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## Ayre AX-7 integrated amplifier

*Art Dudley, October, 2003*

Dating was murder, especially in the months just before I met my wife. I knew some nice women back then, many of whom were good-hearted and others of whom were beautiful. One was both, and talented, too: She gave me presents for no reason and wrote tender things in cards with pictures of sweet meadows or the sea: *My love goes on and on*, they said. But for whatever reason, I just couldn't love her back, and Oh! how the shit hit the fan the day I told her so. I meant it as a respectful act of honesty and forthrightness; she took it as a cowardly act of rejection, and responded in a manner that would forever remind me of Maggie bouncing the rolling pin off Jiggs's head while calling him an insect. That day, I learned two things: 1) women are unlearnable; and, 2) honesty, while an unassailably good thing in and of itself, makes a poor tool, mostly because it lacks a safety handle.



I'm reminded of my sketchy love life when I consider my relationship with the new "affordable" integrated amplifier from Ayre, a product I admired from the start for its superb design, good construction, and even for its impressive sound—yet which required more time and effort than usual before we moved beyond casual friendship. For the longest time, the AX-7 and I simply didn't click.

### What's inside?

The AX-7 did some clicking on its own, though, thanks to its offbeat volume control: a longish metal bar fastened to a thin piece of sheet metal inside the front of the amp, itself rigidly fixed to the chassis at midpoint. That point is the fulcrum about which the two ends of the control bar have some degree of movement, and behind those ends are the two FET switches that raise or lower volume through a resistive ladder, chosen for greater clarity and transparency than a traditional volume pot. I don't doubt the audible benefits of that approach—the Ayre AX-7's sonic clarity was never short of stunning—but a noiseless circuit deserves a noiseless control, and a \$2950 amp deserves a control with a more elegant feel; I wound up making all my volume adjustments with the amp's remote handset...which also let me mute the amp, switch between different sources, and turn off the lighted display from the comfort of my listening seat.

The line-level AX-7 is fully balanced from start to finish, with two single-ended inputs (RCAs) alongside two balanced ones (XLRs). One very nice touch is that each input is labeled with a unique cosmic pictograph—a crescent moon, a shooting star, and so forth—rather than a dull or dated word. The reasoning: Why saddle a poor, innocent amplifier with the words *Compact Disc* when we might not even be listening to those things 10 or 15 years from now? A pair of fixed-signal output jacks can be used for a tape deck, although there are no variable-level preamp-out jacks for, say, a subwoofer.

A reason for the absence of preamp-out jacks may be the absence of a preamp: The Ayre integrated is a solid-state power amp mated with *passive* gain control and source selection. Whether or not that also explains the absence of tone controls (*grr*), mono switch (*grrrr*), or a balance control (*grrrrrr*) is anyone's guess. All remaining signal-switching chores are controlled by a central microprocessor, which comes out of sleep mode in response to user input via the remote handset or the front-panel controls, thus keeping the signal path as clear and clean as technology allows.

The AX-7, which operates without feedback, uses a combination of ICs (for voltage gain) and discrete transistors (for current gain at output), the latter mounted to dual banks of heatsinks. Discrete devices also appear to be used for power-supply regulation just after the transformer's secondaries, and these, like the tranny itself, are mounted directly to the bottom of the chassis. Apart from those and the logic board for digital switching, most other power-supply and amplifying components are mounted to a single, neat circuit board. This class-A/B amp becomes moderately warm to the touch during use, but, as I discovered, a major portion of that comes from the very large frame-type transformer.

Construction and parts quality are both fine, the latter including a clever one-knob speaker connector from Cardas that seems to have been optimized for spade lugs, although bananas and bare wire can be accommodated, too. The enclosure is made from stainless steel and aluminum alloy, both brushed. I liked the styling, especially the unorthodox and rather adventurous pairing of old-style touches (the screen mesh vents on top) with contemporary design elements (the numeric display for volume settings). As to the latter, it was fun to leave the Ayre turned on at night, its display lit up in the darkened room and the volume turned down to "00." The numbers are big, blue, and italicized, and in the dark the effect was like having a pair of cartoon eyes in the room with me. (Think: Woody Woodpecker.)

### A pretty face

For the most part I relied on my usual source components, none of which is balanced, yet all of which I know well: a [Sony SCD-777ES](#) SACD/CD player, and a variety of moving-coil cartridges driving a [Linn Linto](#) phono preamplifier. I listened to the AX-7 through my [Quad ESL-989](#) loudspeakers, and while I also tried pairing it with my high-efficiency Lowther horns, I came away thinking the experience wasn't terribly germane: The Ayre seems to do its best nearer to redline than to idle, for whatever that's worth. I also tried a fairly wide variety of speaker cables, about which I'll have more to say later.

***Article Continues:*** [Page 2](#)

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## ARTICLE TOC

- > [Page 1](#)
- [Page 2](#)
- [Page 3](#)
- [Page 4](#)
- [Specifications](#)
- [Associated Equipment](#)
- [Measurements](#)
- [Manufacturer's Comment](#)

Art on the AX7e, January 2006Sidebar: Ayre's Accessories

 The logo features the text "INTEGRATED AMPS/RECEIVERS" in a gold, serif font. To the left of the text is a stylized graphic of concentric, overlapping semi-circles in shades of blue and gold, resembling a speaker or a signal wave. A dotted line runs horizontally across the page below the logo.

As I mentioned above, the Ayre AX-7 exhibited a tremendous clarity in my system: Not only did voices and instruments sound real and uncolored, but my Ayre-powered Quads seemed to float them into the room with a greater-than-usual degree of presence. About two-thirds of the way through the first movement of Mahler's Symphony 3—toward the end of the portion marked *Zeit lassen, a tempo*—five notes are played on the glockenspiel, spaced over a number of measures. Even on an average-sounding recording of the work, such as Barbirolli and the Hallé from 1969 (BBC 4004-7), these notes tend to stand proud of everything else. Yet the Ayre took the sound of that recording to another level, bringing each note into the room with stunning realism: the attack, the die-away, the full timbral fingerprint, the way the note seemed to pressurize the air in my listening room...all were uncannily right.

You might also consider that well-known Mahler Fourth on RCA Living Stereo: Say what you will about Fritz Reiner, the CSO strings under his direction had superb group intonation, and very good if not quite the best group tone. Their interplay at the opening of the *Adagio* is, on a good system, musically and sonically hypnotic, and by the time the oboe enters, the listener should be fairly drowning in a sea of texture and tone. The Ayre AX-7 filled that bill—not as well as the two single-ended triode amps I compared it to, but then, the SETs aren't powerful enough to keep note attacks from being mushy and unreal on the Quads. And *forget* about them doing the glockenspiel thing.

