll have the converse problem; the trumpet fundamental will sound weak and phasey, because it will literally be sucking instead of blowing, and it won't provide an adequate, musically coherent foundation for the overtones, which will have the correct bite because they'll be correctly blowing.

The two polarity choices sound different, because different spectral parts of a musical note are brought into correct phase polarity. Which choice sounds better to you depends on whether you pay attention to the midrange part of each note or the treble part. But neither choice is correct with these other speakers, since some part of each note will be in the wrong phase polarity regardless, and you only have the choice to pick which part.

We find that we are able to deliberately switch our attention to one spectral part and then the other. In this way we can clearly hear that either polarity choice with such speakers renders some spectral part of each note weak and phasey, while bringing the other spectral part into correct tactile coherence — and thus both polarity choices are wrong.

No matter what you do with these other speaker systems, they fragment each musical note, playing one spectral fraction of the note with correct tactile bite but another fraction with the weak, phasey sound of inverted polarity. If you want to hear the whole trumpet note, fundamental and overtones, all blowing coherently together in the same polarity, sounding like a single musical note, then you need to get a speaker system which has coherent phase, such as the several Vandersteen speaker systems.A coherent phase speaker system usually (but not necessarily, as John Bau proved) has first order (6 dB

per octave) crossover slopes, which has the further advantage that there are fewer crossover network components in the signal path to degrade the music signal and get in the way of your power amp accurately controlling the speaker drivers.

The drivers in the Vandersteen Five use conventional materials, not the exotic and expensive ceramic cones as in the Thiel drivers of the Venture La Perfection. These conventional materials do have non-pistonic breakup modes within the audio range. However, because the Vandersteen Five employs the important technical features discussed above, it overcomes much of any disadvantage of its conventional driver materials, and manages to achieve an overall transparent coherence very close to the Venture La Perfection (and does so with seemingly effortless ease). Indeed, thanks to these technical features, the Vandersteen Five's stereo imaging seems slightly better than La Perfection's, especially in portraying the stage and hall space beyond the area between the speaker locations.

The materials of the Vandersteen Five's four main drivers are actually quite diverse. The subwoofer uses an aluminum cone, the woofer a polymer and Kevlar mixture, the midrange a polymer alone, and the tweeter a metal alloy dome. Yet the colorations one might expect from these materials are nowhere to be heard. Moreover, the entire musical spectrum is reproduced with a seamless integration that one would not expect from such diverse materials. This is a stunning design engineering achievement, and is all the more incredible because the Vandersteen Five employs shallow first order crossover slopes, so each driver's breakup modes cannot be electrically suppressed.

In most other speaker systems, one clearly hears the materials of which each driver diaphragm is made, as they impart foreign plastic or metallic mechanical colorations to all music. Moreover, in most other speaker systems employing diaphragms made of diverse materials, one clearly hears the diverse colorations of each driver material fragmenting the musical spectrum, so that, for example, the midrange sounds plastic whereas the treble has a metallic coloration, and thus does not seem to be emanating from the same musical instrument as the midrange. Such speaker systems do not present music as an integrated whole, and this fragmenting of the music compounds the sins of the mechanical colorations from the drivers, calling even more attention to these several and diverse colorations intruding between you and the music.

The Vandersteen Five's drivers, though employing ordinary materials, must have been very carefully and subtly engineered. Their diaphragm breakup colorations are so low that they do not intrude upon the music, and are not severally audible as originating from diverse materials. The Vandersteen Five's colorations are so low that they even surpass the best electrostatic systems. Again, this represents a stunning engineering achievement for conventional materials, and for a multi-driver system employing diverse driver materials, and for a system using shallow crossover slopes. After listening to the low coloration standard set by the Vandersteen Five, we hear all sorts of driver material colorations in other speakers. Going back to the Vandersteen Five, we hear just the music.

Careful and subtle engineering is also evident throughout the rest of the system's design, and also contributes to this speaker's outstanding transparency and low coloration. The midrange driver is a patented design by Vandersteen, which employs a very open basket structure, to minimize early reflections from the basket that would radiate back through the cone, thereby muddying the midrange's transparency and also adding a foreign coloration to the music. The subwoofer is a special push-pull driver, which inherently cancels out the even order nonlinearities inherent in the long excursions required to produce deep and powerful low bass.

The crossover employs premium parts, and boasts unique detail features, such as special silver contacts, developed by careful listening as the most transparent way to connect the slide-in crossover to the drivers. This slide-in crossover can be user adjusted to optimize several parameters, without having to resort to the introduction of transparency-robbing switches introduced in the signal path. For example, the user's choice in power amp for the main system (above the self-powered subwoofer) is fed by the simplest possible signal path, a high quality capacitor, whose value can be altered to match with the chosen power amp's input impedance, in order to provide the correct high pass crossover frequency. This simple, purist signal path for your main music signal furnishes much better transparency, with less coloration, than the typical electronic crossover.

The subwoofer amplifier includes several user adjustments to tailor the subwoofer's response to the listener's taste and room acoustics. Both the relative amplitude and the Q of the subwoofer can be adjusted. Of course, since the Vandersteen Five does put out powerful low bass, you should still provide it with decent room acoustics, including good room proportions and treatment with ASC Bass Traps. We had heard the Vandersteen Five at previous shows in a long tunnel room, inadequately treated for the bad bass resonance its dimensions produced, and the room's lingering woolly overhang severely impacted the overall quality of the Vandersteen Five's sonics (not only ruining its bass quality, but also sabotaging its marvelous transparency at middle and upper frequencies).

The Vandersteen Five's enclosure also contributes to both its transparency and its low coloration. Even thick walled enclosures can flex, and with their larger radiating area can actually emit more sound than the driver itself. This radiation from the enclosure itself inevitably colors the musical sound, adding to or subtracting from the music's tonal balance in certain frequency regions (see Angstrom story below). And this radiation also degrades system transparency, muddying the music, since it occurs later in time than the original music signal (and has the spurious colorations of the enclosure panel material to boot).

The Vandersteen Five's main enclosure takes a leaf from the book of some very expensive Italian mini-monitors, and applies this same lesson to a full size enclosure. The main enclosure is made from layer after layer of MDF, bonded together with layers of damping adhesive. Thus, this enclosure does not have walls in the conventional sense. Rather, it combines the solidity benefits of being carved from a single block of material, with the inertness benefits of constrained layer damping. The subwoofer enclosure is internally braced in all dimensions with a honeycomb like series of cross braces, offset from the center so that any remaining vibrational modes are smoothly spread out in frequency (rather than all occurring at the same frequency, where they would add and produce a more audible coloration). These factors contribute to our sonic findings that the Vandersteen Five's boxes seem to simply disappear, both in the bass and in the rest of the spectrum.

The Vandersteen Five is a floor standing system that is surprisingly modest in size, given its large sonic achievement, its sense of relaxed ease in managing this achievement, and its powerful deep bass capability (it is just 44 inches high). Thus, it can comfortably fit in even modest size rooms. The lower two thirds, the subwoofer enclosure, is finished in wood (unlike other Vandersteen sock-enclosed systems), with optional premium veneers available.

The only weakness we could find with the Vandersteen Model Five is that the waiting list is already months long. The manufacturer invests a great deal of time and labor making each pair of Model Fives as perfect as possible, including hand matching of drivers and crossover components (this guarantees the flattest possible frequency response, the least possible coloration, and the best pair matching for the best possible stereo imaging). Thus, the Model Five's manufacturing process is a labor of love, and cannot be hurried. But it's well worth the wait. After all, do you want a speaker that just brings you hi-fi; or one that brings you music?