On the Reiner Mahler, the Ayre's spatial performance was also outstanding, and especially easy to hear in this recording's first movement: The triangle sounded very realistically distant, and the tam-tam, soft though it is in this piece, surprised with its entrance from the left. (Am I allowed to suggest that anything originates from that direction?) I consider a hi-fi's sense of *scale* to be more loudspeaker-dependent than anything, with full-range horns at the front of the pack for obvious reasons. But in a somewhat different sense, amplifiers and other components can tend to make the soundfield either small or large overall, and the Ayre fell into the latter camp. The imaginary stage extended well beyond the Quads' physical boundaries in every direction, even height (or so it seemed). And with well-recorded music of every type, images within that space seemed bigger than usual.

What I've described so far are the best aspects of the Ayre in my system: Warmed up, it was colorful, clear, well-textured, and spatially convincing. (Cold, out of the box, the Ayre AX-7 was timbrally chalky and colorless; that's true of most new amps I've heard, to a lesser or greater extent; in the AX-7's case, the extent was greater.)

Apart from wanting a longer break-in period than most—much longer than I would have guessed, but then I'm a bit of a skeptic on the subject—the AX-7 was among the pickiest amps I've tried, in two interesting ways:

First, it was very sensitive to the type and length of speaker cable I used. That doesn't mean you have to spend more money on the cage than on the hamster, only that you have to shop carefully. I've had the best results with the *least* expensive speaker cables in my closet: Nordost's affordable Flatline (\$3.50/foot) and, above all, plain old Naim NACA-5 (\$6/foot). Perhaps counterintuitively, I heard a better sense of musical flow and, in particular, better retrieval of low-level detail with those cables than with the more expensive alternatives, most of which involve silver. (But don't read too much into *that*.) For example, with a very long run of cheap Naim cable in place, it was easier to hear such things as the two soft kick-drum beats Ringo uses at the beginning of the second verse of "Hey Jude" (the

version on the Beatles' *Anthology 3*, Capitol CDP 34451 2) than it was with any other cable I tried. Weird.

Second, I came away thinking that the AX-7 was more sensitive to AC power quality than average. I say that because the Ayre was in my system both before and after my family's recent move, and it sounded and played music better in my new house, where it was fed by one of two separate 200-amp services isolated from most of the rest of the house's wiring. (Dumb luck: Apparently, when an addition to the house was built in 1994, the electrical contractor just said "Screw it" and added a whole new service for this wing, rather than try to upgrade the old one.) Not only that, but our new house is in a very sparsely populated area, with no industrial users I'm aware of and darn few domestic users. It's nice here in the sticks.

From the moment I plugged it in, sans warmup, the Ayre sounded a *lot* better in this house—startlingly so. I'm at a loss to say what else could account for the difference: My old and new rooms are similar in size (1989ft<sup>3</sup> and 1824ft<sup>3</sup>, respectively), and similar in layout and furnishings. I figure it has to be feng shui or the juice. I lean toward the juice.

But, as I've said: The Ayre AX-7 was colorful, clear, well-textured, and spatially convincing. So what if it needed a little coaxing to get that far? What's not to like?

### **But not much soul**

I auditioned the Ayre AX-7 through my Quad ESL-989s almost every day and night for two months, and every time I listened I had to work—to sit up, pay close attention, make an effort not to let my attention wander—in order to "get" the music. If my attention wandered, as was often the case, it wasn't unusual for an entire album side to go by before I realized I'd dropped the plot, so to speak.

Loud was better. Soft music played loud, or loud music played louder, seemed more effective through the AX-7—like an overly compressed pop album you have to crank up just to keep it interesting. That made me wonder: Was it a question of dynamics? Anyone who's ever read an audio magazine has (over)heard the notion that some amps sound more powerful than they really are; could the AX-7 be the opposite? That depends on what you think power sounds like, I guess. To me, the Ayre wasn't so much undynamic as it was simply undramatic—it didn't get across the tension or the development or the sheer *opening-up* I find in virtually all the music I love, and which, under the best of circumstances, grabs my attention, holds it, and keeps me coming back for more.

The AX-7 did a superb job of showing off the beauty and, in some sense, the *realism* of the sound taken a sample at a time, like a CAT scan. But while it got the stills, it didn't get the continuum: I didn't come away knowing anything about the music as an event in time that *moves* from one point to the next. The Ayre let the CSO strings sound as good as I'd heard them, but didn't let the music they were playing stir me. It let the Beatles sound like studio whizzes, but not a great rock'n'roll band. And it let acoustic guitars sound pretty and tangible and real, but let flat-picker David Grier's brilliant *Hootenanny* (Dreadnought 9801) fall emotionally and viscerally flat.

***Article Continues: [Page 3](#)***

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## **ARTICLE TOC**

**[Page 1](#)**

**> [Page 2](#)**

**[Page 3](#)**

**[Page 4](#)**

**[Specifications](#)**

**[Associated Equipment](#)**

**[Measurements](#)**

**Manufacturer's Comment**  
**Art on the AX7e, January 2006**  
**Sidebar: Ayre's Accessories**



The Ayre always *sounded* good, but the difference between sounding good and playing music is like the difference between wallpaper and a painting: Both can be colorful and detailed, but only one of them goes anywhere.

Was the AX-7 a bad mate for my Quad ESL-989s? On closer listen, the Quads' bass panels weren't as well controlled by the Ayre as they were by my older, less powerful, and altogether cheaper vintage Naim NAP110 amplifier—and since the electrostatic Quads are grounded and the Ayre has a balanced throughput...well, to borrow a sentence construction that became popular a few years ago, doubts crept in.

John Atkinson drove to my house with oscilloscope and signal generators to check out the combination *in situ*. While he found that the Ayre's output didn't look *perfect* on the Quads—squarewaves showed a slight overshoot into the speaker compared with a resistive load—neither were there any signs of instability or other evidence of a mismatch. Both of the AX-7's output phases were well-behaved into the Quad, a speaker that had upset JA's Mark Levinson No.33H, also a design with a balanced output stage.

Wanting to be fair, John and I decided we should throw some "normal" speakers at the AX-7 before going to press. Spendor distributor QS&D had on hand a broken-in pair of SP2/3s—a straightforward 8-ohm, two-way, bass-reflex design with which I'm thoroughly familiar, and which I admire. They kindly sent them to me using UPS's special and expensive rush-ass service. Thanks, Mike and Randy!

Playing through the Spondors, the Ayre did exhibit a somewhat tighter, snappier performance on electric and acoustic bass and low-pitched percussion instruments (kick drum, floor tom, *et al*), resulting in a slight improvement in my system's ability to convey the music's momentum, flow, and overall sense of pace. But my 18-year-old Naim NAP110 amp also improved in that regard, and to more or less the same extent. Big dogs like pickup trucks, and amps like ported woofers of reasonable size. No surprises here.

In any case, it wasn't just a matter of good bass vs bad bass, though the former surely helped: It's the way the old Naim made all my favorite music sound as compelling as I believe it really is. I tried a new CD, the great Colorado-based string band Hot Rize in *So Long of a Journey*, a "lost-until-now" live recording from 1996 (Sugar Hill SUG-CD-3943), focusing in particular on Charles Sawtelle's instrumental "The Butcher's Dog." Through the Ayre-Spendor combination, Sawtelle's guitar had believable tone, and the scattered applause throughout the number never failed to remind me of the size of the hall—things the Ayre did better than the Naim.

But the Ayre made the song sound like more of an exercise than a hot-blooded performance: By comparison, the Naim-Spendor combination restored the nuance and...well, I hate to say it, but the *verve* of the performance. The same was true on vocal numbers such as "Won't You Come and Sing for Me": Both amps kicked it off well, but by the time the massed harmonies enter for the first chorus, the Ayre started to lose me: It was pretty and it was clear, but it was not compelling.

**Taken as directed**

Only one thing remained to try: Ayre designer Charles Hansen had gone out of his way to create a fully balanced integrated amplifier, but all I had used it with were *unbalanced* sources. So Hansen kindly dispatched a sample of his company's CX-7, a "Red Book" CD player with both balanced and unbalanced outputs (and

casework identical to the AX-7's). The \$2950 CX-7 had been favorably reviewed in the May 2003 *Stereophile* by JA, who had used its balanced outputs exclusively.

I doubted the CX-7 would make much of a difference. I was ready to put my name on a review that said, essentially, "Good construction, pretty sound, musicality needs work." Then I played that same Hot Rize album on the warmed-up CX-7, balanced output to balanced input.

***Article Continues: [Page 4](#)***

## **COMPANY INFO**

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## **ARTICLE TOC**

**[Page 1](#)**

**[Page 2](#)**

**> [Page 3](#)**

**[Page 4](#)**

**[Specifications](#)**

**[Associated Equipment](#)**

**[Measurements](#)**

**[Manufacturer's Comment](#)**

**[Art on the AX7e, January 2006](#)**

**[Sidebar: Ayre's Accessories](#)**



It was brilliant. Amazing. Stirring, even. It was some of the best-sounding, most compelling music-making I've heard at home. I didn't know whether to laugh or cry: *There* was the snap in Charles Sawtelle's rhythm guitar playing. *There* was the dynamic give-and-take between the singers. *There* was the rhythm, the momentum, the out-and-out excitement of the music.

Now what I had in my system was an integrated amplifier with a clear, open sound, a somewhat larger sense of scale than average, and very good presence, that also played lines of notes with a convincing sense of rhythm, flow, and musical drama. It still wasn't as tight in the bass on my panel speakers as some amps, but it wasn't terrible, either. I still wish it had a balance control and a mono button, but I enjoyed using it otherwise. It was a fine thing.

Why hadn't I tried that two months ago?

By now I wanted to learn precisely what was responsible for the night-and-day change: Was it the balancedness of the connection between the source and the amp, or was that source, in and of itself, a really big deal? The only way to know for sure was to re-audition the CX-7, using its unbalanced outputs to drive the AX-7's unbalanced inputs.

The Ayre CD player, taken on its own merits, is a good enough product; I've spent a few hours getting to know the CX-7 in my other system, and it plays music about as well as anyone has the right to expect from standard CDs. But through the Ayre AX-7's unbalanced inputs, it did no better than my Sony. In fact, as I wrote in my notes when I made the switch, "Used as a balanced system, the CX-7 and AX-7 combination sounded alive; unbalanced, it was DOA."

The AX-7 simply didn't shine in unbalanced mode. By that I don't just mean that "balanced is better than unbalanced." I mean that, after hearing how well the AX-7 played music in balanced mode, the unbalanced AX-7 sounded almost broken by comparison.

## **Conclusions**

There's no sense spending big money on an amp unless you intend to get the best out of it every time you switch it on.

With that in mind, I strongly recommend the Ayre AX-7 for use in an all-balanced system. If you already own one or more balanced sources—whether or not you presently use them in that mode—or if you're sold on the idea and you intend to buy balanced sources right away, this integrated amp is a superb choice. Used as a balanced amp, it sounded and played music better than its \$2950 price might have led me to expect. (Too bad the relatively small number of balanced phono preamps on the market tend not to be cheap. In fact, most of the ones I know of cost more than the AX-7 itself—leaving me to wonder if the notoriously vinyl-loving Charles Hansen shouldn't get to work on a companion phono pre right away.)

Used as an unbalanced amp, the AX-7 still sounded good, but its musical performance lacked momentum and, ultimately, excitement. It didn't do enough to get across the excitement of real music—something that some other amps, many costing less than three grand, do well.

It's worth another paragraph to underscore this fact: The AX-7 is yet another product that confounds the idea that judging an audio component is a simple matter of plugging something unknown into a known system, then describing, purply or otherwise, what it did. Things aren't that simple anymore, if they ever were.

The AX-7 is a success after all, but a qualified one: It can play music brilliantly well, and it can be a very good value. Having spent more time with this pretty little thing than I usually do with a review sample, I feel unusually comfortable in recommending it—but now, all the more, I look forward to the day when the clever people at Ayre turn their attention to the comparatively cheap and electrically messy world that *most* music-lovers inhabit.

***Article Continues:*** [Specifications](#)

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## **ARTICLE TOC**

[Page 1](#)

[Page 2](#)

[Page 3](#)

> [Page 4](#)

[Specifications](#)

[Associated Equipment](#)

[Measurements](#)

[Manufacturer's Comment](#)

[Art on the AX7e, January 2006](#)

[Sidebar: Ayre's Accessories](#)



### **Sidebar 1: Specifications**

**Description:** Solid-state, two-channel integrated amplifier. Inputs: 4 (2 balanced, 2 unbalanced). Output power: 60Wpc into 8 ohms (17.8dBW), 120Wpc into 4 ohms (17.8dBW). Frequency range: 2Hz-200kHz. Input impedance: 40k ohms balanced, 20k ohms unbalanced. Maximum voltage gain: 35dB.

**Dimensions:** 17.25" W by 4.75" H by 13.75" D. Weight: 25 lbs.

**Serial numbers of units reviewed:** 8B0136, 8G0176.

**Price:** \$2950. Approximate number of dealers: 35.

**Manufacturer:** Ayre Acoustics, Inc., 2300-B Central Ave., Boulder, CO 80301. Tel: (303) 442-7300. Fax: (303) 442-7301. Web: [www.ayre.com](http://www.ayre.com).

*Article Continues: [Associated Equipment](#)***COMPANY INFO**

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**ARTICLE TOC**

[Page 1](#)  
[Page 2](#)  
[Page 3](#)  
[Page 4](#)  
 > [Specifications](#)  
[Associated Equipment](#)  
[Measurements](#)  
[Manufacturer's Comment](#)  
[Art on the AX7e, January 2006](#)  
[Sidebar: Ayre's Accessories](#)

**Sidebar 2: Associated Equipment**

**Analog sources:** Linn LP12 turntables (two) with [Linn Lingo](#), [Naim Armageddon](#) power supplies; [Naim Aro](#), [Linn Ekos](#) tonearms; Supex 900 Super, Miyabi 47, Denon DL-103D, Lyra Helikon Mono phono cartridges; Rega Planar 3 turntable, Rega RB-300 tonearm, Rega Elys & Exact phono cartridges.

**Digital source:** [Sony SCD-777ES](#) SACD player, [Ayre CX-7](#) CD player.

**Preamplification:** Fi, Audio Note M3, Naim NAC32-5 preamplifiers; [Linn Linto](#) phono preamp.

**Power amplifiers:** Fi 2A3 Stereo, Audio Note Kit One (300B), Naim NAP110.

**Loudspeakers:** [Quad ESL-989](#), Lowther PM2A and PM6A drivers (both 15 ohm versions) in modified Medallion horns, Spendor SP2/3.

**Cables:** Interconnect: Audio Note AN-Vx, Nordost Valhalla, Linn Analogue, Naim SNAIC (various), homemades. Speaker: Audio Note AN-SPX, Nordost Valhalla & Flatline, Naim NACA-5.

**Accessories:** Mana component stands, Loricraft PRC3 record cleaner, [Shun Mook](#) [Mpingo](#) discs, beer.—**Art Dudley**

*Article Continues: [Measurements](#)***COMPANY INFO**

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**ARTICLE TOC**

[Page 1](#)  
[Page 2](#)  
[Page 3](#)  
[Page 4](#)  
[Specifications](#)  
 > [Associated Equipment](#)  
[Measurements](#)  
[Manufacturer's Comment](#)  
[Art on the AX7e, January 2006](#)  
[Sidebar: Ayre's Accessories](#)

**Sidebar 3: Measurements**

The warning in Ayre's manual is clear: the AX-7's speaker outputs should not be connected to ground or to each other.

I had almost finished my set of measurements when Murphy struck. Changing my dummy load from 4 ohms to 2 ohms, I inadvertently connected the two channels' negative terminals together. The rear-panel fuse immediately blew, but the amplifier remained resolutely dead when the connection was broken and the fuse was replaced (footnote 1). This test report is therefore missing my usual high-frequency intermodulation tests and any estimate of signal/noise ratio. But the AX-7's performance on these tests can be inferred from the tests I *did* perform.

The AX-7's chassis was hot after the one-hour preconditioning period at one-third power, and the metal mesh covers over the internal heatsinks were too hot to touch. The Ayre's stepped volume control offers 66 steps, the front-panel display appropriately showing bright blue numbers from "0" to "66." The unity gain setting was "33" for both balanced and unbalanced inputs. However, when I tried to measure the maximum voltage gain, I ran into stability problems with volume-control settings higher than "60" when the output was greater than about 1W into 8 ohms. The right channel started "motorboating," and the signal traces on my oscilloscope were overlaid with a low level of RF "fuzz." This happened no matter how I experimented with the grounding of my test setup, and it limited the effective gain of the AX-7 to a still-high 29dB or so.

I have experienced this before with an integrated amplifier that combines a passive front-end with a power amp of higher-than-usual gain. In practice, it should not prove a problem, as I can't conceive of modern signal sources that have such a low maximum output level that the Ayre's owner will need to use the amplifier's volume control at settings above "50." But it did alarm me.

That out of the way, the AX-7's input impedance was to specification, at 23k ohms unbalanced and 44k ohms balanced, both figures remaining constant from 20Hz to 20kHz. The amplifier preserved absolute polarity. Its output impedance was moderately high for a solid-state design, at 0.4 ohm across the audioband. As a result, the response fluctuations resulting from the Ohm's Law interaction between the amplifier's source impedance and the manner in which our simulated loudspeaker's impedance changes with frequency reached  $\pm 0.35$ dB (fig.1). With resistive loads, the AX-7's response was flat within the audioband, gently rolling off above 30kHz. The exact rolloff depended on the load impedance; the output was 1.25dB down at 200kHz into 8 ohms, -2.5dB at 200kHz into 4 ohms.

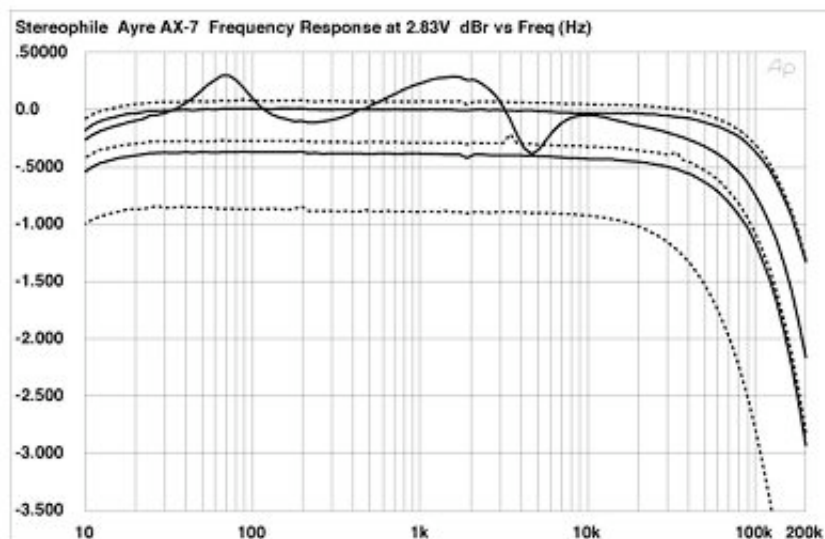


Fig.1 Ayre AX-7, frequency response at (from top to bottom at 2kHz): 2.83V into simulated loudspeaker load, 1W into 8 ohms, 2W into 4 ohms, 4W into 2 ohms (1dB/vertical div., right channel dashed).

As a result of this extended HF response, the AX-7's reproduction of a 10kHz

squarewave was high-on perfect (fig.2). Channel separation was very good: better than 76dB below 20kHz, and buried beneath the amplifier's low noise floor below 1kHz. But, as can be seen from fig.3, the crosstalk does increase with increasing frequency, due to the usual capacitive coupling between the channels.

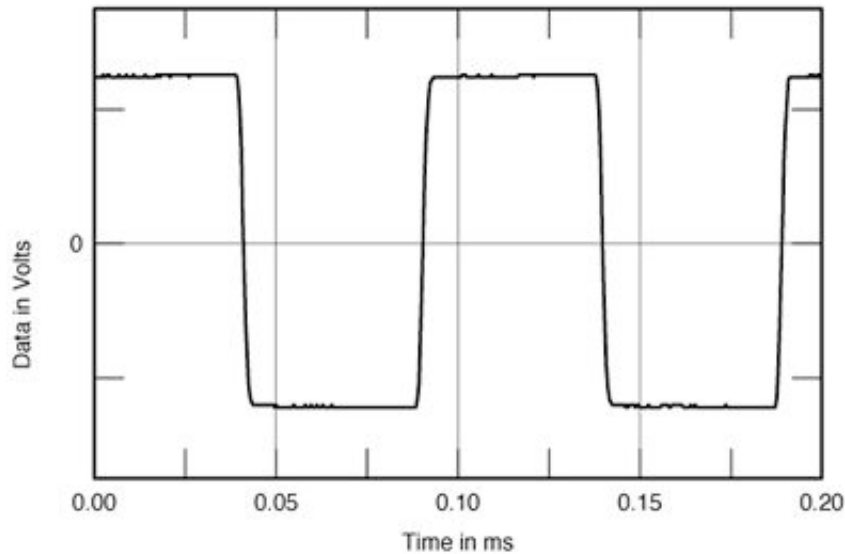


Fig.2 Ayre AX-7, small-signal 10kHz squarewave into 8 ohms.

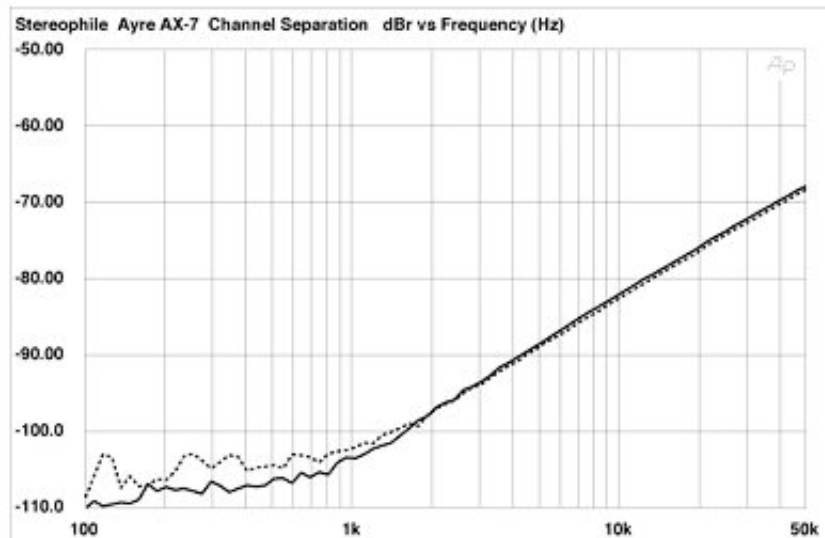


Fig.3 Ayre AX-7, channel separation (10dB/vertical div., R-L dashed).

Even with its lack of overall loop feedback, the AX-7's distortion level was moderately low into 8 ohms (fig.4, bottom pair of traces). However, it more than doubled each time the load impedance halved, implying that low-impedance speakers are best avoided. Note that the THD remains low above the audioband, which implies that the AX-7 would have offered good performance on the HF intermodulation test. At low levels and into high impedances, the distortion was almost pure third harmonic (fig.5), which, while not quite as subjectively benign or as easily masked as the second harmonic, is still musically consonant. At higher powers and into lower impedances, the third harmonic remained the highest in level but was joined by higher-order components, as well as by some second-harmonic (fig.6).

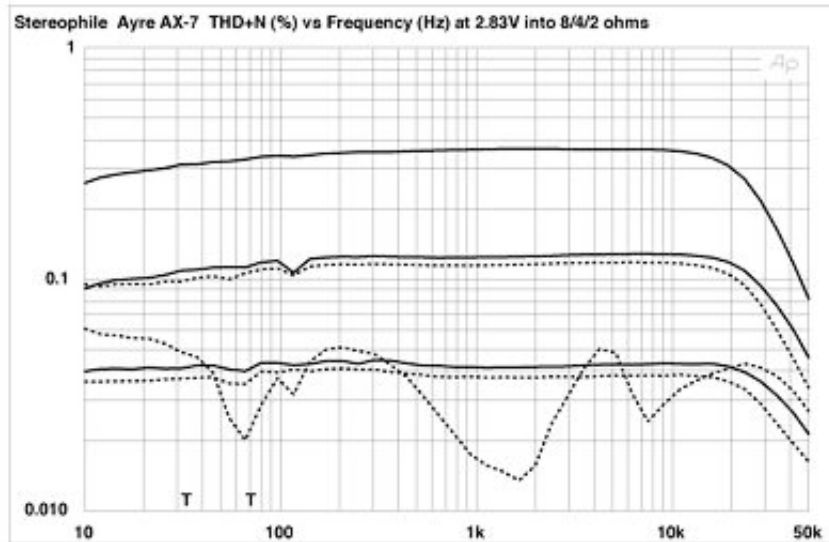


Fig.4 Ayre AX-7, THD+N (%) vs frequency (from bottom to top at 2kHz): 2.83V into simulated loudspeaker load, 8 ohms, 4 ohms, 2 ohms.

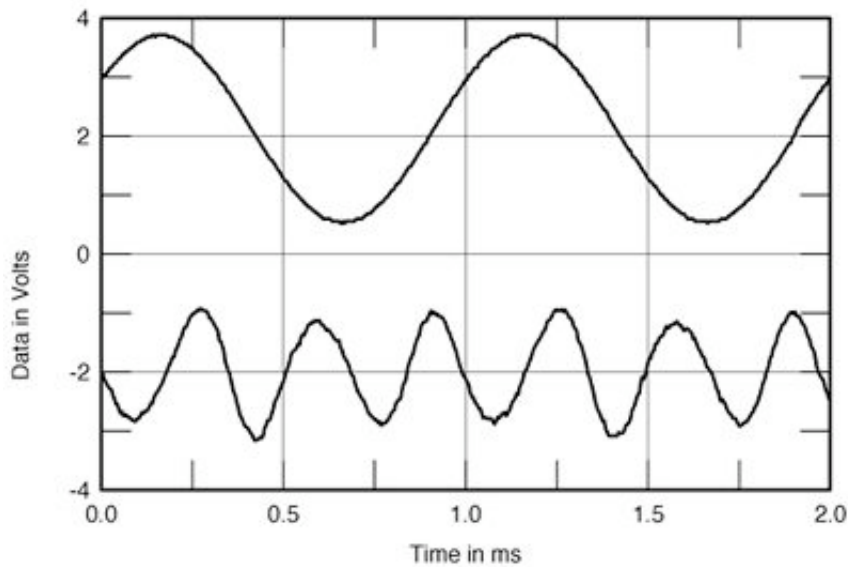


Fig.5 Ayre AX-7, 1kHz waveform at 1W into 8 ohms (top), 0.037% THD+N; distortion and noise waveform with fundamental notched out (bottom, not to scale).

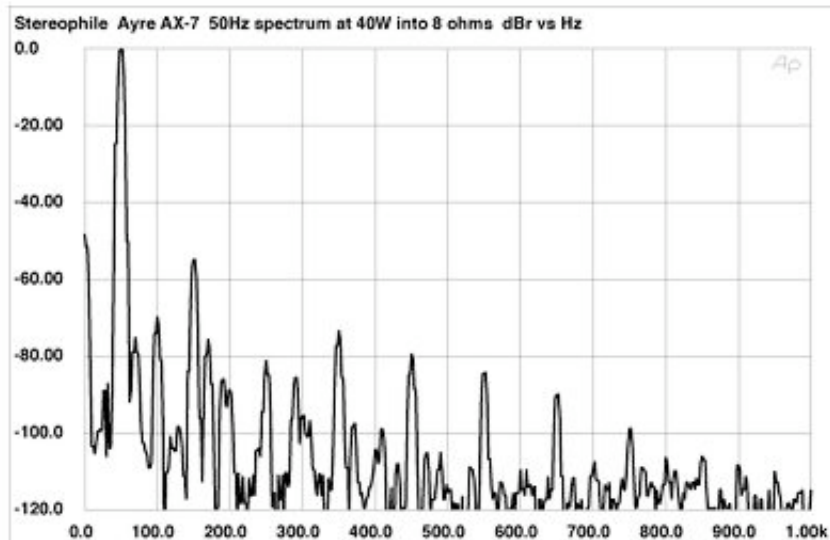


Fig.6 Ayre AX-7, spectrum of 50Hz sinewave, DC-1kHz, at 40W into 8 ohms (linear frequency scale).

While taking these measurements, I noticed something that I have seen only rarely in amplifiers: a change in steady-state test conditions led to a small, long-term drift in the state of the output. For example, to measure the percentage of distortion in its output, I set the AX-7 up to drive a 1kHz tone at 1W into 8 ohms. Suddenly changing the load impedance to 4 ohms dropped the output voltage and raised the level of harmonic distortion, as expected. What was *not* expected was the fact that the AX-7's voltage level into the lower impedance then began to rise again, reaching a slightly higher steady-state value after about 30 seconds. I blew the main fuse before I could further investigate this matter, but the lack of loop feedback means that the dependence of the amplifier's operating conditions on the music and load are not masked, as they are in feedback designs.

With both channels driven, the AX-7 didn't meet its specified output power at our usual 1% THD definition of clipping. Fig.7 shows that 51W were available into 8 ohms (17.1dBW) and 87W into 4 ohms (16.4dBW). The specified 60W into 8 ohms and 120W into 4 ohms were delivered at 6% and 10% THD, respectively. The shortfalls—0.7dB into 8 ohms, 1.4dB into 4 ohms—are not significant, however.

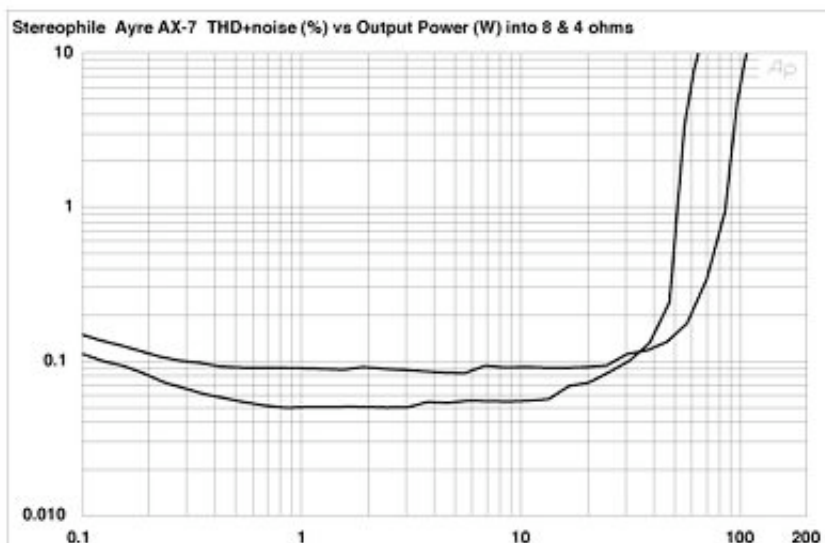


Fig.7 Ayre AX-7, distortion (%) vs 1kHz continuous output power into (from bottom

to top): 8 ohms, 4 ohms.

Considering the fact that Ayre's Charles Hansen eschews negative feedback, the AX-7 still offers excellent linearity and basically good measured performance, provided the amplifier is not asked to drive speakers with an impedance that drops below 4 ohms. However, I admit to being a little alarmed by the AX-7's onset of instability at its highest volume-control settings. Assuming the review sample wasn't broken, it is fair to point out that this will *almost* never happen in real life.

**Postscript:** When he received the preliminary preprint of *Stereophile's* review of the AX-7, Ayre's Charles Hansen was disturbed by my finding that the amplifier was unstable at volume-control settings higher than "60." As this was not typical of the amplifier's behavior on the test bench, he suspected that the sample we'd reviewed was defective, and arranged for a different sample to be dispatched to Art Dudley.

Art reported that the second sample sounded the same as the first. He continued his auditioning with the second sample, investigating the effects of balanced operation.

When I received the second AX-7 back from Art, I hooked it up to my Audio Precision System One with the same grounding arrangement I'd used for my measurements of the first sample. After a warmup period, the new AX-7 showed none of the signs of instability at high volume-control settings that I had experienced with the first sample. Feeding this amplifier with a single-ended 1kHz tone at 100mV and setting the volume control to "61"—the conditions that had led to the first sample's visible "furring" of the waveform on the oscilloscope screen, as well as the "motorboating" (very-low-frequency changes in the output level)—produced nothing untoward. The second sample behaved impeccably on the test bench.

This suggests that there was something wrong with our first sample of the Ayre AX-7. However, as Art's experience was that the two samples sounded identical, it didn't appear to affect the amplifier's sound quality. It is also fair to note that I found no obvious reason the amplifier should sound so much better when driven by balanced sources.—**John Atkinson**

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Footnote 1: In hindsight, this might have been because the only suitable fuse I had to hand was a 2.5A fast-blow. Ayre specifies a 4A slow-blow.—**John Atkinson**

*Article Continues: [Manufacturer's Comment](#)*

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## **ARTICLE TOC**

[Page 1](#)

[Page 2](#)

[Page 3](#)

[Page 4](#)

[Specifications](#)

[Associated Equipment](#)

> [Measurements](#)

[Manufacturer's Comment](#)

[Art on the AX7e, January 2006](#)

[Sidebar: Ayre's Accessories](#)



### **Sidebar 4: Manufacturer's Comment**

Editor: Our heartfelt thanks from all of us at Ayre go to Art Dudley for his willingness to persist in exploring the capabilities of the Ayre AX-7 integrated amplifier. As he found, the AX-7 can require extra care to achieve its full measure of performance, but in the end, that care is amply rewarded. In Art's case, the prize was "...brilliant. Amazing. Stirring, even. It was some of the best-sounding, most compelling music-making I've heard at home." Certainly a prize worth seeking!

One may rightfully wonder why the AX-7 requires that special degree of care to achieve its full potential. The answer is twofold: an exceptional degree of freedom from colorations combined with outstanding transparency. Clearly, these are goals for which most designers strive. And yet, as Art found out, when achieved they can create something of a double-edged sword.

Simply put, a transparent component that is free from colorations will allow one to hear (ever so clearly!) the context of the system into which it is placed. (By "system" we mean to include not only the other components and accessories, but also secondary items such as the quality of the AC mains supply.) Now, if one creates a source component that is transparent and free from colorations, that is almost guaranteed to be a good thing. But the further we progress down the signal chain with this approach, the more likely we are to run into problems.

Consider the transparent loudspeaker that is free from colorations. You will more clearly hear the music, but if there are aberrations and colorations in your other components upstream, they will also be heard more clearly. (Please note that we are making an important distinction here between components that are truly transparent and those that are "ruthlessly revealing." That latter characterization should properly be considered another form of coloration, and not true transparency.)

Many audio components have colorations that impose a strong sonic signature on all music that passes through them. With experience (and possibly a bit of luck), systems with carefully chosen complementary colorations may be assembled that will give a musically pleasing experience. However, this approach is ultimately limiting, both in terms of what other (potentially superior) components may be successfully used and, more important, what types of music may be successfully enjoyed. In contrast, a system assembled with transparent components that are free from colorations will provide a vehicle for the ultimate enjoyment of all types of music.

One point brought up in Art's review is the difference in performance between balanced and unbalanced connections. Through carefully controlled listening tests with the AX-7 here at the Ayre factory, we have found that balanced connections do indeed provide a higher level of performance than unbalanced connections. (This was not an altogether unexpected result; otherwise, we wouldn't bother to build balanced circuits!) However, when all other variables are held constant, the degree of difference between balanced and unbalanced connections must be regarded as audible but not significantly so. Nor did we find the differences fundamental to the degree of musical involvement. Perhaps Art's findings of greater differences in his system were due to some other variable, such as a lack of otherwise identical interconnect cables.

Ultimately, concerning music-reproduction equipment, the two goals of sonic accuracy and musical enjoyment must converge and be considered two sides of the same coin. After all, the original performance provides the full measure of both criteria. At Ayre, we have combined innovative circuit topologies and a complete absence of negative feedback with carefully chosen passive and active circuit components to achieve an unprecedented degree of transparency and freedom from coloration. Only in this way can the holy grail of total musical accuracy be achieved. Not only the "tremendous clarity" and "stunning realism" of the sounds, but also "the rhythm, the momentum, the out-and-out excitement of the music."

Thanks again, Art, for confirming that we at Ayre are achieving our goals.—*Charles*

*Hansen, Ayre Acoustics*

P.S. John, please don't lose any sleep over the first sample, which died on your test bench when the negative speaker terminals were shorted together. As you correctly surmised, it was the incorrect value of replacement AC line fuse that prevented its resurrection. Installing the correct fuse brought it back to life.

**Article Continues:** [Art on the AX7e, January 2006](#)

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## ARTICLE TOC

[Page 1](#)  
[Page 2](#)  
[Page 3](#)  
[Page 4](#)  
[Specifications](#)  
[Associated Equipment](#)  
[Measurements](#)  
 > [Manufacturer's Comment](#)  
[Art on the AX7e, January 2006](#)  
[Sidebar: Ayre's Accessories](#)



### Art Dudley wrote about the AX-7e in January 2006 (Vol.29 No.1):

When I reviewed the Ayre AX-7 integrated amplifier for the October 2003 *Stereophile*, I wasn't completely taken with it. Heard at its best—which is to say, when I used it as a balanced integrated amplifier with a balanced playback source—it was wonderful. When I used it with *unbalanced* sources, it was acceptably good but certainly not a product I'd go out of my way for.

Apparently the folks at Ayre took my observations seriously and found a way to implement a few technical refinements. Those efforts have resulted in a new version, the AX-7e (*e* for *evolution*<sup>1</sup>), whose \$2950 tag represents a price increase of nothing. Furthermore, anyone who bought an AX-7 can send it back for a full upgrade (\$250–\$350, depending on the age of the original).

The Ayre AX-7 combines a passive line stage—it has four inputs, two of which are balanced—with a feedback-free, class-A/B solid-state amplifier. Gain control is accomplished with discrete metal-film resistors and a bank of FET switches, and the AX-7's logic section is designed to drop all switching devices out of the signal path after a given command has been executed. The amp's power supply is a fairly straightforward thing built around a frame-style transformer of the usual sort.

That power supply is where all of the changes have been made. On the AC side, Ayre's designers applied three distinct, proprietary refinements that they refer to collectively as Dynamic Power: additional filtering of the AC mains, increased peak current delivery, and filtering of the rectifier switching noise. Of the last, Ayre's [Charles Hansen](#) says that, despite using the fastest, quietest rectifiers available, "there's a residual level of noise generated when the rectifiers turn on and off. Removing that noise yields improved resolution and a more dimensional, realistic presentation."

On the other side of the power supply, the operating voltages for the AX-7's gain stages were treated to a more rigorous and sophisticated round of governance, this time using two-stage voltage regulators (FETs driving bipolar transistors) in place of the earlier version's single-stage regulators (bipolar transistors left to man the turrets on their own). As with the original AX-7, all of the revised amp's regulators

operate without feedback, but the new approach creates a stage with a higher-impedance input and lower-impedance output than before. The result is more effective regulation—simple as that.

I've spent a number of weeks with the AX-7e, beginning with one of those very nice and increasingly rare evenings when the listening continues well past midnight, often with the lights turned off. After all that, and after the days and nights that followed, I can say with confidence that the new version is a knockout: that rare integrated amplifier that not only has *no* sense of compromise about it, but one that has the audacity to stand on its own merits. You may wonder if you'd ever need anything else.

The Ayre AX-7e sounded big and open, especially in the sense that the music it played seemed to emanate from an unusually dark, empty background. It combined classic Brit-style pacing and tunefulness with near-SET levels of presence and a fine sense of musical flow. That last quality represents the area of greatest improvement: My biggest reservation regarding the original AX-7 was that, for all its noble clarity of sound, it played music in a way that was emotionally unstimulating. Two years later I'm older, crankier, and harder to please in every way—yet the AX-7e made me happy, nonetheless. In my earlier review I mentioned Hot Rize's *So Long of a Journey* (CD, Sugar Hill SUG-CD 3943), and how the instrumental "The Butcher's Dog" fell flat through the AX-7. Through the AX-7e, even in unbalanced mode, the same tune fared *much* better: It was more like good music than merely good sound. The pickers' momentum seemed to have been restored, and subtler elements, such as the rhythmically nuanced guitar style of the late Charles Sawtelle (so like the late Clarence White in that regard), were easier to hear and enjoy.

Now that Ayre Acoustics had sent me an amp that played music so well, I found it easier to relax and enjoy the sonic attributes that had mostly been there all along—especially the aforementioned bigness of its soundspace, and how convincingly it portrayed the positions of the players and the singers within. Hearing the Vasari singers perform the Howells *Requiem* (LP, United 88033) was sadly magical, especially with the lights off. And the strange mix of very real, naturally recorded sounds and larger-than-life sounds on one of my favorite Neil Young albums, *Sleeps with Angels* (CD, Reprise 45749-2), was effective and right-sounding with the Ayre in my system: artful recording meets artful playback.

The revised Ayre didn't make me want to give up my own Fi preamp or my Fi and Lamm SET amps: The AX-7e had a smooth and acceptably tactile presentation, but my favorite tube components still do better in terms of texture, richness, and that last iota of presence. There was still a disparity between the Ayre's performance with balanced and unbalanced sources, but the difference was no greater than with other products I've heard that offer both modes.

So at the end of the day (literally, as it happens), as refinements go, the jump from AX-7 to AX-7e is significant, and I'm impressed that Ayre isn't using it as an excuse to profiteer. In fact, I'm beginning to see Ayre in the same light as Naim, Audio Note, and a few other companies whose production is motivated by something loftier than an effort to fill a certain price point (I can think of two prominent high-end audio companies whose expensive integrated amplifiers are little more than that), and where product design is governed by a consistent and comprehensive *point of view*. Ayre Acoustics seems to occupy their own branch of the tree, and the more I learn about them, the more interested I am in seeing—and hearing—what they'll do next.—**Art Dudley**

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Footnote 1: Rumors that the same amplifier will be available in some states as the AX-7scot—for *small changes over time*—remain unconfirmed as I write this. And now that I've officially run that joke into the ground, I vow to retire it, or at least to try.—**Art Dudley**

**Article Continues:** [Sidebar: Ayre's Accessories](#)

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**ARTICLE TOC**

**Page 1**  
**Page 2**  
**Page 3**  
**Page 4**  
**Specifications**  
**Associated Equipment**  
**Measurements**  
**Manufacturer's Comment**  
 > **Art on the AX7e, January 2006**  
**Sidebar: Ayre's Accessories**


**Sidebar: Ayre's Accessories**

Steve Silberman of Ayre paid me a visit right after his company's amp arrived here, and he brought along three accessories to try with the AX-7e and some of the other components in my system. First was an 8'-long Cardas Golden power cord, which Ayre endorses as an upgrade for their own products. As I've mentioned before, out of about a dozen different aftermarket power cords I've tried, the [JPS Labs Digital AC](#), used with a CD player or a D/A converter, was the only one I ever felt made a consistently audible change for the better.

Until now. The Cardas cord made the AX-7e's already black, empty silences between and around the notes noticeably blacker and emptier: no mean feat. And the information that remained had a cleaner, more natural feel. Those differences weren't enormous, and only you can decide whether the improvement is worth the cost, or the sheer pain-in-the-assosity of a power cord so heavy and stiff it seems forever on the verge of popping out of the amplifier's AC socket (footnote 1). Still, Ayre and Cardas now have my attention on the subject.

Speaking of Cardas, the second accessory was another of their developments: The Ayre Myrtle Block, neé Cardas Golden Cuboid. Myrtle is a dense, open-grain hardwood, and Cardas mills it into little blocks that measure 1.61" by 0.97" by 0.6"—numbers that will no doubt resonate (sorry) for fans of *The Da Vinci Code* (footnote 2)—and these are intended for use as accessory feet, usually in groups of three, and usually directly under the chassis (not the feet) of the component being supported.

Like other isolation products, these effect a subtle but real clarifying of the sound under some products; for once, the accessory in question is priced reasonably enough (\$5 each) that you can experiment more liberally than usual. I heard them make a slight improvement under the AX-7e, as well as under my Rega Planar 3 record player, [Lamm ML2.1](#) monoblock amplifiers, and, surprisingly, my [Linn Lingo](#) turntable power supply. But I heard no difference at all when I put Myrtle Blocks under my Fi preamp or any of my moving-coil step-up transformers. Go figure.

Third and last was also an accessory from Ayre and the good folks at Cardas: a CD titled *Irrational But Efficacious*. The idea is that playing this recording—especially its series of 5Hz–20kHz sweeps—through your system will bring about enhanced performance. That may impress some or even most of you as nonsense, so I won't hesitate to suggest that playing the Ayre CD through my system *did* affect its sound—and I hated it. Maybe I internalized the experience overmuch—because the sound of the sweep jangled my nerves and put me on edge, I think it did the same for my system. (I admit that I have also, on occasion, mistaken thunder for the sound of elves playing ninepins.)

But as I heard it, my hi-fi sounded mechanical and utterly devoid of human feeling for close to an hour after playing this CD. Not only did I refuse to allow it to be played again, I put the CD back in its case and hid it—seriously. If it were up to me, it would be retitled *Irritating But Irritating*, and the only good thing I can say is that, after a while, its effects wear off.

But hey: As Mr. Loaf himself has observed, two out of three ain't bad.—**Art Dudley**

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Footnote 1: In Cardas's defense, this same complaint applies to almost every other aftermarket power cord I've tried, the JPS Labs Digital AC excepted. In fact, the Cardas Golden was slightly more flexible for its size than I'd expected.—**Art Dudley**

Footnote 2: An entertaining and well-plotted book. From what I've seen, *The Da Vinci Code*'s critics are mostly sciolistic nerds from various disciplines who seem miffed that *they* weren't consulted in its writing, or that author Dan Brown didn't devote more text to *their* own hobbyhorses—and, of course, religious crackpots. Are its characters two-dimensional? Yup. Is the dialog believable? Nope. It's a pop novel, for God's sake—just as this is just an audio review. *Relax!*—**Art Dudley**

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## ARTICLE TOC

[Page 1](#)  
[Page 2](#)  
[Page 3](#)  
[Page 4](#)  
[Specifications](#)  
[Associated Equipment](#)  
[Measurements](#)  
[Manufacturer's Comment](#)  
[Art on the AX7e, January 2006](#)  
 > [Sidebar: Ayre's Accessories](#)

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